# WEBS-21B0

# Fan-less Embedded System



# User's Manual

Version 1.0

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# How to Use This Manual

The manual describes how to configure WEBS-2190 system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Fan-less Embedded System.

**Chapter 1: System Overview.** Present what may have in the box and give an overview of the product specifications and basic system architecture for this fan-less embedded system.

**Chapter 2: System Installation.** Show the definitions and locations of all the interfaces and describe a proper installation guide so that can easily configure the system.

**Chapter 3: BIOS Setup Information.** Specify the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

**Chapter 4: Important Instructions.** Indicate some instructions which must be carefully followed when the fan-less embedded system is used.

**Chapter 5: Frequent Asked Questions.** Provide the answers for the most frequently asked questions.

The content of this manual is subject to change without prior notice. These changes will be incorporated in new editions of the document. The vendor may make supplement or change in the products described in this document at any time.

# **Revision History**

Revision	Date	Details of Change(s)		
V1.0	2017/6/14	Initial Release		

# Chapter 1 System Overview

## 1.1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market, announced WEBS-21B0, a fan-less intelligent embedded system featuring Intel<sup>®</sup> Pentium<sup>®</sup> / Celeron<sup>®</sup> Quad / Dual-core Processor N3000 Series (codename Braswell). Its rugged, compact design plus low power consumption make WEBS-21B0 the perfect solution for applications in kiosk, digital signage, in-vehicle mobile video surveillance, medical, and the harsh environments of factory automation.

The new rugged WEBS-21B0 is equipped with the Portwell NANO-6061, a NANO-ITX embedded board based on the dual/quad-core Intel® Celeron<sup>®</sup>/Pentium<sup>®</sup> Processor N3000 Series (4W~6W TDP), which integrates the low power the 8th generation Intel® HD Graphics architecture that supports up to 3 displays with a maximum resolution of 4K and doubles performance compared to the previous generation. The compact WEBS-21B0 embedded system also features DDR3L SO-DIMM up to 8GB supporting 1333/1600 MT/s; one DisplayPort (DP) on the rear I/O with resolution up to 3840 x 2160; one legacy VGA interface support; one smart COM port for RS-232/422/485 selected by BIOS; and multiple storage with 2.5" HDD/SSD, mSATA as well as SD card. In addition, WEBS-21B0 is designed especially for IoT applications. The compact 150mm x 150mm x 50mm box integrates the latest M.2 type E interface, which targets wireless connectivity like WIFI, Bluetooth and near field communication (NFC) functionalities, making it an ideal solution as an IoT gateway.

The rugged, fan-less design makes the WEBS-21B0 durable in harsh environment applications, such as factory automation and industrial automation. The rugged and compact WEBS-21B0 supports a temperature range from 0°C to 50°C for harsh environment operations, while at the same time, its fan-less design ensures silent operation, reliability and low maintenance rate and costs. In addition, it has already passed a vibration test of 5Grms/ 10~500Hz and a shock test of 50G, assuring its solidity and reliability. In addition, the system accepts 12V input voltage.

With its superior, up to quad-core processing power, high capability and excellent 3D graphics via the 8th generation Intel® HD Graphics, Portwell's WEBS-21B0 is indeed an ideal solution for high computing power and/or high 3D video/image applications.

# 1.2 Check List

The WEBS-21B0 package should cover the following basic items:

- ✓ One WEBS-21B0 Fan-less Embedded System
- ✓ One 60W AC/DC Power Adapter DC-plug with screw
- ✓ Other Accessories

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

## **1.3 Product Specification**

System	
M/B	NANO-6061
System Chipset	Intel® Brasswell SoC
CPU	Intel <sup>®</sup> Pentium <sup>®</sup> Quad Core Processor N3710
	1.6 GHz up to 2.56 GHz /4C/4T. 2M Cache.
	Intel <sup>®</sup> Celeron <sup>®</sup> Quad Core Processor N3160
	1.6 GHz up to 2.24 GHz /4C/4T. 2M Cache
BIOS	AMI uEFI BIOS (SPI ROM)
System Memory	One 204-pin SO-DIMM socket supports DDR3L 1333/1600
	MT/s SDRAM up to 8GB
Storage	1x 2.5" SATA HDD/SSD, 1x mSATA, 1x SD card
Watchdog Timer	Programmable by embedded controller
H/W Status Monitor	-Temperature (CPU & System)
	-Voltage (CPU Vcore, 12V, 5V, 3.3V, 1.35V)
Expansion	1x M.2 socket (type E) with PCIe x 1, USB 2.0, SDIO, UART
	or I2C signal
External I/O	
Series Ports	1x RS-232/422/485 COM Port (selected by BIOS)
Display	1x VGA, 1x DP
USB	2x USB 3.0
Audio	Lin-out (Realtek ALC892)
LAN	2x Gigabit Ethernet (Intel® I211AT)
Other	1x Antenna hole for WIFI module
Power Supply Unit	
Power Supply	DC 12V
Environment	
Operating	0°C to 55°C
Temperature	
Storage Temperature	-20°C to 85°C
Relative Humidity	95% @ $40^{\circ}$ C , non-condensing
Operating Vibration	5Grms/10~500Hz, IEC 60068-2-6
Operating Shock	50G, 11 msec, IEC 60068-2-27
Mechanical	
Dimension (WxDxH)	150x 150 x 56 mm; 5.9" x 5.9" x 2.1"
Weight	1.8kg
Mounting	Wall, Panel/Desk, and DIN Rail mounting

# 1.4 Mechanical Dimension





# Chapter 2 System Installation

This chapter provides you with instructions to set up your system. Definitions and locations of all the interfaces are described so that you can easily configure your system. For more detailed PIN assignment and jumper setting, please refer to user's manual of NANO-6061.

# 2.1 HDD Installation

It's easy to install and maintenance the 2.5" HDD/SSD by just open the back cover. (The height must be less than 10mm)



# 2.2 SD card Installation



# 2.3 mSATA Device Installation

It's easy to install and maintenance the 1x mSATA by just open the back cover. Step 1. Loosen the 4 screws of the back Step 2. Take out the back cover



# 2.4 M.2 Device Installation

It's easy to install and maintenance the 1x M.2 device by just open the back cover. Step 1. Loosen the 4 screws of the back Step 2. Take out the back cover





# 2.5 DIN Rail Mounting Device Installation

It's easy to install and maintenance the Din Rail mounting device by just open the back cover.





# 2.6 AT mode setting

AT mode: Once the power supply plug in, the system starts automatically, don't need press the power button.

JP3 : Power On Mode Selection



JP3	Function
1-2 Short	AT
2-3 Short	ATX (default)

# 2.7 Getting Started

It is easy to get the system started.



# 2.8 I/O Interfaces

### 2.8.1 Front View



### 2.8.2 Rear View



### **Power Button:**

Press the power button to turn ON/OFF the system

### HDD LED:

Shows real-time read and write activity of your HDD/SSD as a small blinking indicator

### DC in: (12V)

Using the provided DC source to connect to the system

### Antenna Hole:

Antenna holes for M.2 WiFi card

### Audio:

Connectors for Line-Out

### LAN:

Two Gigabit Ethernet (10/100/1000 Mbits/sec) LAN ports by using Intel 211AT Ethernet Controller

### <u>USB3.0</u>

Two USB 3.0 (Universal Serial Bus) ports

### VGA:

VGA - CRT display output

PIN No.	Signal Description	PIN No.	Signal Description
1	RED	2	SCL
3	GREEN	4	GND
5	BLUE	6	SDA
7	VSYNC	8	GND
9	HSYNC	10	+5V

### DP:

DP (Display Port) display output

PIN No.	Signal Description	PIN No.	Signal Description
1	D0+	2	GND
3	D0-	4	D1+
5	GND	6	D1-
7	D2+	8	GND
9	D2-	10	D3+
11	GND	12	D3-
13	AUX_EN#	14	GND
15	AUX+	16	GND
17	AUX-	18	Hot plug
19	GND	20	VCC3

### <u>RS-232/422/485:</u>

\*Note: RS-232/422/485 configuration is determined by BIOS setting. Check BIOS setting for details.

PIN No.	Signal Description	PIN No.	Signal Description
1	DCD#/485D-/422T-	2	RXD#/485D+/422T+
3	TXD#/422R+	4	DTR#/422R-
5	Ground	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	N/C

# Chapter 3 BIOS Setup Information

WEBS-21B0 system adopts NANO-6061 mother board. 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.

# 3.1 Entering Setup – Launch System 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 <ESC> or <DEL> key will enter BIOS setup screen.

### Press <ESC> or <DEL> 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.

	—— General Help ————
tt→+	: Move
Enter	: Select
+/-	: Value
ESC	: Exit
F1	: General Help
F2	: Previous Values
F3	: Optimized Defaults
F4	: Save & Exit Setup
<k></k>	: Scroll help area upwards
<m></m>	: Scroll help area downwards
	OK

## 3.2 Main

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

Aptio Setup Utilit Main Configuration	y – Copyright (C) 2016 American Megatrends, Inc. Security Boot Save & Exit
Project Name BIOS Version & Build	NAND-6061 R1 00 F1 (03/08/2016 11:04:29)
EC Version & Build Da	R04.E00 (09/10/2015)
Access Level	Administrator
Processor information	
Brand String	INTEI(R) CEIERON(R) CPU N3160 @ 1.60GHZ
Memory Information	8192 MB (J PDDP3)
Total Hellory	
TXE Information TXE FW Version	02.00.02.2092
System Date	[Sun 03/06/2016]
System Time	[23:13:15]

Feature	Description	Options
System Date	The date format is <day>, <month> <date> <year>. Use <math>[+]</math> or <math>[-]</math></year></date></month></day>	
Cyclom Balo	to configure system Date.	
System Time	The time format is <hour> <minute> <second>. Use <math>[+]</math> or <math>[-]</math> to</second></minute></hour>	
	configure system Time.	

# 3.3 Configuration

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

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Main <mark>Configuration</mark> Security Boot Save & Exit			
<ul> <li>CPU Configuration</li> <li>Chipset Configuration</li> <li>LAN Configuration</li> <li>Graphics Configuration</li> <li>PCI/PCIE Configuration</li> <li>SATA Configuration</li> <li>USB Configuration</li> <li>Power Control Configuration</li> <li>TPM Configuration</li> <li>Operation</li> </ul>	CPU Configuration Parameters		
<ul> <li>Super 10 Configuration</li> <li>H/W Monitor</li> <li>Serial Port Console Redirection</li> </ul>	<pre>**: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>		
Version 2.17.1249. Copyright (C) 2015	American Megatrends, Inc.		

# CPU Configuration

### CPU Configuration Parameters

Aptio Setup Utility Configuration	y – Copyright (C	) 2015 Ameri	can Megatrends, Inc.
CPU Signature Microcode Patch Max CPU Speed Min CPU Speed Processor Cores Intel HT Technology Intel VT-x Technology 64-bit L1 Data Cache L1 Code Cache L2 Cache	406c3 34f 1600 MHz 480 MHz 2 Not Supported Supported Supported 24 kB x 2 32 kB x 2 1024 kB x 2		Enabled/Disable Digital Thermal Sensor.
Intel Virtualization Power Technology EIST Turbo Mode CPU C6 report CPU C7 report CPU Thermal Configuration	[Enabled] [Custom] [Enabled] [Disabled] [Enabled] [Enabled]		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen Esc: Evit.</pre>
Version 2.17.1249.	Copyright (C)	2015 America	n Megatrends, Inc.

Feature	Description	Options
Intel Virtualization	When enable, a VMM can utilize the additional hardware canabilities provided by Vanderpool Technology	Disabled, ★
reennoiogy	capabilities provided by variatipoor recimology	
Power Technology (custom)	Enable the power management features	Energy Efficient, Custom
EIST	Enable/Disable Intel SpeedStep	★ Enabled, Disabled
Turbo Mode	Turbo Mode.	★ Disabled, Enabled
CPU C6 report	Enable/ Disable CPU C6(ACPI C3) report to OS	★ Enabled, Disabled
CPU C7 report	Enable/ Disable CPU C7(ACPI C3) report to OS	★ Enabled, Disabled
DTS	Enable/Disable Digital Thermal Sensor	Enabled, ★ Disabled

# <u>Chipset Configuration</u> Configure Chipset feature

Aptio Setup Utili Configuration	ty – Copyright (C) 2016	American Megatrends, Inc.
Chipset Configuration	1	Control Detection of the Azalia device.
Audio Controller	[Enabled]	Disabled = Azalia will
Azalia HDMI Codec	[Enabled]	be unconditionally disabled. Enabled =
Memory Information		Azalia will be unconditionally Enabled
Total Memory	8192 MB (LPDDR3)	
Memory Slot0	8192 MB (LPDDR3)	
Memory Slot2	Not Present	→+: 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

Feature	Description	Options	
Audio Controller	Control Detection of the Azalia device. Disable = Azalia will be unconditionally disabled. Enable = Azaliawill be unconditionally Enable.	Disabled, Enabled	*
Azalia HDMI Codec	Enable/Disable internal HDMI codec for Azalia	Disabled, Enabled	*

LAN Configuration Configuration On Board LAN device

Aptio Setup Utility Configuration	∣ – Copyright (C) 2015 Ame	erican Megatrends, Inc.
LAN Configuration		Enable or disable Intel Ethernet Controller WGI211AT.
Intel Ethernet Contro LAN MAC Address Launch Legacy PXE Rom	[Enabled] 00-90-FB-54-B8-46 [Disable]	
Intel Ethernet Contro LAN MAC Address Launch Legacy PXE Rom	[Enabled] 00-90-FB-54-B8-47 [Disable]	
Wake On Lan Controlle	[Disabled]	<pre>++: Select Screen  f↓: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help
		F3: Optimized Defaults F4: Save & Exit
Vancian 2 17 1249	Copupidat (C) 2015 Amoni	F12: Capture Screen ESC: Exit
Version 2.17.1245.	Cobalitation (C) 2012 Hilleri	an Megatrenus, Inc. AB

Feature	Description	Options
Intel Ethernet Controller WGI211AT	Enable or disable Intel Ethernet Controller WGI211AT.	Disabled, ★Enabled
Launch Legacy PXE Rom	Launch Legacy PXE Rom. [Disable] Not launch Rom, [Enable] Force Launch Rom, [Auto] Auto detect LAN Cable status to Enable/Disable Rom initial	★Disable, Enable, Auto
Intel Ethernet Controller WGI211AT	Enable or disable Intel Ethernet Controller WGI211AT.	Disabled, $\bigstar$ Enabled
Launch Legacy PXE Rom	Launch Legacy PXE Rom. [Disable] Not launch Rom, [Enable] Force Launch Rom, [Auto] Auto detect LAN Cable status to Enable/Disable Rom initial	★Disabled, Enabled, Auto
Wake on Lan Controller	Enable/Disable Intel Lan WGI211AT wakeup function.	Enabled, ★ Disabled

### **Graphics Configuration**

Configuration graphic settings Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Configuration Graphics Configuration For test: force to set lid status as on or off. IGD Output Display control - GOP [Enabled] GOP Driver IGD Flat Panel [Auto] IGD Output Display control - CSM ▶ PTN3460 Configuration ++: 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-Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.

Feature	Description	Options
Force Lid Status	For test: force to set lid status as on or off.	★On, Off

### PTN3460 Configuration

PTN3460 help Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Main PTN3460 Configuration Select Panel Profile for current use Color depth and data [VESA 24 bpp] Channel Mode [Dual Channel] Clock Mode [Both Buses] DEM Profile ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen

Feature	Description	Options
		640x480
		800x480
		800x600
		1024x768
Danol Profilo	Soloot Donal Drofile for ourrent upo	1280x800
		1280x1024
		1366x768
		1440x900
		★1920x1080
		OEM Profile
		★VESA 24 bpp
Color depth and data	Select Color depth and data format	JEIDA 24 bpp
		VESA and JEIDA 18 bpp
Channal Mada	Coloct LV/DC Channel Made	Single Channel
	Select LVDS Channel Mode	★Dual Channel
		Even Bus
Clock Mode	Select clock output for LVDS.	Odd Bus
		★Both Bus

### OEM Profile Papel 1 help

Panel 1 help		
Aptio Setup Utility	– Copyright (C) 2015 Ameri	can Megatrends, Inc.
Main		
PANEL 1 Configuration		
THREE I CONTINUE ACTON		
Profile Name :	empty	
Rename Profile		
Color depth and data	[VESA and JEIDA 18 bpp]	
Channel Mode	[Single Channel]	
Clock Mode	[Even Bus]	
Pixel Clock	2500	
H Active Pixels	640	
H Blank Pixels	160	
H Offset Pixels	16	↔: Select Screen
H Width Pixels	96	T∔: Select Item
V Active Lines	480	Enter: Select
V Blank Lines	45	+/-: Change Opt.
V Uffset Lines	10	F1: General Help
V Width Lines	2 [Deptive]	F2: Previous values
H & V Sync Signal Pol	[POSTIVE]	F3: Uptimized Defaults
		F4: Save & Exit
		F12: Capture Screen
Version 2 17 1249	Conunight (C) 2015 America	n Megatrends Inc
VCI STOIL 2.11.1245.		AB
		TIB.

Feature	Description	Options
Rename Profile		
Color depth and data	Select Color depth and data format.	VESA 24 bpp JEIDA 24 bpp ★VESA and JEIDA 18 bpp
Channel Mode	Select LVDS Channel Mode	★Single Channel Dual Channel
Clock Mode	Select clock output for LVDS.	★Even Bus, Odd Bus, Both Bus
Pixel Clock	Pixel Clock (10Khz)	
H Active Pixels	H Active Pixels (Pixel)	
H Blank Pixels	H Blank Pixels (Pixel)	
H Offset Pixels	H Offset Pixels (Pixel)	
H Width Pixels	H Width Pixels (Pixel)	
V Active Lines	V Active Lines (Line)	
V Blank Lines	V Blank Lines (Line)	
V Offset Lines	V Offset Lines (Line)	
V Width Lines	V Width Lines (Line)	
H & V sync Signal Pol	Flag: 0x1E Signal Polarity is Postive 0x18 Signal Polarity is Non-Postive	★Postive, Non-Postive

### **PCI/PCIE Configuration**

PCI, PCI-X and PCI Express Settings. Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Configuration Control the PCI Express PCI/PCIE Configuration Root Port. PCIE Express Root Port 2 PCIE Express Root Port 3 PCIE Port | PCIE Port | Current | Curren... | Config | Link Width | Link P1(D28/F0) | ×1 | ×1 GEN1 P2(D28/F1) | ×1 P3(D28/F2) | ×1 GEN1 ↔: Select Screen | ×1 1 ---↑↓: Select Item ---Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen ESC: Exit-Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.

<u>PCIE Express Root Port 1</u> Control the PCI Express Root Port

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Configuration			
PCI Express Root Port ASPM PCIe Speed	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.	
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>	
Version 2.17.1249.	. Copyright (C) 2015 Ame	rican Megatrends, Inc.	

Feature	Description	Options
PCI Express Root Port	Control the PCI Express Root Port.	★Enabled, Disabled
		★Disabled
ASPM	PCI Express Active State Power Management settings.	LOs
		L1
		L0sL1
		Auto
	Configure PCIe Speed	★ Auto
PCIe Speed	CHV A1 always with Con1 Speed	Gen 2
	onv At always with Gent Opeed.	Gen1

<u>PCIE Express Root Port 2</u> Control the PCI Express Root Port

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Configuration		
PCI Express Root Port ASPM PCIe Speed	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		<pre>**: Select Screen  **: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>
Version 2.17.1249.	Copyright (C) 2015 Americ	an Megatrends, Inc.

AB

Feature	Description	Options
PCI Express Root Port	Control the PCI Express Root Port.	★Enabled, Disabled
ASPM	PCI Express Active State Power Management settings.	★Disabled, L0s, L1, L0sL1, Auto
PCIe Speed	Configure PCIe Speed. CHV A1 always with Gen1 Speed.	★Auto, Gen 2, Gen1

<u>PCIE Express Root Port 3</u> Control the PCI Express Root Port

Aptio Setup Utility Configuration	y – Copyright (C) 2015	American Megatrends, Inc.
PCI Express Root Port ASPM PCIe Speed	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>
version 2.17.1249.	. copyright (C) 2015 Am	erican Megatrends, inc. ספ

Feature	Description	Options
PCI Express Root Port	Control the PCI Express Root Port.	★Enabled, Disabled
		★Disabled
ASPM	PCI Express Active State Power Management settings.	LOs
		L1
		L0sL1
		Auto
	Configure PCIe Speed	★ Auto
PCIe Speed	CHV A1 always with Gen1 Sneed	Gen 2
	CITY AT always with Gent Speed.	Gen1

SATA Configuration SATA Device Options Settings

Aptio Setup Utility Configuration	– Copyright (C) 2015 Ameri	can Megatrends, Inc.
SATA Configuration		Enable/Disable SATA Device
SATA Controller SATA Mode Selection SATA Interface Speed	[Enabled] [AHCI] [Gen3]	
SATA PortO Not Present	[Frebled]	
Hot Plug	[Enabled]	↔: Select Screen ↑↓: Select Item
SATA Port1 Not Present		Enter: Select +/-: Change Opt.
Port 1 Hot Plug	[Enabled] [Disabled]	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen
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		AB

Feature	Description	Options
SATA Controller	Enable/Disable SATA Device	★Enabled, Disabled
CATA Interf	an Solant SATA Interface Speed CHV A1 always	Gen1
SATA IIILEIT	with Conf Chood	Gen2
Speed	with Gent Speed.	★Gen3
Port 0	Enable/Disable SATA Port.	★Enabled, Disabled
Hot Plug	Designates this port as Hot Pluggable.	Enabled, ★Disabled
Port 1	Enable/Disable SATA Port.	$\bigstar$ Enabled, Disabled
Hot Plug	Designates this port as Hot Pluggable.	Enabled, ★ Disabled

<u>USB configuration</u> USB Configuration Parameters.

Aptio Setup Utility Configuration	) – Copyright (C) 2016 Amer	ican Megatrends, Inc.
USB Configuration		▲ Enable/Disable USB Mass
USB Controllers:		
1 XHCI		
USB Devices:		
1 Drive, 1 Keyboa	rd, 1 Hub	
SoC USB Configuration		
XHCI Mode	[Enabled]	
USB Port 0	[Enabled]	
USB Port 1 (SD Card)	[Enabled]	
USB Port 2	[Enabled]	
USB Port 3	[Enabled]	
USB Port 4	[Enabled]	
Common USB Configuratio	n	
Legacy USB Support	[Enabled]	
XHCI Hand-off	[Enabled]	
USB Mass Storage Driv	[Enabled]	
USB hardware delays a		++: Select Screen
USB transfer time-out	[20 sec]	↑↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Manual]	+/-: Change Opt.
Device power-up delay	5	F1: General Help
		F2: Previous Values
Mass Storage Devices:		F3: Optimized Defaults
Generic Ultra HS-SD/M	[Auto]	F4: Save & Exit
		▼ F12: Capture Screen
		ESC: Exit

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Feature	Description	Options
XHCI Mode	Made of operation of xHCI controller	★Enabled
		Disabled
USB Port 0	Enable / Disable USB Port 0	★Enabled
		Disabled
USB Port 1 (SD	Enable / Disable USB Port 1. This port is connected to 2.0	★Enabled
Card)	SD/MMC Memory Card Reader.	Disabled
LICD Dort 2	Enable / Disable LISP Dart 2	★Enabled
USD POILZ	Ellable / Disable USB Polt 2	Disabled
LICD Dart 2	Enable / Disable LICP Dart 2	★Enabled
		Disabled
LICD Dort 4	Enable / Disable LICP Dart 4	★Enabled
03D P0114	Ellable / Disable USB Poil 4	Disabled
Legacy USB Support	Enables Legacy USB support. AUTO option disable legacy support if no USB device are connected. DISABLE option will keep USB devices available only for EFI applications.	★Enabled Disabled AUTO
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.	★Enabled Disabled
USB Mass Storage Driv	Enable/ Disable USB Mass Storage Driver Support.	Disabled ★Enabled

USB time-out	transfer	The time-out value for Control, Bulk, and Interrupt transfers.	1 sec 5 sec 10 sec ★20 sec
Device time-out	reset	USB mass storage device Start Unit command time-out.	10 sec ★20 sec 30 sec 40 sec
Device delay (Manual)	power-up	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
Device delay	power-up	Delay range is 140 seconds, in one second increments	
Generic HS-SD/M	Ultra	Mass storage device emulation type. 'Auto" enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.	★Auto Floppy Forced FDD Hard Disk CD-ROM

# **<u>Power Control Configuration</u>** System Power Control Configuration Parameters.

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Configuration			
Power Control Configura	ation	Enables or Disables	
Enable Hibernation	[Enabled]	Hibernate (05/54 Sleen	
ACPT Sleen State	[S3 (Suspend to RAM)]	State) This ontion may	
Restore AC Power Loss	[Power Off]	be not effective with	
		some OS.	
RTC Wakeup	[Enabled]	The second s	
System Time	[23:13:15]		
Wake up day	0		
Wake up Time(HH:mm:ss	[00:00:00]	2	
		++: Select Screen	
Wake On Ring Controll	[Disabled]	<b>1</b> ↓: Select Item	
		Enter: Select	
		+/-: Change Upt.	
		F1: General Help	
20 C		E3: Antimized Defaults	
		F4: Save & Exit	
		F12: Capture Screen	
		ESC: Exit	
Version 2.17.1249.	. Copyright (C) 2016 Ameri	can Megatrends, Inc.	

Feature	Description	Options
Enable Hibernation	Enables or Disable System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.	Disabled ★Enabled

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)
Restore AC Power Loss	Select AC power state when power is re-applied after a power failure.	★Power Off Power On Last State
RTC Wakeup	Enable/Disable system wake on alarm event [Enabled], system will wake on the Hour: Min: Sec specified. [Disabled] Turn off RTC Wakeup.	★Disabled 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	
Wake up Time (HH: mm: ss)	Use [Enter], [TAB] to select field, HH: 0-23, mm: 0-59, ss: 0-59	
Wake On Ring Controll	Enable/Disable GPIO Wake On Ring function.	Enabled ★Disabled

### <u>TPM Configuration</u> Trusted Computing Settings

Aptio Setup Utility – Copyright (C) 201 Configuration	5 American Megatrends, Inc.
TPM Configuration	Enables or Disables BIOS support for
Security Device Sup [Enable]	security device. O.S. will not show Security Device. TCG EFI
Current Status Information NO Security Device	protocol and INT1A interface will not be available.
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt.</pre>
	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen
Version 2.17.1249. Copyright (C) 2015	American Megatrends, Inc.

Feature	Description	Options
Security Device Sup	Enable or Disables BIOS support fir security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.	Disable ★Enable

### Super IO Configuration

System Super IO Chip Parameters.. Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Configuration Super IO Configuration Enable or Disable Serial Port (COM) UART Mode [RS232] Device Settings IO=3F8h; IRQ=4; [Enabled] Watch Dog Timer [Second] Timer Unit Timer value 20 ++: 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— Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.

Feature	Description	Options
Sorial Dort	Enchle or Dischle Seriel Port (COM)	Disabled
Senai Port		★Enabled
		★RS232
	Set Current LIART MODE RS232 RS485	RS485 HALF
UART Mode	$ D \in Current $ $O = O =$	DUFLEX
	10403/10422	RS485/422 FULL
		DUFLEX
Watch Dog Timer	Enable/Disable Wateh Deg Timer	★Disabled
(Enable)		Enabled
Timor I Init	Select Timer count unit of WDT	Second
		Minute
Timer value	Set WDT Timer value seconds/minutes	

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### H/W Monitor

Monitor hardware status

Aptio Setup Utili Configuration	ty – Copyright (C) 201	6 American Megatrends, Inc.
Pc Health Status		
CPU Temperature System Temperature Vcore +3.3V +5V +12V VDIMM	: +51 % : +46 % : +0.858 V : +3.366 V : +5.116 V : +12.573 V : +1.374 V	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>

## Serial Port Console Redirection

Serial Port Console Redirection.

Aptio Setup Utility – Copyright (C) 2015 Ameri Configuration	can Megatrends, Inc.
Serial Port Console Redirection	Console Redirection Enable or Disable.
COMO Console Redirection [Enabled] ▶ Console Redirection Settings	
	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt.</pre>
	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit F12: Capture Screen ESC: Exit

Feature	Description	Options
Console Redirection (Enable)	Console Redirection Enable or Disable.	★Disabled Enabled

<u>Console Redirection Settings</u> Console Redirection Enable or Disable.

Aptio Setup Utility Configuration	y – Copyright (C) 2015 Amer	rican Megatrends, Inc.
СОМО		Emulation: ANSI:
Console Redirection Set	tings	Extended ASCII char
Terminal Tune	[ANST]	set VI100: ASUII char set VI100+: Extends
Bits per second	[115200]	VT100 to support color.
Data Bits	[8]	function keys, etc.
Parity	[None]	VT-UTF8: Uses UTF8
Stop Bits	[1]	encoding to map Unicode
Flow Control	[None]	chars onto 1 or more
VT-UTF8 Combo Key Sup	[Enabled]	
Recorder Mode	[Disabled]	++: Select Screen
Resolution 100x31	[Disabled]	T4: Select Item
Legacy US Redirection	[80X24]	Enter: Select
Pully Keyrau Rediportion After BID	[VIIUU] [Always Epoble]	+/-: Change Opt.
Realifection Hiter Bio	[HIWAYS ENADIE]	F1. General netp E2: Provious Values
		F3: Ontimized Defaults
		F4: Save & Exit
		F12: Capture Screen
		LESC: Exit
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Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes	VT100 VT100+ VT-UTF8 ★ANSI
Bits per second	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.	9600 19200 38400 57600 ★115200
Data Bits	Data Bits	7, <b>★</b> 8
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 is the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.	★None Even Odd Mark Space

Stop Bits	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	★1,2
Flow Control	Flow control can 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 re-start the flow. Hardware flow control uses two wires to send start/stop signals	
VT-UTFB Combo Key Support	Enable VT-UTFB Combination Key Support for ANSI/VT100 terminals	Disabled ★Enabled
Recorder Mode	With this mode enable only text will be sent. This is to capture Terminal data.	★Disabled Enabled
Resolution 100x31	Enables or disables extended terminal resolution	★Disabled Enabled
Legacy OS Redirection Resolution	On Legacy OS, the Number of Rows and Columns supported redirection	★80x24 80x25
Putty keypad	Select Function Key and Key Pad on Putty.	★VT100 LINUX XTERM6 SCO ESCN VT400
Redirection After BIOS POST	The Setting specify if Boot Loader is selected then Legacy console redirection is disable before booting to Legacy OS. Default value always enable which means Legacy console Redirection is enable for Legacy OS.	★ Always Enable BootLoader

# 3.4 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.

and und of which chief ut biob betap program,		
Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Main Configuration <mark>Security</mark> Boot Save & Exit		
Password Description If ONLY the Administrato then this only limits ac only asked for when ente If ONLY the User's pass is a power on password a boot or enter Setup. In	or's password is set, ccess to Setup and is ering Setup. word is set, then this and must be entered to Setup the User will	[Setup] check password when enter setup screen. [Power on] check password on every time system power on.
have Administrator right	IS.	
The password length must	t be	
in the following range:		++: Select Screen
Minimum length	3	T∔: Select Item
Maximum length	20	Enter: Select
		+/-: Change Opt.
Password Check Mode	[Setup]	F1: General Help
Administrator Password		F2: Previous Values
User Password		F3: Optimized Defaults
		F4: Save & Exit
		F12: Capture Screen
		L <sub>ESC: Exit</sub>
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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	
Administrator Password	Set Administrator Password	Create Password	New

## 3.5 Boot

Use this menu to specify the priority of boot devices.

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Main Configuration Security <mark>Boot</mark> Save & Exit		
Boot Configuration		Number of seconds to
Setup Prompt limeout	2	wait for setup
Bootup NumLock State	LONJ	activation key.
Post Report	[Disabled]	65535(0xFFFF) means
Summary Screen	[Disabled]	indefinite waiting.
CSM Support	[Enabled]	
OS Select	[Default]	
Option ROM Messages	[Force BIOS]	
Full Screen Logo	[Disabled]	
Boot Option Priorities		++: Select Screen
Boot Option #1	[Generic Ultra HS-SD]	↑↓: Select Item
Boot Option #2	[UEFI: Built-in EFI]	Enter: Select
Fast Boot	[Disabled]	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
Hard Drive BBS Prioriti	.es	F3: Optimized Defaults
		F4: Save & Exit
		F12: Capture Screen
		LESC: Exit
Version 2.17.1249. Copyright (C) 2015 American Megatrends, Inc.		

Feature	Description	Options
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	2
Bootup NumLock State	Select the keyboard NumLock state	<b>★</b> On Off
Post Report	Post Report Support Enabled/Disabled	★Disabled Enabled
Summary Screen	Summary Screen Support Enabled/Disabled	★Disabled Enabled
CSM support	Enable/Disable CSM support.	Disabled ★Enabled
OS Select	[Default] To Win8.x / Android [Legacy System] Win7 /DOS [LINUX] Yocto Linux This item setting will effect LPSS & XHCI Hand-off items setting.	★Default Legacy System Linux
Option ROM Messages	Set display mode for Option ROM	★Force BIOS Keep Current
Full Screen Logo	Enables or disables Quiet Boot option and Full screen Logo.	★Disabled Enabled

Dest Online #4		UEFI: Built-in EFI Shell
Boot Option #1	Sets the system boot order	HS-SD/MMC Disabled
Boot Option #2	Sets the system boot order	★UEFI: Built-in EFI Shell Generic Ultra HS-SD/MMC Disabled
Fast Boot	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.	★Disabled Enabled

<u>Hard Drive BBS Priorities</u> Set the order of the legacy devices in this group

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Boot		
Boot Option #1	[Generic Ultra HS–SD]	Sets the system boot order
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>
Version 2.17.1249.	Copyright (C) 2015 America	n Megatrends, Inc. AB

Feature	Description	Options
Boot Option #1	Sets the system boot order	★ Generic Ultra HS-SD/MMC Disabled

# 3.6 Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Main Configuration Security Boot Save & Exit		
Save Options	Reset the system after	
Save Changes and Reset	Suving the changes.	
Discard Changes and Reset		
Default Options Restore Defaults		
Boot Overnide		
UEFI: Built-in EFI Shell	++: Select Screen	
Launch EEI Shell from filesustem device	Foter: Select	
	+/-: Change Opt.	
	F1: General Help	
	F2: Previous Values	
	F3: Uptimized Defaults F4: Save & Evit	
	F12: Capture Screen	
	ESC: Exit	
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Feature	Description	Options
Save Changes and Reset	Reset the system after saving the changes	
Discard Changes and Reset	Reset system without saving any changes.	
Restore Defaults	Restore/Load Default values for all the setup options.	
Generic Ultra HS-SD/MMC	Save configuration and reset?	Yes, No
UEFI: Built-in EFI Shell	Save configuration and reset?	Yes, No
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices Save configuration and reset?	Yes, No

# **Chapter 4 Important Instructions**

This chapter includes instructions which must be carefully followed when the fan-less embedded system is used.

## 4.1 Note on the Warranty

Due to their limited service life, parts which, by their nature, are especially subject to wear are not included in the guarantee beyond the legal stipulations.

# 4.2 Exclusion of Accident Liability Obligation

Portwell, Inc. shall be exempt from the statutory accident liability obligation if users fail to abide by the safety instructions.

# 4.3 Liability Limitations / Exemption from the Warranty Obligation

In the event of damage to the system unit caused by failure to abide by the hints in this manual and on the unit (especially the safety instructions), Portwell, Inc. shall not be required to respect the warranty even during the warranty period and shall be free from the statutory accident liability obligation.

# 4.4 Declaration of Conformity

### <u>EMC</u>

CE/FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.

2. This equipment must accept any interference that may cause undesired operation.

### Applicable Standards:

EN 55022: 2006 + A1: 2007, Class A EN 61000-3-2: 2006 EN 61000-3-3: 1995 + A1: 2001 + A2: 2005 EN 55024: 1998 + A1: 2001 + A2: 2003 IEC 61000-4-2: 2008 IEC 61000-4-3: 2006 + A1: 2007 IEC 61000-4-3: 2004 IEC 61000-4-5: 2005 IEC 61000-4-6: 2007 IEC 61000-4-8: 1993 + A1: 2000 IEC 61000-4-11: 2004 FCC 47 CFR Part 15 Subpart

# Chapter 5 Frequent Asked Questions

### Q1: How to Clear CMOS?

Answer:

You can switch off your power supply then find the JP9/10 to set it from 1-2 short to 2-3 short and wait 10 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

JP9/JP10 : CMOS Setting

### JP9/JP10 : CMOS Setting

JP7/8	Function
1-2 Short	Normal Operation (default)
2-3 Short	Clear CMOS Contents



### Q2: How to update BIOS?

Answer:

- Please visit web site of Portwell download center as below hyperlink <u>http://www.portwell.com.tw/support/download\_center.php</u> Registering an account in advance is a must. (The E-Mail box should be an existing Company email address that you check regularly.) <u>http://www.portwell.com.tw/member/newmember.php</u>
- 2. Type in your User name and password and log in the download center.
- 3. Select "Search download" and type the keyword "NANO-6061".
- 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.

6. Reboot the system and getting into [Shell]. Please follow the below instruction to update BIOS.

Aptio Setup Utility – Copyright (C) 2015 Americ Main Configuration Security Boot Save & Exit	can Megatrends, Inc.
Save Options	
Save Changes and Reset	
Discard Changes and Reset	
Default Options Restore Defaults	
Boot Overnide	
Generic Ultra HS-SD/MMC	↔: Select Screen
UEFI: Built-in EFI Shell Launch EFI Shell trom tilesystem device	f↓: Select Item Enter: Select
	+/-: Change Opt.
	F1: General Help F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit
Version 2.17.1249. Copyright (C) 2015 Americar	Megatrends, Inc.
A. Key-in "fs0" to access your pen driver.	
B. "cd update" to access the root folder.	
C. Key-in" <b>update</b> " this command to run updating pr	rocedure.
EFI Shell version 2.40 [5.11]	
Current running mode 1.1.2	
fs0 :Removable HardDisk - Alias bd6d0b0b blk0	n
PciRoot(0x0)/Pci(0x14,0x0)/USB(0x3,0x0)/USB(	0x1,0x0)/HD(1,MBR,0x044C0BF0
,0x3F,0x79B141)	
blk0 :Removable HardDisk – Alias hd6d0b0b fs0	
PciRoot(0x0)/Pci(0x14,0x0)/USB(0x3,0x0)/USB( 0x05,0x700144)	0x1,0x0)/HD(1,MBR,0x044C0BF0
,UX3F,UX/3B141) hlk1 :Removable BlockDevice - Aliac (pull)	
PciRoot(0x0)/Pci(0x14.0x0)/USB(0x1.0x0)/USB(	0x0.0x0)
blk2 :Removable BlockDevice – Alias (null)	
PciRoot(0x0)/Pci(0x14,0x0)/USB(0x3,0x0)/USB(	0x1,0x0)
Press ESC in 1 seconds to skip startup.nsh. any othe	r key to continue.
Shell> fs0:	
fs0:\> cd update	
fs0:\Update> update	

8.

### 7. Update procedure



- 9. Power off the system (wait 10 sec) and power on again to initial the BIOS
- 10. Press **"del"** key into the BIOS setup menu and switch to **"Save & Exit"** page then select **"Restore Defaults"** option and press **"Yes"** then select **"Save Changes and Reset"** to finish all BIOS update processes.

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc. Main Configuration Security Boot <mark>Save &amp; Exit</mark>		
Save Options Save Changes and Reset Discard Changes and Reset	Reset the system after saving the changes.	
Default Options Restore Defaults		
UEFI: Built-in EFI Shell Generic Ultra HS-SD/MMC Launch EFI Shell from filesystem device	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit F12: Capture Screen ESC: Exit</pre>	
Version 2.17.1249. Copyright (C) 2015 America	an Megatrends, Inc. AB	

### Q3: OS limitation

Answer:

In DVT test, we install popular OS as below and all of Braswell products pass Compatibility Test in Win8.1 Ultimate and Windows 7. Regarding Linux operation system, Braswell has not supported Ubuntu 15.04, Fedora 22, SUSE 13.2 until now.

Software Compatibility Test				
Win 8.1	Ubuntu 15.04	Fedora22	SUSE13.2	Yocto
Ultimate (64 bit)				
0	TBA	TBA	TBA	TBA

### **Q4: Function limitation**

Answer:

- 1. USB 3.0: In PssMark Software, the speed of USB3.0 should higher than 2400 Mb/S, but Brasewll products only can reach 2000.8 Mb/S.
- 2. UART (M.2 socket for NANO-6061): In Win7, the UART from SoC can be extended to M.2, so we can apply UART signal. However, UART cannot be extended to M.2 in Win8.
- 3. For memory support, the different between 32bit and 64bit type of operating system as following:

	32bit OS	64bit OS
Memory sizing	Up to 4GB	UP to 8GB

\*Note: Braswell supports memory sizing up to 8GB/per channel

### Q5: How to install Windows 7 in NANO-6061?

Answer:

Windows 7 installation media does not include native driver support for USB 3.0, so during installation, when you get to the screen to select your preferred language, a keyboard or mouse connected to a USB 3.0 port does not respond. If you need the solution for this issue, please fill in the technical request form as below hyperlink and we will contact you as soon as possible.

http://www.portwell.com.tw/support/problem\_report.php