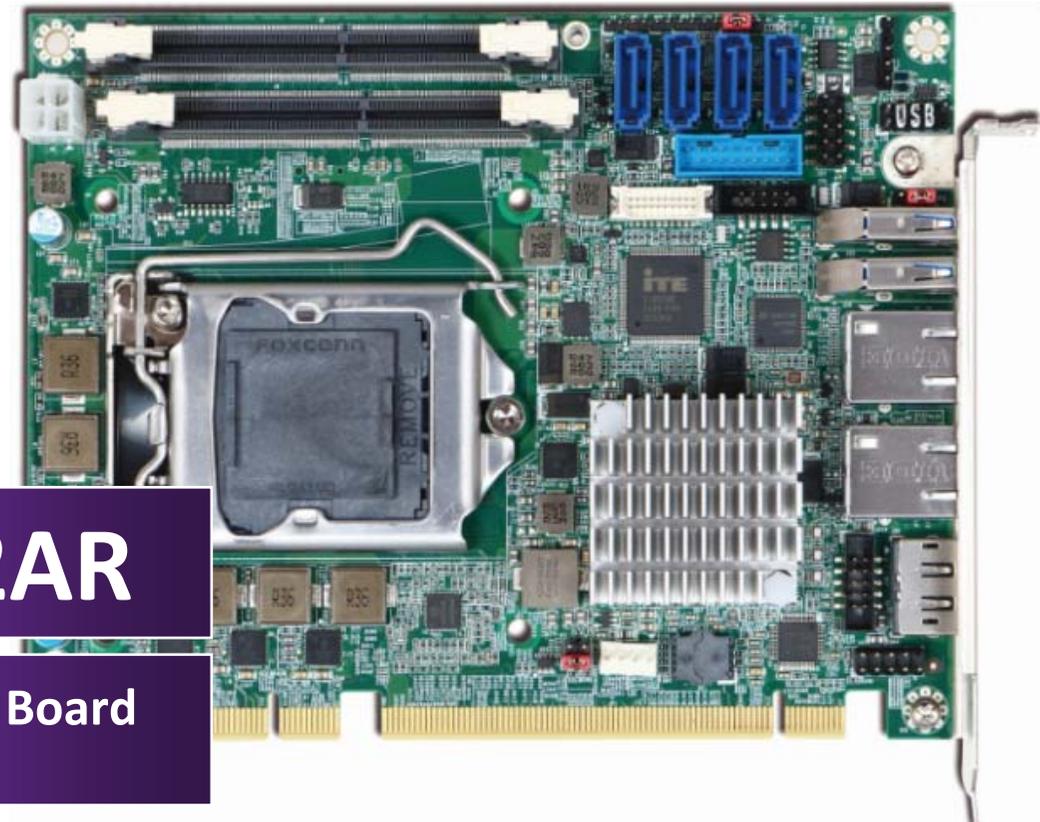


ROBO-6911VG2AR



ROBO-6911VG2AR

Half size PICMG 1.3 Single Host Board

Version 1.0

Revision History

R1.0	Preliminary

Contents

1	Introduction	10
2	Specifications	11
	2.1 Supported Operating Systems	12
	2.2 Mechanical Dimensions	13
	2.3 Power Consumption	14
	2.4 Environmental Specifications	15
3	Hardware Configuration	17
	3.1 Jumpers and Connectors	17
	3.2 Jumpers Settings	19
4	Signal Descriptions	36
	4.1 Watch Dog Signal	36
	4.2 GPIO Signal	38
5	System Resources	39
	5.1 Intel® Skylake-S PCH	39
	5.2 Main Memory	39
	5.3 Installing the Single Board Computer	40
	5.3.1 Chipset Component Driver	40
	5.3.2 Intel® HD Graphics 530	41
	5.3.3 Intel LAN I210AT/I219LM Gigabit Ethernet Controller	41
6	BIOS Setup Items	42
	6.1 Introduction	42

ROBO-6911VG2AR

6.2 BIOS Setup	43
6.2.1 Main	44
6.2.2 Configuration	46
6.2.3 Security	78
6.2.4 Boot	80
6.2.5 Save & Exit	82
7 Troubleshooting	84
7.1 Hardware Quick Installation	84
7.2 BIOS Setting	86
7.3 FAQ	87
8 Portwell Software Service	93
9 Industry Specifications	94

Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the ROBO-6911VG2AR. This document should be referred to when designing PICMG 1.3 application. The other reference documents that should be used include the following:

- ✧ Intel SkyLake-S/KabyLake-S Design Guide
- ✧ Intel SkyLake-S/KabyLake-S Specification

Please contact Portwell Sales Representative for above documents.

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Notice

SBC Handling and Installation Notice

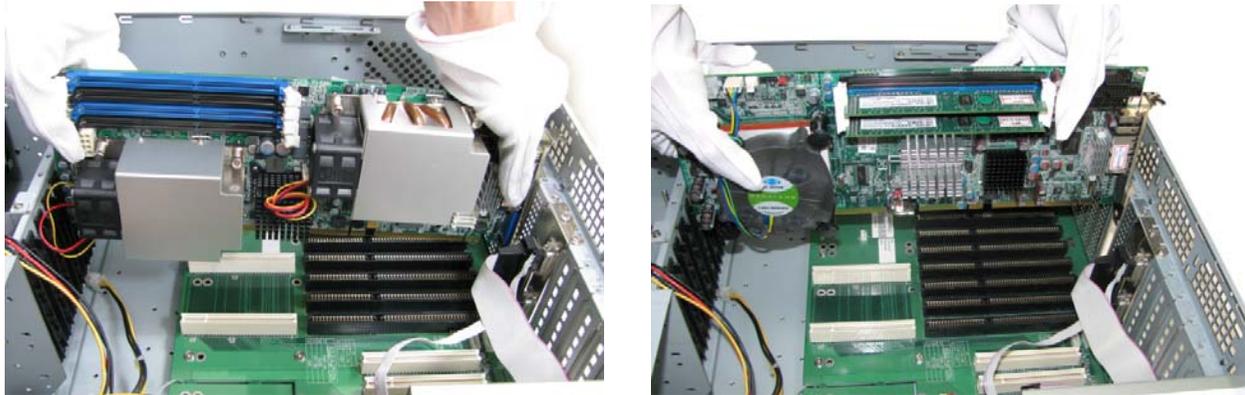
■ Handling and Installing SBC

Caution: Do not just hold any single side of the SBC; hold evenly on both sides!

- Heavy processor cooler may bend the SBC when SBC being held just on one side.
- The bending may cause soldering or components damaged.



ROBO-6911VG2AR

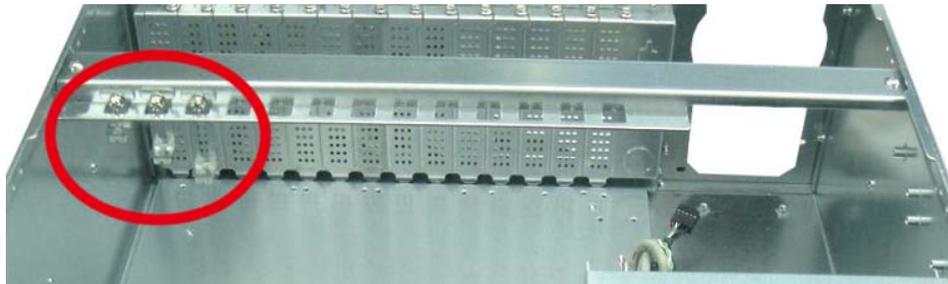


■ Fix your SBC in System

Caution: Suggest your S.I or vendor to use a metal bracket to hold/fix the desktop or server grade SBC to avoid the vibration damage during transportation. Heavy processor cooler may bend the SBC when systems are during transportation without any holder.

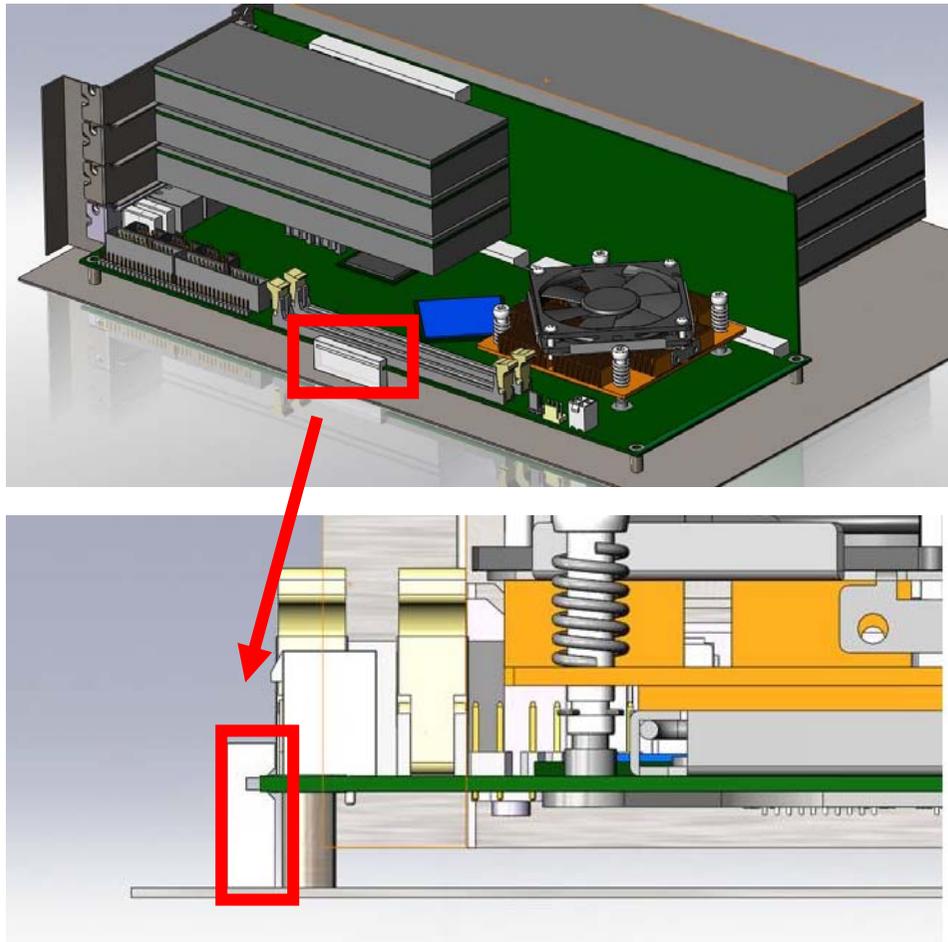
Example:

- 4U chassis :
- Use L type metal or plastic or rubber bracket to hold SBC.



ROBO-6911VG2AR

- 2U or 1U chassis: a metal bracket on the bottom of chassis to balance and support SBC from bending.



1 Introduction

ROBO-6911VG2AR, a Half size PICMG 1.3 Single Host Board (SHB) with the latest Intel 6th/7th Generation Core processors supported from E3 class Xeon processors to Core i3 processors. Portwell's ROBO-6911VG2AR implements flexible PCI Express Gen 3 expansion by one PCI Express x16 or two PCI Express x 8 or one PCI Express x8 and two PCI Express x4 with dedicated processor sku, which is ideal for a range of applications, such as Industrial Automation, Digital Signage, and Medical.

ROBO-6911VG2AR adopt Intel C236 and Q170 PCH. Providing up to 32GB DDR4 system memory supported with ECC or non-ECC option on SODIMM sockets. ROBO-6911VG2AR with the 6th/7th generation Intel® processor family features and integrated, enhanced graphics engine which provides significant 3D performance, up to DirectX® 12. It supports triple display function via VGA, DVI-D and DP port. Rich I/O functions are also provided by ROBO-6911VG2AR single host board, which is 4x USB 3.0 (dual ports on bracket), 4x SATA III ports, 1x smart COM ports which select RS232/422/485 mode by bios adjustment, and dual Intel GbE LAN ports. It also provide one mSATA socket for storage use.

For the industries who already have install based systems, ROBO-6911VG2AR not only provides a way to upgrade to use the latest Intel processors, but also supporting legacy elements such as VGA, Serial ports.

2 Specifications

Main Processor	◆ Intel® Skylake –S/Kaby Lake-S Core™ i /Xeon E3-12xx v5 and v6 series Processors
System BIOS	◆ AMI UEFI BIOS
Main Memory	◆ Up to 32 GB ECC or non-ECC DDR4 on two Long-DIMM sockets. Supports dual channel DDR4 1866/2133 MHz SDRAM
Graphics	<ul style="list-style-type: none"> ◆ Controller: Intel® Gfx Gen 9, HD graphics ◆ VGA: Resolution up to 1920 x 1200 @ 60Hz ◆ DVI-D: Resolution up to 1920 x 1200 @ 60Hz ◆ DP: Resolution up to 4096 x 2304 @ 60Hz
Expansion Interface	<ul style="list-style-type: none"> ◆ From CPU: 1x PCI Express x16 or 2x PCI Express x8 or 1x PCI Express x8 + 2x PCI Express x4 by jumper setting (Gen3 up to 8.0 GT/s) ◆ From PCH: 1x PCI Express x4 or 4x PCI Express x1 by different bios support (Gen 3 up to 8.0 GT/s)
SATA Interface	◆ Four on-board SATA III ports (SATA 6Gb/s)
Input/Output	<ul style="list-style-type: none"> ◆ Serial Ports: 1x RS-232/422/485 selectable by bios ◆ USB Port: 2x USB 3.0 on bracket, 2x USB 3.0 on board header ◆ GPIO connector: N/A ◆ Audio Interface: Mic-In / Line-Out / Line-in (on-board header)
Ethernet	<ul style="list-style-type: none"> ◆ Supports dual 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 interface by Intel WGI219LM and WGI210AT controller ◆ Dual RJ45 connector on bracket
High Drive GPIO	◆ N/A

ROBO-6911VG2AR

Mechanical and environmental specifications	<ul style="list-style-type: none">◆ Operating temperature: 0 ~ 60° C◆ Storage temperature:-20 ~ 80° C◆ Humidity: 5 ~ 90% non-condensing◆ Power supply voltage: ATX◆ Board size: 167.64mm x 126.39mm, 6.6" (L) x 4.98" (W)
----------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

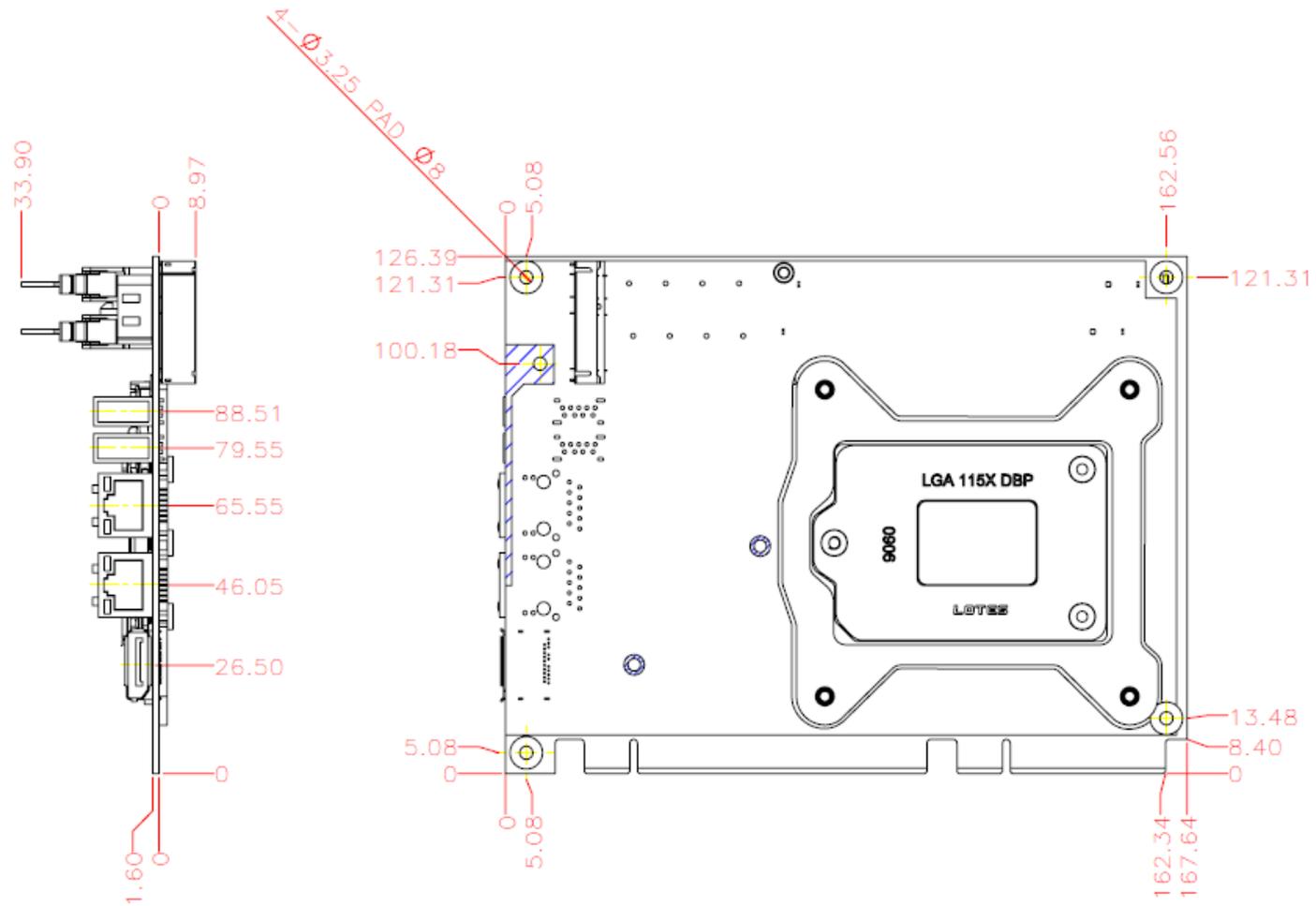
2.1 Supported Operating Systems

The ROBO-6911VG2AR supports the following operating systems.

- ✧ Windows 7 support (Sky Lake only)
- ✧ Windows 8.1 / WEI 8.1 support
- ✧ Windows 10 full support
- ✧ Kernel.org Distribution

ROBO-6911VG2AR

2.2 Mechanical Dimensions



2.3 Power Consumption

CPU Type	Intel® Xeon® CPU E3-1268L v5@2.40GHz
SBC BIOS	Portwell,Inc.ROBO-6911VG2AR TEST BIOS (60523T00)
Memory	Transcend DDR4 ECC SO-DIMM 2133 16GB*2
VGA Card	Intel® HD Graphics 530
VGA Driver	Intel® HD Graphics 530,Version:20.19.15.4312
LAN Card#1	Intel® Ethernet Connection(2) I219-LM
LAN Driver#1	Intel® Ethernet Connection(2) I219-LM,Version:12.13.17.7
LAN Card#2	Intel® I210 Gigabit Network Connection
LAN Driver#2	Intel® I210 Gigabit Network Connection,Version:12.14.7.0
Audio Card	Realtek High Definition Audio
Audio Driver	Realtek High Definition Audio,Version:6.0.1.7312
Chipset Driver	Intel® Chipset Device Software,Version:10.0
USB3.0 Driver	Intel® USB3.0 Host Controller Adaptation Driver,Version:1.0.1.45
EC Version	51225T00 (12/25/2015)
CDROM	LG-GH24NS95
Power Supply	FSP460-60PFB
Carrier Board	PBPE-07A-MED

<i>Item</i>	<i>Power ON</i>	<i>Full Loading 10Min</i>	<i>Full Loading 30Min</i>
CPU +12V	1.46A	2.69A	2.64A
System +12V	1.29	2.15A	1.97A
System +3.3V	0.84A	0.69A	0.62A
System +5V	-0.04A	-0.09A	-0.03A
System+ Device +12V	1.33A	2.30A	2.20A
System+ Device +5V	0.49A	0.41A	0.32A
System+ Device +3.3V	0.84A	0.73A	0.72A
USB2.0 Loading Test	4.96V/ 470mA		
USB3.0 Loading Test	4.97V/ 980mA		

2.4 Environmental Specifications

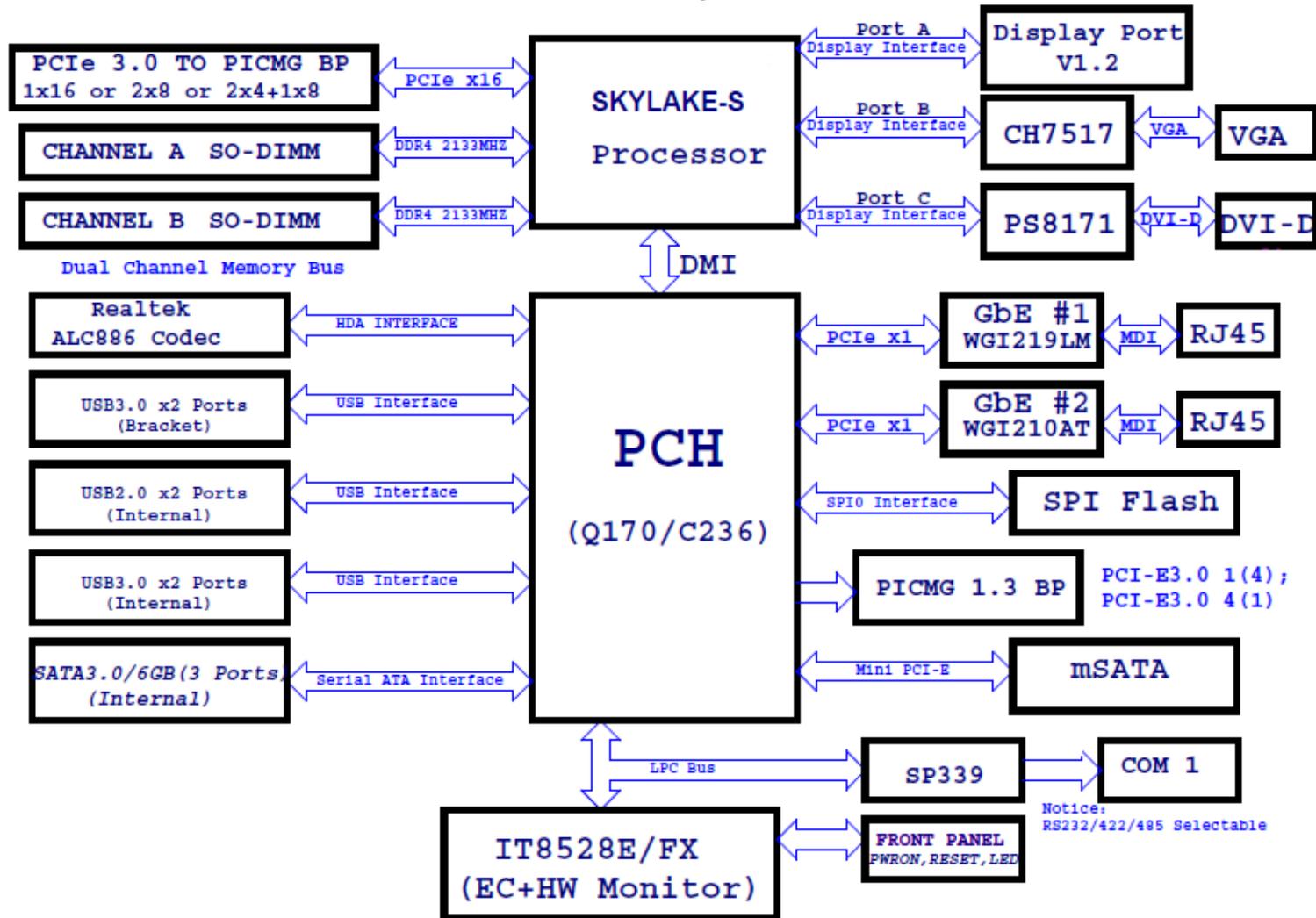
Storage Temperature : -20~80°C

Operation Temperature : 0~60°C

Storage Humidity : 5~90%

Operation Humidity: 10~90%

Block Diagram

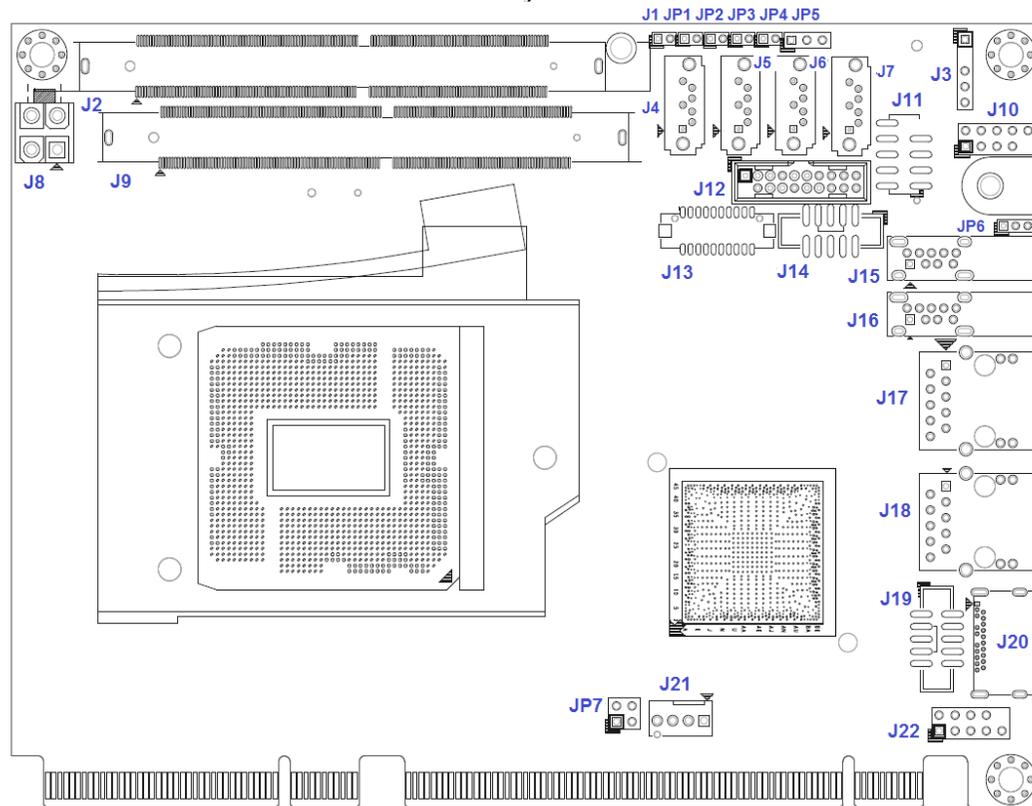


3 Hardware Configuration

3.1 Jumpers and Connectors

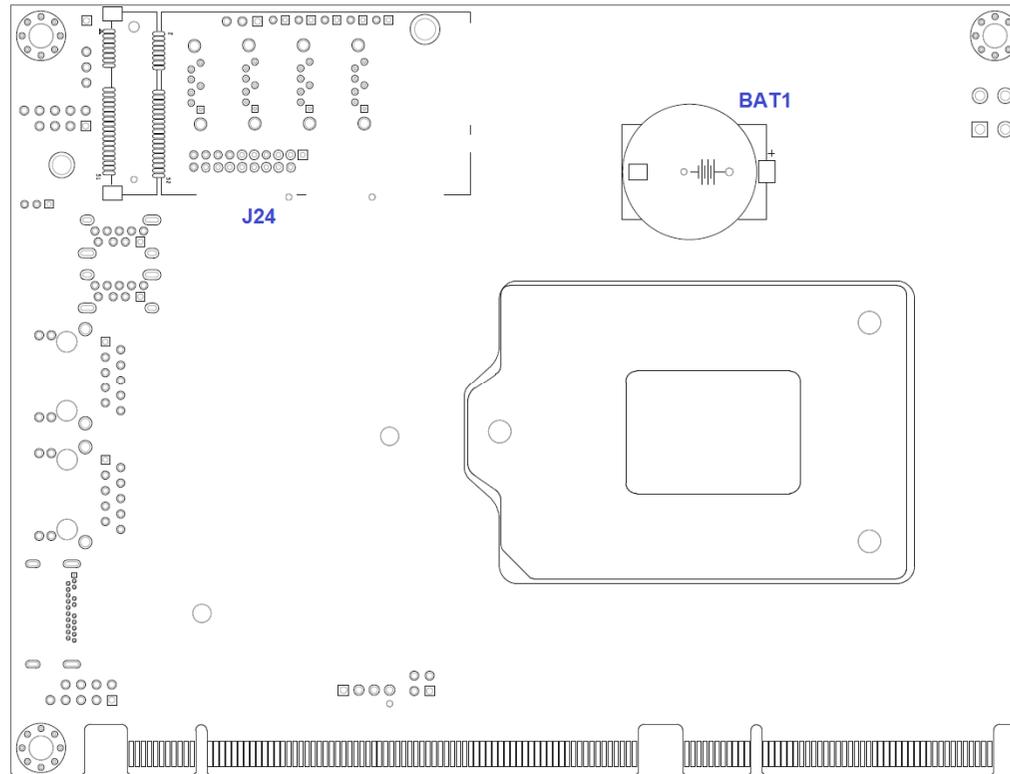
This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter.

Component side



ROBO-6911VG2AR

Solder side



ROBO-6911VG2AR

3.2 Jumpers Settings

For users to customize ROBO-6911VG2AR's features. In the following sections, Short means covering a jumper cap over jumper pins; Open or N/C (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 1 for the Jumper allocations.

Jumper Table

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

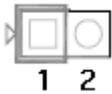
Connector Function List

Connector	Function	Remark
J1/JP1-JP4	Front Panel System Connectors	PH2Px1/2mm
J2/J9	DDR4 SO-DIMM Memory Sockets	DDR4-260P Foxconn
J3	SMBus Connector	PH5Px1(-pin2)/2.54mm
J4/J5/J6/J7	SATA Connector(6Gb/s)	SATA/Blue
J8	ATX 4Pin 12V Power Connector	MA 2Px2. ATX4PT-L.TechBest
J10	USB 2.0 Dual-Port Cable Connector	PH5Px2(-pin9)/2.54mm
J11	LPC Port-80 Debug Port	PH5Px2(-pin9)/2.54mm
J12	USB 3.0 Dual-Port Cable Connector	BH10Px2/2mm/Blue
J13	DVI Port Video Cable Connector	PH10Px2/1.25mm DF13,Hirose
J14	COM1 Serial Port Cable Connector	BH5Px2/2mm
J15/J16	USB 3.0 Connector	UEA3119C-41B1-4H, Foxconn
J17	Gigabit Ethernet Magnetics Connector (LAN2)	RJ45 RT7-195AAM1F,UDE

ROBO-6911VG2AR

	LAN WGI210AT	
J18	Gigabit Ethernet Magnetics Connector (LAN1) LAN WGI219LM	RJ45 RT7-195AAM1F,UDE
J19	VGA Port Video Cable Connector	BH5Px2/2mm
J20	Display Port Video Jack	Molex 047272
J21	CPU FAN Power Connector	HEADER 4Px1
J22	Audio Input/Output Connector	PH5Px2(-pin10)/2.54mm
J24	mSATA Solid State Drive Socket	AS0B226-S90Q Foxconn

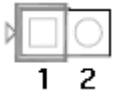
J1: Power Button



Pin No.	Signal Description
1	PWRBTN
2	GND

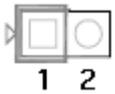
ROBO-6911VG2AR

JP1: System Reset



Pin No.	Signal Description
1	RSTBTN
2	GND

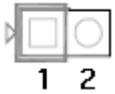
JP2: System Buzzer



Pin No.	Signal Description
1	SPEAKER (+)
2	SPEAKER (-)

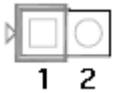
ROBO-6911VG2AR

JP3: Power LED



Pin No.	Signal Description
1	PWR_LED (+)
2	PWR_LED (-)

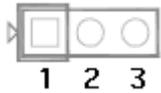
JP4: SATA LED



Pin No.	Signal Description
1	SATA_LED (+)
2	SATA_LED (-)

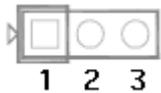
ROBO-6911VG2AR

JP5: CMOS Clear



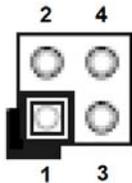
Pin No.	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS

JP6: AT & ATX Mode Select



Pin No.	Function
1-2 Short	ATX simulate AT Mode
2-3 Short	ATX Mode ★

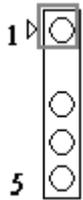
JP7: PCI Express* Bifurcation



Pin No.	Function
1-2, Short 3-4, Short	1x8 , 2x4 PCI Express (Support Three slot)
1-2, Open 3-4, Short	reserved
1-2, Short 3-4, Open	2x8 PCI Express (Support Two slot)
1-2, Open 3-4, Open	1x16 PCI Express (Support One slot)

Note: ROBO-6911VG2AR can support one PCIe16 or two PCIe8 or one PCIe8 + two PCIe4.

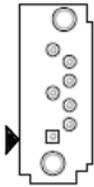
J3: SMBus Connector



Pin No.	Signal Description
1	SMBus_CLK
2	N/C
3	Ground
4	SMBus_DAT
5	+5V

ROBO-6911VG2AR

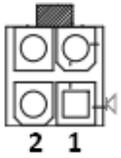
J4/J5/J6/J7: SATA Connector(6Gb/s)



Pin No.	Signal Description
1	GND1
2	TX+
3	TX-
4	GND2
5	RX-
6	RX+
7	GND3

ROBO-6911VG2AR

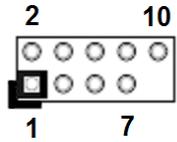
J8: ATX 4Pin 12V Power Connector



Pin No.	Function
1	Ground
2	Ground
3	+12V
4	+12V

ROBO-6911VG2AR

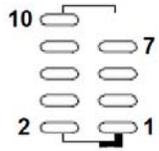
J10: External USB2 Dual Port Cable Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	5V Dual
3	USB2_DN8	4	USB2_DN9
5	USB2_DP8	6	USB2_DP9
7	Ground	8	Ground
9	Key(no pin)	10	N/C

ROBO-6911VG2AR

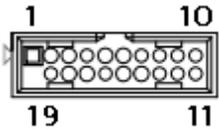
J11: LPC PORT 80 Debug Port Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	LAD0	2	VCC3
3	LAD1	4	PLT_REST
5	LAD2	6	LFRAME#
7	LAD3	8	CLK
9	Key(no pin)	10	Ground

ROBO-6911VG2AR

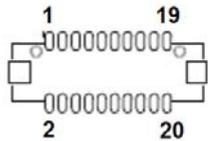
J12: Internal USB3 Dual Port Cable Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	USB3_RX1_DN
3	USB3_RX1_DP	4	Ground
5	USB3_TX1_DN	6	USB3_TX1_DP
7	Ground	8	USB2_DN2
9	USB2_DP2	10	Ground
11	USB2_DP3	12	USB2_DN3
13	Ground	14	USB3_TX2_DP
15	USB3_TX2_DN	16	Ground
17	USB3_RX2_DP	18	USB3_RX2_DN
19	5V Dual	20	N/C

ROBO-6911VG2AR

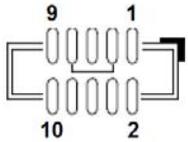
J13: DVI Port Cable Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	2	Ground
3	DVI_D2_DP	4	DVI_D3_DP
5	DVI_D2_DN	6	DVI_D3_DN
7	Ground	8	Ground
9	DVI_D1_DP	10	DVI_POWER (+5V)
11	DVI_D1_DN	12	DVI_POWER (+5V)
13	Ground	14	DVI_HPD_N
15	DVI_D0_DP	16	DVI_DDC_CLK
17	DVI_D0_DN	18	DVI_DDC_DATA
19	Ground	20	Ground

ROBO-6911VG2AR

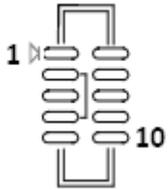
J14: COM1 Box Header



PIN No.	Signal Description	PIN No.	Signal Description
1	DCD#	2	RXD#
3	TXD#	4	DTR#
5	Ground	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	VCC

ROBO-6911VG2AR

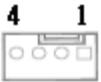
J19: VGA Box Header



PIN No.	Signal Description	PIN No.	Signal Description
1	Red	2	DDC_CLK
3	Green	4	Ground
5	Blue	6	DDC_DATA
7	V_SYNC	8	Ground
9	H_SYNC	10	VCC

ROBO-6911VG2AR

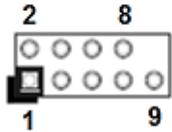
J21: CPU Fan Connector



Pin No.	Signal Description
1	Ground
2	+12V
3	Detect Fan RPM speed
4	Fan Speed control

ROBO-6911VG2AR

J22: Audio MIC/Line-in/Line-out Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	MIC	2	Analog Ground
3	Line-in Left Channel	4	Analog Ground
5	Line-in Right Channel	6	Analog Ground
7	Line-out Left Channel	8	Analog Ground
9	Line-out Right Channel	10	Key(no pin)

4 Signal Descriptions

4.1 Watch Dog Signal

```
#Define WDTCFG 0x06 //WDT Timer Counter Register  
#Define WDTMIN 0x07 //WDT Timer Counter Register (Minute)  
#Define WDTSEC 0x08 //WDT Timer Counter Register (Second)
```

```
VOID Write_EC_SRAM(UINT8 Offset,UINT8 Value){
```

```
    IoWrite8(0xE300+Offset,Value);  
}
```

```
Byte Read_EC_SRAM(UINT8 Offset){  
    IoRead8(0xE300+offset,Value);  
    return Value;  
}
```

```
void WDT()  
{  
    // Enable WDT 30sec
```

ROBO-6911VG2AR

```
Write_EC_SRAM(WDTSEC,30);
Write_EC_SRAM(WDTCFG,0x01);//Bit0: WDT Enable, BIT1: 0:Second Mode

// Enable WDT 5min
Write_EC_SRAM(WDTSEC,5);
Write_EC_SRAM(WDTCFG,0x03);//Bit0: WDT Enable, BIT1: 1:Minute Mode

// Enable WDT 10min, 20sec
Write_EC_SRAM(WDTSEC,20);
Write_EC_SRAM(WDTSEC,10);
Write_EC_SRAM(WDTCFG,0x03);//Bit0: WDT Enable, BIT1: 1:Minute Mode
}
```

4.2 GPIO Signal

ROBO-6911VG2AR series don't support GPIO function.

5 System Resources

5.1 Intel® Skylake-S PCH

Intel® Q170 Chipset (Intel® GL82Q170 PCH)

Intel® C236 Chipset (Intel® GL82C236 PCH)

5.2 Main Memory

ROBO-6911VG2AR provides 2 x 260-pin SODIMM sockets which supports DDR4 ECC/non-ECC memory. The maximum memory can be up to 32GB. 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 ROBO-6911VG2AR into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position

Step 2 : Install and configure CPU,CPU cooling and memory module on right position

Step 3 : Place ROBO-6911VG2AR into the dedicated position in the system

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

WARNING

Please ensure that mother board 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

ROBO-6911VG2AR is based on Intel® Q170/C236 chipset and desktop/workstation processors including Xeon E3-1200v5 and v6/Core™ i7 / i5 / i3 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 8, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in ROBO-6911VG2AR CD-title

5.3.2 Intel® HD Graphics 530

ROBO-6911VG2AR has integrated Intel® HD Graphics 530 which supports DirectX 12 、 OpenCL 2.0 、 OpenGL 4.4. It is the most advanced design to gain an outstanding graphic performance. ROBO-6911VG2AR supports VGA, DVI-D and DP display output. This combination makes ROBO-6911VG2AR an excellent performance hardware.

Drivers Support

Please find the Graphic driver in the ROBO-6911VG2AR CD-title. The driver supports Windows 8.

5.3.3 Intel LAN I210AT/I219LM Gigabit Ethernet Controller

- Intel I210AT Gigabit Ethernet controller and 1x RJ45 connectors on bracket
- Intel I219LM Gigabit Ethernet controller and 1x RJ45 connectors on bracket

Drivers Support

Please find Intel I210AT/I219LM LAN driver in /Ethernet directory of ROBO-6911VG2AR CD-title. The driver supports Windows 8.

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

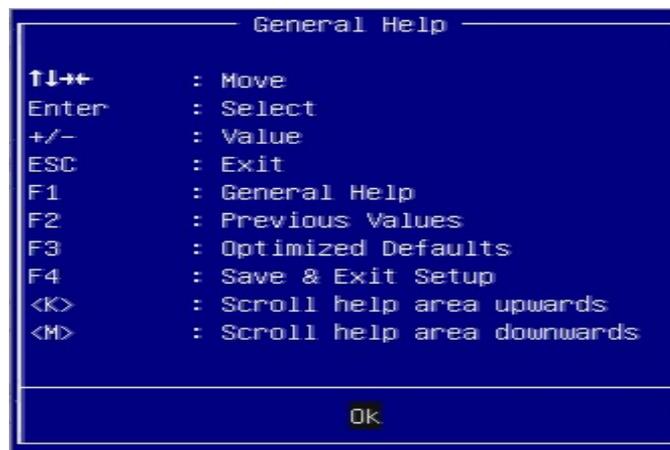
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

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.



ROBO-6911VG2AR

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 Event Logs

Project Name                ROBO-6911VG2AR
BIOS Version & Build Date   R1.00.E0 (03/17/2017 15:42:05)
EC Version & Build Date     51225T00 (12/25/2015)

Processor Information
Name                        SkyLake DT
Brand String                Intel(R) Core(TM) i7-6700TE CPU @ 2.40GHz

Total Memory                8192 MB
Memory Frequency            2133 MHz

PCH Information
Name                        SKL PCH-H
PCH SKU                     Server SKU Intel C236 Chipset
Stepping                    31/D1
LAN PHY Revision            B2

ME FW Version                11.0.0.1197
ME Firmware Mode            Normal Mode
ME Firmware SKU              Corporate SKU

System Date                  [Wed 03/22/2017]
System Time                  [17:37:06]

Access Level                 Administrator

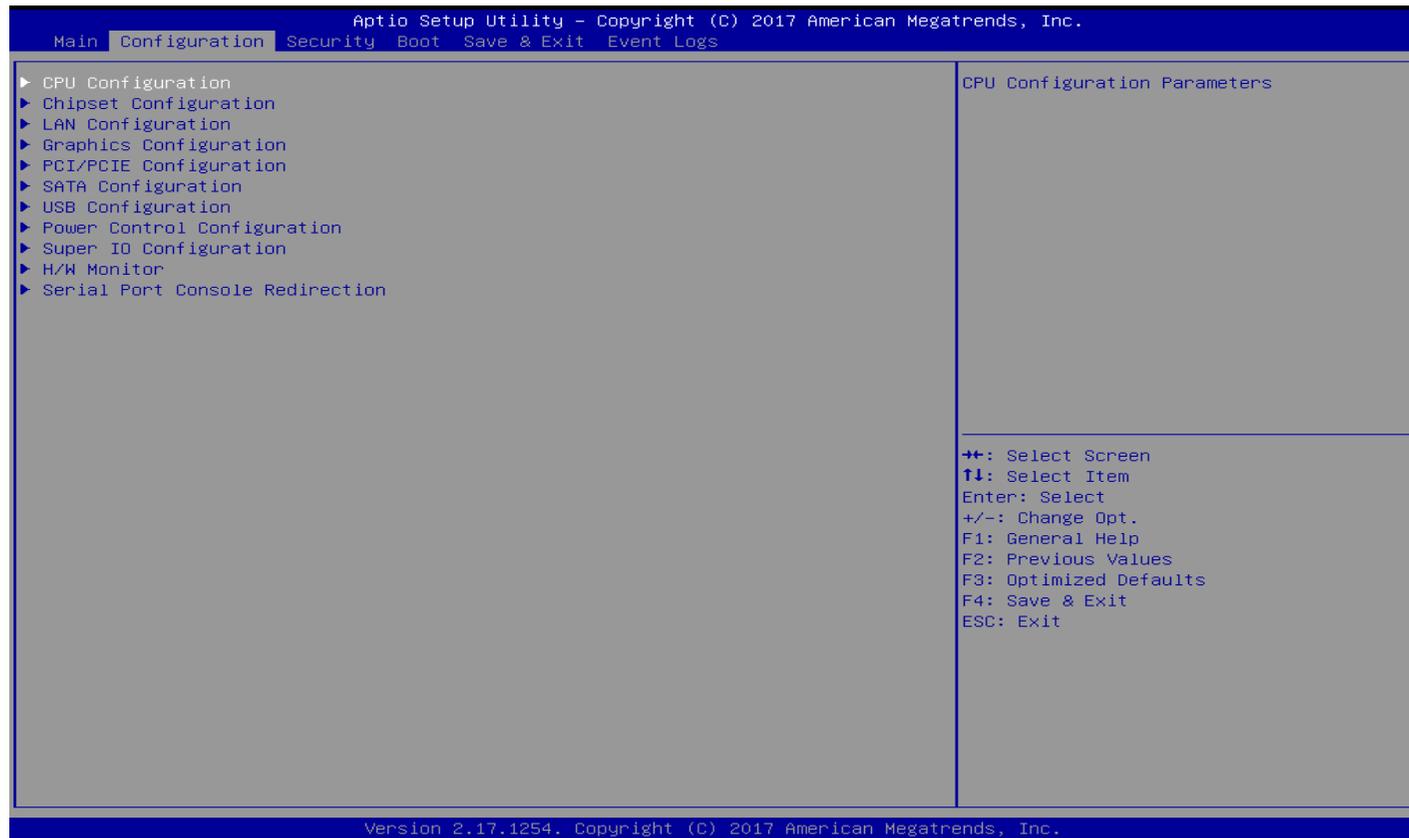
Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

ROBO-6911VG2AR

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



ROBO-6911VG2AR

CPU Configuration

CPU Configuration Parameters

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Configuration
CPU Configuration
Intel(R) Core(TM) i7-6700TE CPU @ 2.40GHz
CPU Signature          506E3
Max CPU Speed         2400 MHz
Min CPU Speed         800 MHz
CPU Speed             3100 MHz
Processor Cores       4
Hyper Threading Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology  Supported
64-bit                Supported
EIST Technology       Supported
CPU C3 state          Supported
CPU C6 state          Supported
CPU C7 state          Supported

L1 Data Cache         32 kB x 4
L1 Code Cache         32 kB x 4
L2 Cache              256 kB x 4
L3 Cache              8 MB
L4 Cache              Not Present

Hyper-threading      [Enabled]
Active Processor Cores [All]
Intel Virtualization Technology [Enabled]
Intel(R) SpeedStep(tm) [Enabled]
Turbo Mode           [Enabled]
CPU C states         [Disabled]

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.

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

Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

ROBO-6911VG2AR

Feature	Description	Options
Hyper-threading	Enabled for Windows XP and Linux (OS optimized for Hyper-threading Technology) and Disabled for other OS (OS not optimized for Hyper-threading Technology). When Disabled only one thread per enabled core is enabled.	★Enabled, Disabled
Active Processor Cores	Number of cores to enable in each processor package.	★All, 1, 2, 3
Intel Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.	★Enabled, Disabled
Intel® Speed Step™	Allows more than two frequency ranges to be supported.	★Enabled, Disabled
Turbo Mode	Turbo Mode.	★Enabled, Disabled
CPU C states	Enable or disable CPU C states	★Disabled, Enabled

ROBO-6911VG2AR

Chipset Configuration

Configuration Chipset feature

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Configuration
Chipset Configuration
Total Memory          8192 MB
DIMM#0                8192 MB
DIMM#1                Not Present
ECC Support           [Enabled]
VT-d                  [Enabled]
Above 4GB MMIO BIOS assignment [Disabled]
HD Audio              [Enabled]
Port 80h Redirection  [LPC Bus]
▶ AMT Configuration

Enable/disable DDR Ecc Support

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

Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

ROBO-6911VG2AR

Feature	Description	Options
ECC Support	Support ECC Memory	★ Enabled, Disabled
VT-d	VT-d capability	★ Enabled, Disabled
Above 4GB MMIO BIOS assignment	Enable/Disable above 4GB Memory Mapped IO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB.	★ Disabled, Enabled
HD Audio	Control Detect of the HD-Audio device. Disabled = HAD will be unconditionally disabled Enabled = HAD will be unconditionally Enabled	★ Enabled, Disabled
Port 80h Redirection	Control where the port 80h cycles are sent.	★ LPC Bus, PCIE Bus

AMT Configuration

Configure Active Management Technology Parameters

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.

Configuration

Intel AMT	[Disabled]	Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device
Un-Configure ME	[Disabled]	

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

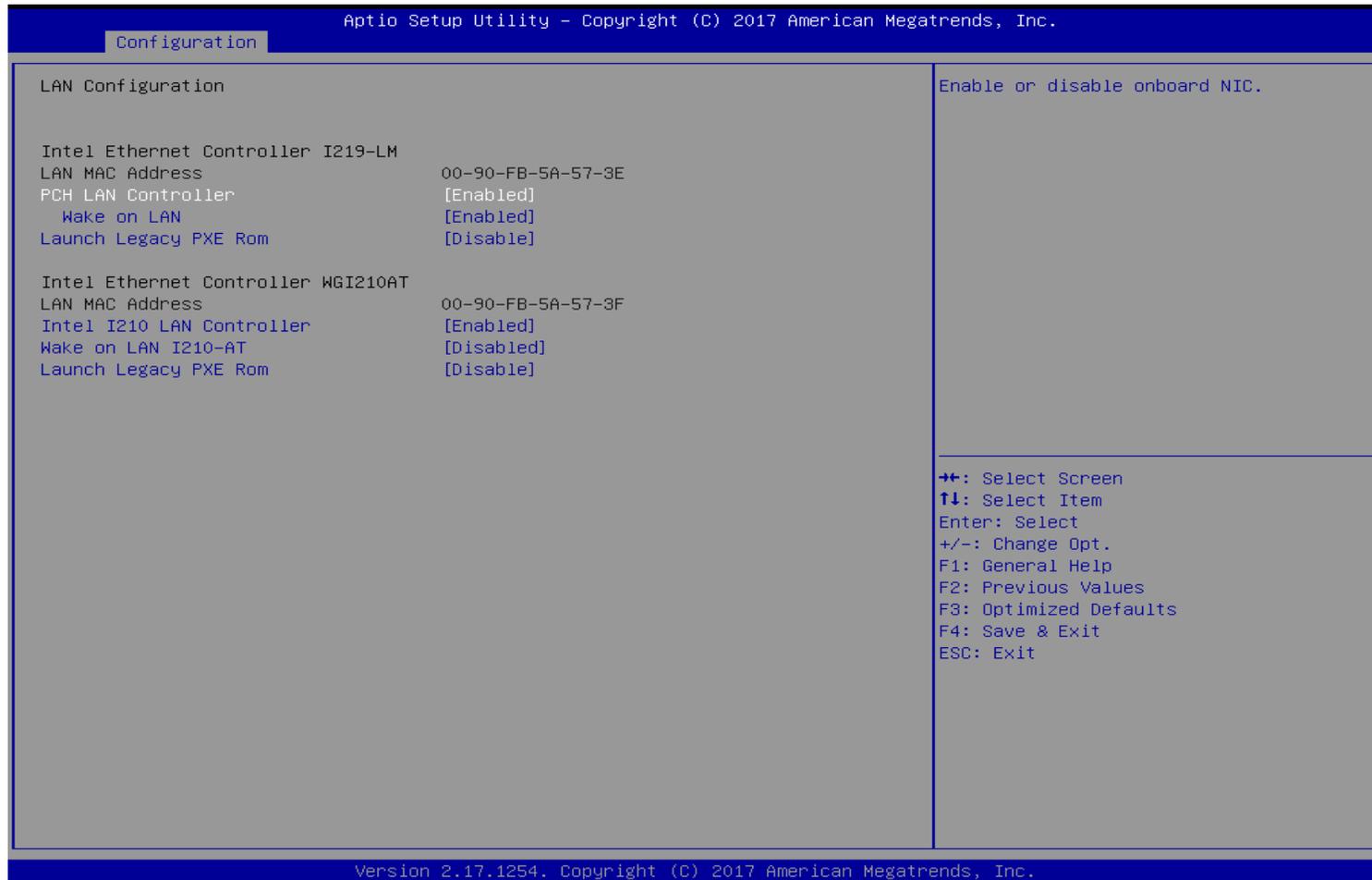
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.

Feature	Description	Options
<p>Intel AMT (Enabled)</p>	<p>Enable/Disable Intel® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device</p>	<p>★ Disabled, Enabled</p>
<p>Un-Configure ME</p>	<p>OEMFlag Bit 15: Un-Configure ME without password.</p>	<p>★ Disabled, Enabled</p>

ROBO-6911VG2AR

LAN Configuration

Configuration on Board LAN device configuration.



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

Configuration

LAN Configuration

Enable or disable onboard NIC.

Intel Ethernet Controller I219-LM	
LAN MAC Address	00-90-FB-5A-57-3E
PCH LAN Controller	[Enabled]
Wake on LAN	[Enabled]
Launch Legacy PXE Rom	[Disable]
Intel Ethernet Controller WGI210AT	
LAN MAC Address	00-90-FB-5A-57-3F
Intel I210 LAN Controller	[Enabled]
Wake on LAN I210-AT	[Disabled]
Launch Legacy PXE Rom	[Disable]

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

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ROBO-6911VG2AR

Feature	Description	Options
PCH LAN Controller	Enable or disable onboard NIC	★Enabled, Disabled
Wake on LAN	Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)	★Enabled, Disabled
Launch Legacy PXE Rom	Launch Legacy PXE Rom. [Disable] Not launch Rom, [Enable] Force launch Rom	★Disable, Enable
Intel I210 LAN Controller	Intel I210 LAN Controller.	★Enabled, Disabled
Wake on LAN I210-AT	Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)	★Disabled, Enabled
Launch Legacy PXE Rom	Launch Legacy PXE Rom. [Disable] Not launch Rom, [Enable] Force launch Rom	★Disable, Enable

ROBO-6911VG2AR

Graphics Configuration

Configuration Graphics Settings

The screenshot shows the Aptio Setup Utility interface. At the top, it says 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.' and 'Configuration'. The main area is divided into two columns. The left column is titled 'Graphics Configuration' and lists various settings with their current values in brackets. The right column is titled 'Select Secondary Display Device' and is currently empty. Below this column, there is a list of navigation and function keys. At the bottom of the screen, it says 'Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.'

Graphics Configuration	
Primary PEG	[Auto]
Primary PCIE	[Auto]
Internal Graphics	[Auto]
GTT Size	[8MB]
Aperture Size	[256MB]
DVMT Pre-Allocated	[32M]
DVMT Total Gfx Mem	[256M]
Primary IGFX Boot Display	[Display Port]
Secondary IGFX Boot Display	[Disabled]

Select Secondary Display Device

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

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ROBO-6911VG2AR

Feature	Description	Options
Primary PEG	Select PEG0/ PEG1/PEG2/PEG3 Graphics device should be Primary PEG.	★Auto, PEG11, PEG12
Primary PCIE	Select Auto/PCIE4 of D28: F4, Graphics device should be Primary PCIE.	★Auto, PCIE4
Internal Graphics	Keep IGFX enabled based on the setup options.	★Auto, Disabled, Enabled
GTT Size	Select the GTT Size	★8MB, 2MB, 4MB
Aperture Size	Select the Aperture Size Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.	★256MB, 128MB, 512MB, 1024MB,2048MB,4096MB
DVMT Pre-Allocated	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.	★32M,64M,96M,128M, 160M,192M,224M,256M,288M ,320M,352M,384M,416M,448 M,480M,512M, 1024M,1536M,2048M, 4M, 8M,12M,16M,20M,24M,28M,3 2M,/F7,36M,40M,44M,48M,52 M,56M,60M
DVMT Total Gfx Mem	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device	★256MB, 128MB,MAX
Primary IGFX Boot Display	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear base on your selection. VGA modes will be supported only on primary display.	★ VBIOS Default, Display Port,DVI,VGA
Secondary IGFX Boot Display	Select Secondary Display Device	★Disabled,Display Port,DVI,VGA

ROBO-6911VG2AR

PCI/PCIE Configuration

PCI, PCI-X and PCI Express Settings.

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

Configuration

PCI/PCIE Configuration

▶ PCI Express Root Port 5
PCIE Port 9 is assigned to LAN
PCIE Port 10 is assigned to LAN

PCIE Port	PCIE Port Config	Current Link Width	Current Link Speed
P1(D27/F0)	x1	--	--
P2(D27/F1)	x1	--	--
P3(D27/F2)	x1	--	--
P4(D27/F3)	x1	--	--
P5(D28/F0)	x4	--	--
P6(D28/F1)	--	--	--
P7(D28/F2)	--	--	--
P8(D28/F3)	--	--	--
P9(D28/F4)	x1	--	--
P10(D28/F5)	x1	--	--
P11(D28/F6)	x1	--	--
P12(D28/F7)	x1	--	--
P13(D29/F0)	x1	--	GEN1 (2.5GT/s)
P14(D29/F1)	x1	x1	GEN1 (2.5GT/s)
P15(D29/F2)	x1	--	--
P16(D29/F3)	x1	--	--
P17(D29/F4)	x1	--	--
P18(D29/F5)	x1	--	--
P19(D29/F6)	x1	--	--
P20(D29/F7)	x1	--	--

PCI Express Root Port 5 Settings.

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

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ROBO-6911VG2AR

PCI Express Root Port 5

PCI Express Root Port 5

The screenshot shows the Aptio Setup Utility Configuration screen. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and the current screen is labeled "Configuration". The main area is divided into two columns. The left column lists settings for "PCI Express Root Port 5": "PCI Express Root Port 5" is set to "[Enabled]", "ASPM Support" is set to "[Disabled]", and "PCIe Speed" is set to "[Auto]". The right column contains the text "Control the PCI Express Root Port." and a list of navigation keys: "←→: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimized Defaults", "F4: Save & Exit", and "ESC: Exit". The footer of the screen reads "Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc."

Setting	Value	Description
PCI Express Root Port 5	[Enabled]	Control the PCI Express Root Port.
ASPM Support	[Disabled]	
PCIe Speed	[Auto]	

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

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Feature	Description	Options
PCI Express Root Port5	Control the PCI Express Root Port.	★ Enabled, Disabled
ASPM Support	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO-BIOS auto configure DISABLE – Disables ASPM	★ Disabled, L0s, L1, L0sL1, Auto
PCIe Speed	Select PCI Express port speed	★ Auto, Gen1, Gen2, Gen3

ROBO-6911VG2AR

SATA Configuration

SATA Device Options Settings

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

Configuration

SATA Configuration

SATA Controller(s)	[Enabled]
SATA Mode Selection	[AHCI]
Serial ATA Port 0 (J5)	Empty
Software Preserve	Unknown
Port 0	[Enabled]
Hot Plug	[Disabled]
External SATA	[Disabled]
SATA Device Type	[Hard Disk Drive]
Serial ATA Port 1 (J6)	Empty
Software Preserve	Unknown
Port 1	[Enabled]
Hot Plug	[Disabled]
External SATA	[Disabled]
SATA Device Type	[Hard Disk Drive]
Serial ATA Port 2 (J4)	Empty
Software Preserve	Unknown
Port 2	[Enabled]
Hot Plug	[Disabled]
External SATA	[Disabled]
SATA Device Type	[Hard Disk Drive]
Serial ATA Port 3 (J7)	Empty
Software Preserve	Unknown
Port 3	[Enabled]
Hot Plug	[Disabled]
External SATA	[Disabled]
SATA Device Type	[Hard Disk Drive]
Serial ATA Port 4 (mSATA J24)	Empty"
Software Preserve	Unknown
Port 4	[Enabled]
Hot Plug	[Disabled]
External SATA	[Disabled]

Enable or disable SATA Device.

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

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ROBO-6911VG2AR

Feature	Description	Options
SATA Controller(s)	Enable or disable SATA Device.	★Enabled, Disabled
SATA Mode Selection	Determines how SATA controller(s) operate.	★AHCI, RAID
Port 0 – Port 4	Enable or Disable SATA Port	★Enabled, Disabled
Hot Plug	Designates this port as Hot Pluggable	★Disabled, Enabled
External SATA	External SATA Support.	★Disabled, Enabled
SATA Device Type	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.	★Hard Disk Drive, Solid State Drive

ROBO-6911VG2AR

USB Configuration

USB Configuration Parameters.

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

Configuration

USB Configuration

USB Devices:
1 Drive, 1 Keyboard

Legacy USB Support [Enabled]
XHCI Legacy Support [Enabled]
USB Mass Storage Driver Support [Enabled]
▶ PCH USB Configuration

Mass Storage Devices:
JetFlashTranscend 4GB 1100 [Auto]

JetFlashTranscend 4GB 1100

- Auto
- Floppy
- Forced FDD
- Hard Disk
- CD-ROM

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.

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

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ROBO-6911VG2AR

Feature	Description	Options
Legacy USB Support	Enables Legacy USB support. AUTO option disables legacy support if no USB Devices are connected. DISABLE option will keep USB devices available only for EFI applications.	★Enabled, Disabled, Auto
XHCI Legacy Support	Enable/Disable XHCI Controller Legacy support.	★Enable, Disabled
USB Mass Storage Driver Support	Enable/Disable USB Mass Storage Driver Support.	★Enable, Disabled
Mass Storage Devices	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

ROBO-6911VG2AR

PCH USB Configuration

PCH USB Configuration

The screenshot shows the Aptio Setup Utility interface. At the top, it reads 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.' and 'Configuration'. The main area is titled 'USB Configuration' and contains the following settings:

USB Precondition	[Disabled]
xDCI Support	[Disabled]
USB Port Disable Override	[Select Per-Pin]
USB HS Physical Connector #0	[Enabled]
USB HS Physical Connector #1	[Enabled]
USB HS Physical Connector #2	[Enabled]
USB HS Physical Connector #3	[Enabled]
USB HS Physical Connector #8	[Enabled]
USB HS Physical Connector #9	[Enabled]

To the right of the settings is a descriptive text: 'Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.'

At the bottom right, a legend lists the navigation keys:

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

At the very bottom, it says 'Version 2.17.1255. Copyright (C) 2017 American Megatrends, Inc.'

ROBO-6911VG2AR

Feature	Description	Options
USB Precondition	Precondition work on USB host controller and root ports for faster Enumeration.	★ Disabled, Enabled
xDCI Support	Enable/Disable xDCI (USB OTG Device).	★ Disabled, Enabled
USB Port Disable Override (Select Per-Pin)	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.	★ Disabled, Select Per-Pin
USB HS Physical Connector #0 - #9	Enable/Disable USB Port.	★ Enabled, Disabled

ROBO-6911VG2AR

Power Control Configuration

System Power Control Configuration Parameters

The screenshot shows the Aptio Setup Utility interface. At the top, it reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and "Configuration". The main area is titled "Power Control Configuration" and contains the following settings:

Enable Hibernation	[Enabled]
ACPI Sleep State	[S3 (Suspend to RAM)]
Restore AC Power Loss	[Power Off]
RTC Wakeup	[Disabled]
System Time	[17:46:32]
Wake up day	0
Wake up Time(HH:mm:ss)	[00:00:00]

To the right of the settings, there is a descriptive text: "Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS." Below this, a list of navigation keys is provided:

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

At the bottom of the screen, it reads "Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc."

ROBO-6911VG2AR

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.	★S3 (Suspend to RAM), Suspend Disabled
Restore AC Power Loss	Specify what state to go to when power is re-applied after a power failure (G3 state)	★Power Off , Power On
RTC Wake up (Enabled)	Enable or 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	1-31
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

ROBO-6911VG2AR

Super IO Configuration

System Super IO Chip Parameters.

Feature	Description	Options
Watch Dog Timer (Enabled)	Enable/Disable Watch Dog Timer	★ Disabled, Enabled
Timer Unit	Select Timer count unit of WDT	★ Second, Minute
Timer value	Set WDT Timer value seconds/minutes	★ 20

ROBO-6911VG2AR

Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COM1)

The screenshot shows the Aptio Setup Utility interface for Serial Port 1 Configuration. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and a "Main" tab is active. The screen is divided into two main sections. The left section, titled "Serial Port 1 Configuration", contains the following settings: "Serial Port" is set to "[Enabled]"; "Device Settings" are "IO=3F8h; IRQ=4"; "RS-232/422/485 Control Option" is set to "[RS-232]"; and "Change Settings" is set to "[Auto]". The right section, titled "Enable or Disable Serial Port (COM)", is currently empty. At the bottom right of the screen, a list of navigation keys is provided: "←→: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimize Defaults", "F4: Save & Exit", and "ESC: Exit". The footer of the utility reads "Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc."

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main
Serial Port 1 Configuration
Serial Port          [Enabled]
Device Settings     IO=3F8h; IRQ=4;
RS-232/422/485 Control Option [RS-232]
Change Settings     [Auto]

Enable or Disable Serial Port (COM)

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

Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

ROBO-6911VG2AR

Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★ Enabled, Disabled
RS-232/422/485 Control Option	Serial Port 1 RS-232/422/485 Control Option	★ RS-232, RS-485 HALF DUPLEX, RS-485/422 FULL DUPLEX
Change Settings	Select an optimal settings for Super IO Device	★ IO=3F8h; IRQ=4, Auto, IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12

ROBO-6911VG2AR

H/W Monitor Configuration

Monitor hardware status

```
Aprio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Configuration
Pc Health Status
Smart System Fan Function      [Enabled]
System Start Target Temp      30
System Full Target Temp       50

CPU temperature                : +39 %
System temperature             : N/A
CPU Fan Speed                  : 2822 RPM
Vcore                          : +1.164 V
VCC3                           : +3.336 V
VCC5                           : +5.145 V
VCC12                          : +12.394 V
VDDQ_DDR                       : +1.224 V

Enable or Disable Smart System Fan

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

Version 2.17.1254. Copyright (C) 2017 American Megatrends, Inc.
```

ROBO-6911VG2AR

Feature	Description	Options
Smart System Fan Function (Enabled)	Enable or Disable Smart System Fan	★ Disabled, Enabled
System Start Target Temp	System Start Fan Target Temperature.	30
System Full Target Temp	System Full Fan Fan Target Temperature.	50

ROBO-6911VG2AR

Serial Port Console Redirection

Serial Port Console Redirection

The screenshot shows 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 is titled 'Serial Port Console Redirection' and contains the following text: 'COM0 Console Redirection [Enabled]', '► Console Redirection Settings', and 'COM1(Pci_Bus0,Dev0,Func0) (Disabled) Console Redirection Port Is Disabled'. The right column is titled 'Console Redirection Enable or Disable.' and contains a list of keyboard shortcuts: '←→: Select Screen', '↑↓: Select Item', 'Enter: Select', '+/-: Change Opt.', 'F1: General Help', 'F2: Previous Values', 'F3: Optimized Defaults', 'F4: Save & Exit', and 'ESC: Exit'. At the bottom of the screen, the version information 'Version 2.17.1255. Copyright (C) 2017 American Megatrends, Inc.' is displayed.

ROBO-6911VG2AR

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

ROBO-6911VG2AR

COM 0 Serial Port Console Redirection Settings

COM0 Serial Port console Redirection settings

The screenshot shows the 'Configuration' screen of the Aptio Setup Utility. The title bar reads 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.'. The main window is titled 'Configuration' and contains the following settings for 'COM0 Console Redirection Settings':

Terminal Type	[ANSI]
Bits per second	[115200]
Data Bits	[8]
Parity	[None]
Stop Bits	[1]
Flow Control	[None]
VT-UTF8 Combo Key Support	[Enabled]
Recorder Mode	[Disabled]
Resolution 100x31	[Disabled]
Legacy OS Redirection Resolution	[80x24]
Putty KeyPad	[VT100]
Redirection After BIOS POST	[Always Enable]

On the right side of the screen, there is a text area with the following information:

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.

Below this, a list of navigation keys is provided:

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

At the bottom of the screen, the version information is displayed: 'Version 2.17.1255. Copyright (C) 2017 American Megatrends, Inc.'

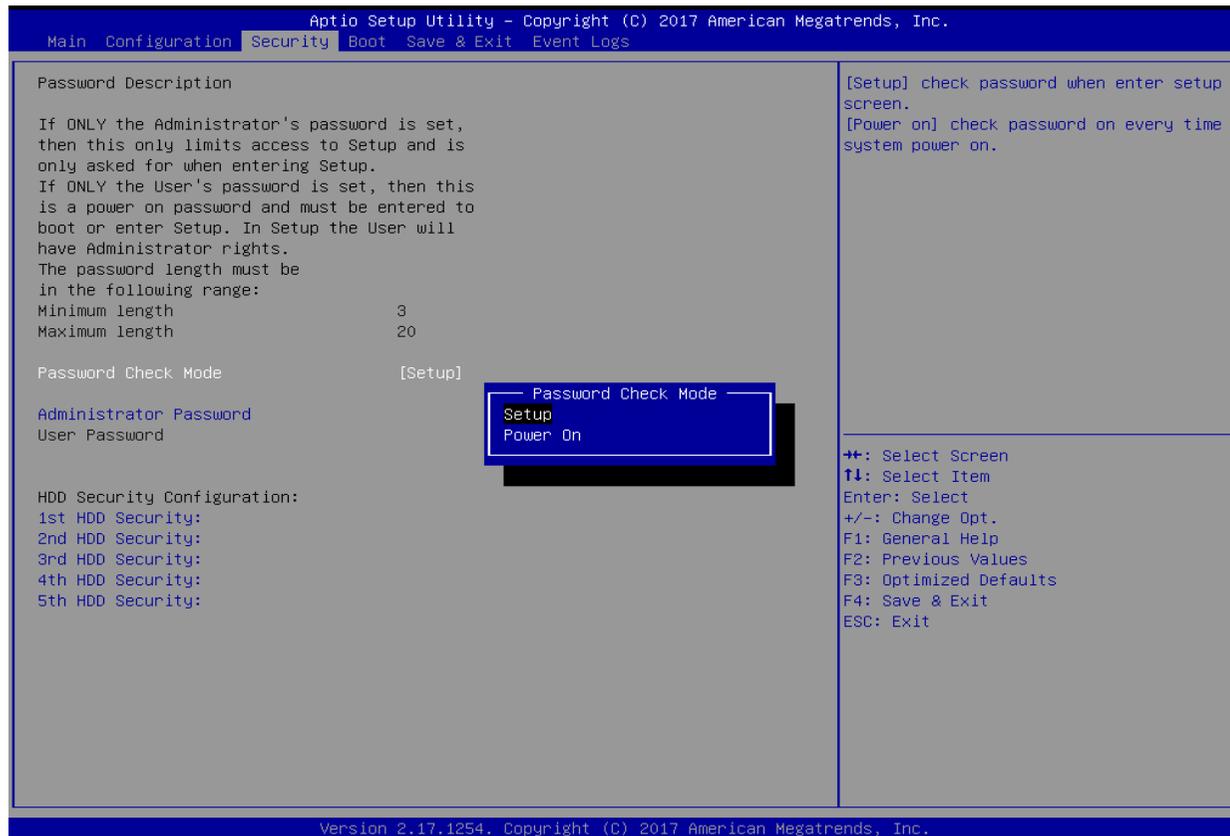
Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	★ANSI, VT100, VT100+, VT-UTF8
Bits per second	Select Serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.	★115200, 9600, 19200, 38400, 57600
Data bits	Data bits	★8, 7
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if 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.	★None, Hardware RTS/CTS

ROBO-6911VG2AR

VT-UTF8 Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	★Enabled, Disabled
Recorder Mode	With this mode enabled 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 FunctionKey and KeyPad on Putty	★VT100, LINUX,XTERMR6, SCO,ESCN,VT400
Redirection After BIOS POST	The settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.	★Always Enable, BootLoader

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.

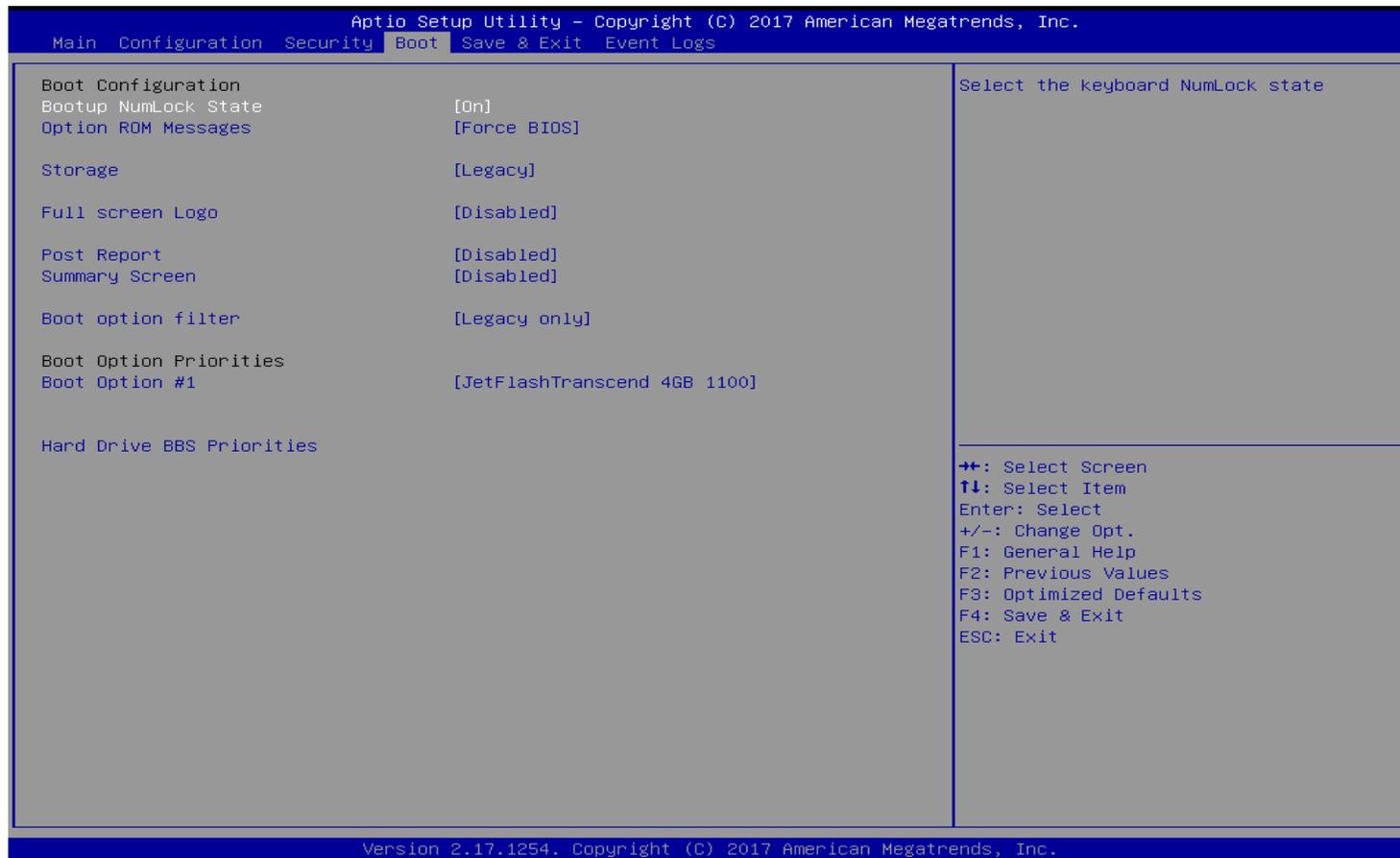


ROBO-6911VG2AR

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	★ No default setting
1st-5th HDD Security	HDD Security Configuration for selected drive.	

6.2.4 Boot

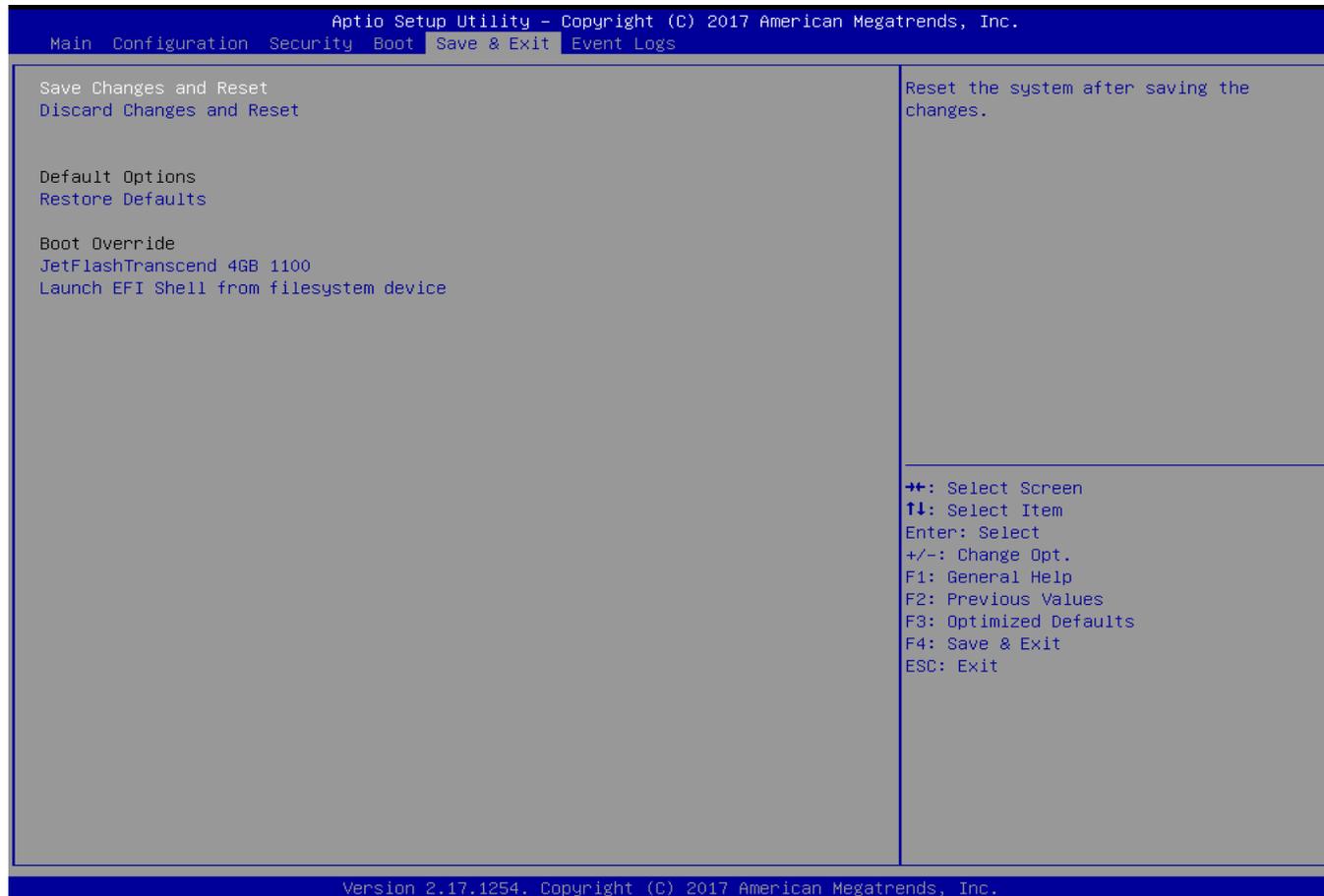
Use this menu to specify the priority of boot devices.



ROBO-6911VG2AR

Feature	Description	Options
Bootup NumLock State	Select the keyboard NumLock state	★On, Off
Option ROM Messages	Set display mode for Option ROM	★Force BIOS, Keep Current
Storage	Controls the execution of UEFI and Legacy Storage OpROM	★Legacy, Do not Launch, UEFI
Full screen Logo	Enables or disables Quiet Boot option and Full screen Logo.	★Disabled, Enabled
Post Report	Post Report Support Enabled/Disabled	★Disabled, Enabled
Summary Screen	Summary Screen Support Enabled/Disabled	★Disabled, Enabled
Boot option filter	This option controls Legacy/UEFI ROMs priority	★Legacy only, UEFI only
Hard Drive BBS Priorities	Set the order of the legacy devices in this group	

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 ROBO-6911VG2AR 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

ATX Power Setting

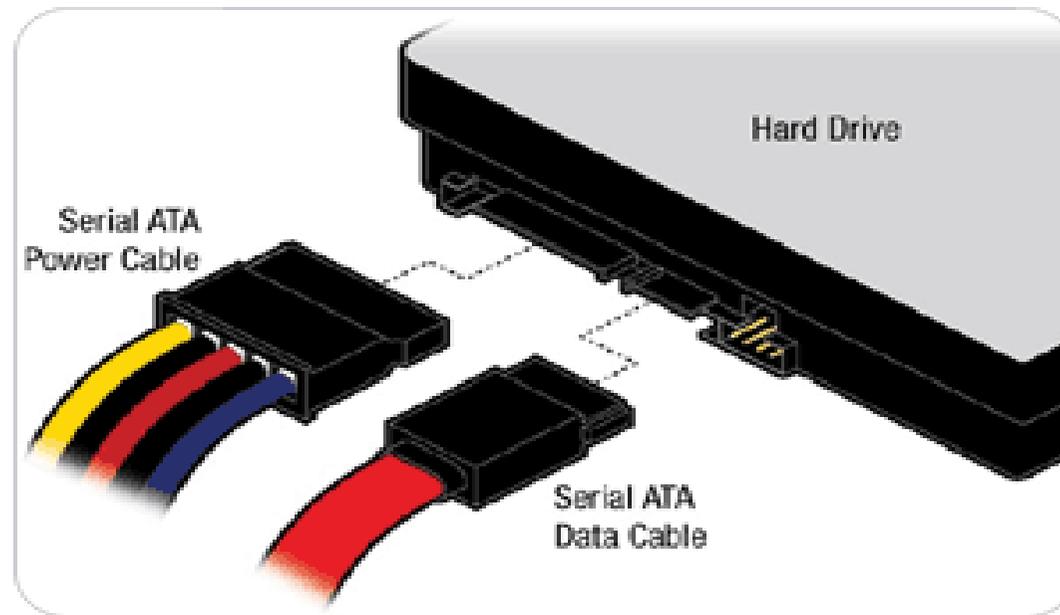
Unlike other Single board computer, ROBO-6911VG2AR supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there are only two connectors that must be connected—J8 ATX 4 Pin Connector & 24 pins ATX Power Connector (On PICMG Backplane).

Serial ATA Hard Disk Setting for AHCI/RAID

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total four connectors, SATA0~3 port. The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation. All you need to operate AHCI, RAID (0/1/5/10) application for system, please follow up setting guide in BIOS setup utility.

ROBO-6911VG2AR

ROBO-6911VG2AR can support four(J4/J5/J6/J7) SATA interface (SATAIII, 6.0Gb/s) and one mSATA(J24) interface on board; The SATA interface shall support 1.5Gb/ 3.0Gb & 6.0Gb operation per the SATA specification.



7.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. CPU, CPU Fan, 260-Pin DDR4 SO-DIMM memory, keyboard, mouse, SATA hard disk, DP connector, device power cables, ATX accessories 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 ROBO-6911VG2AR, it is recommended, when going with the boot-up sequence, to hit "delete" or "Esc" 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: Can I use Intel standard CPU Cooler on ROBO-6911VG2AR?

Answer: No. The Intel standard CPU Cooler will get stuck on ROBO-6911VG2AR, we suggest that you can use below CPU Cooler to install on ROBO-6911VG2AR.

The P/N are as below:

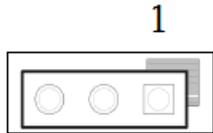
B9971030 、 B9971040 、 B8304610

Please contact with your distributor or sales to get them .Thanks.

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 JP5 on the ROBO-6911VG2AR SBC to set it from 1-2 short to 2-3 short and wait 5 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

JP5: Clear CMOS Setup



PIN No.	Description
1-2, Short	Normal
2-3, Short	Clear CMOS

Question: How to update the BIOS file of ROBO-6911VG2AR?

Answer: 1. Please visit web site of [Portwell download center](http://www.portwell.com.tw/support/download_center.php) 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 "ROBO-6911VG2AR".
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.bat" or "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.

ROBO-6911VG2AR

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

Question: The steps of windows7 OS installation with USB3.0 driver.

Answer: 1. Windows 7* installation media does not include the native driver supports for USB 3.0, so during the installation, once you get into the screen for select your preferred language, when the keyboard or mouse connect to the USB 3.0 port, it won't have any response. In order to solve this problem, you could refer the following steps to install the Windows 7 on Skylake platform.

2. Installation needs:

(1) Preparing the valid copyright of Windows 7 on ISO or DVD, as the following you have administrator access to another working computer (the Admin system) with Windows 7 or later to follow these steps.

(2) To download and unzip the Windows 7 USB 3.0 driver.

<https://downloadcenter.intel.com/download/22824/USB-3-0-Driver-Intel-USB-3-0-eXtensible-Host-Controller-Driver-for-Intel-8-9-100-Series-and-C220-C610-Chipset-Family>

3. Create a USB flash drive installer:

Using the Windows 7 DVD or ISO image to create a bootable USB flash drive.

A. Using Windows USB/DVD Download Tool to create a bootable USB flash drive. You could find this tool in our driver CD or download it via <http://wudt.codeplex.com/>

B. Click the Windows Start button, and click Windows7 USB/DVD Download Tool to execute.

C. Choosing the ISO file, type the name and path of your Windows ISO file, or click Browse and select the file from the open dialog box. Click Next.

- D. Select USB device to create a copy on the USB flash drive.
- E. If you are copying the file to a USB flash drive, select your USB device in the drop-down list and click Begin copying.
- F. Then you can see it starts to create the bootable USB device.
- G. It shows the "Bootable USB device created successfully" message after finish all processes.

4. Extract the USB3.0 drivers:

The USB3.0 drivers which you downloaded must make a folder to place the driver. Example: "USB3 Fix". Please create 2 folders in the USB3 Fix folder: "USB3" & "mount". Then extract the USB3.0 drivers and copy the "Drivers" folder into USB3 folder.

5. Get the "boot.wim" & "install.wim" files from USB bootable device:

Please copy those two files to the "USB3 Fix" folder from \source of the root of your USB bootable device.

6. Update the "boot.wim" & "install.wim" files by "dism" command:

Please execute the cmd shell as an administrator. (Click Start on windows 7, type in "cmd" and then right click on the cmd application and choose Run as Administrator.)

Please navigate to the USB3_Fix folder in the cmd shell, and type in the following commands in this order to update the boot.wim file:

(1) `dism /mount-wim /wimfile:boot.wim /index:2 /mountdir:mount`

(2) `dism /image:mount /add-driver:"usb3" /recurse`

(3) `dism /unmount-wim /mountdir:mount /commit`

(4) Please type the command to get which type of your Win7 O/S.

```
dism /Get-WimInfo /WimFile:install.wim
```

Please select the correct index number for your Win7 O/S. (Example: We used the Win7 Ultimate N then we must choose "index 5")

(5) Please type the command as below lists.

```
dism /mount-wim /wimfile:install.wim /index:5 /mountdir:mount
```

(6) Please type the command as below lists.

```
dism /image:mount /add-driver:"usb3" /recurse
```

(7) Please type the command as below lists.

```
dism /unmount-wim /mountdir:mount /commit
```

7. Please copy both two file back to the \source of the root of your USB bootable device.

Then you can install the Win7 O/S which has been included the USB3.0 driver by USB bootable device.

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 BIOS web Tool (PBT)

The Portwell BIOS web Tool (PBT) is a brand new on-line utility which innovated by Portwell. PBT now is available for Portwell's premiere customers who are able to [add customized BIOS logo](#) and [change BIOS default settings](#) on American Megatrends (AMI) BIOS. Please contact Portwell for more information.

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>