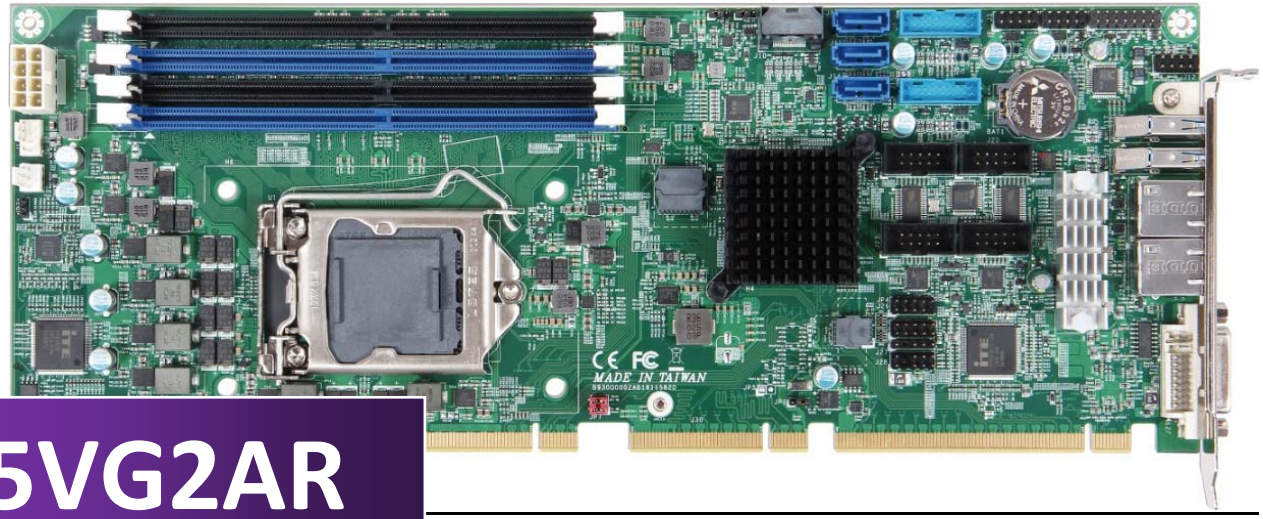

ROBO-8115VG2AR

PICMG 1.3 Single Host Board

Version 1.0

Revision History

R1.0	Preliminary

Contents

Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the ROBO-8115VG2AR. This document should be referred to when designing PICMG 1.3 application. The other reference documents that should be used include the following:

- ✧Intel Comet Lake-S Design Guide
- ✧Intel Comet Lake-S Specification

Please contact Portwell Sales Representative for above documents.

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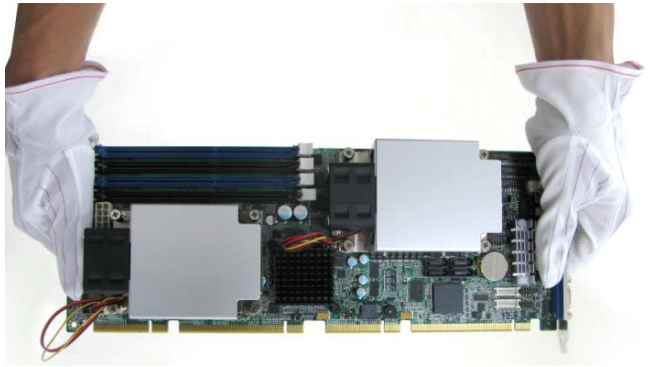
Notice

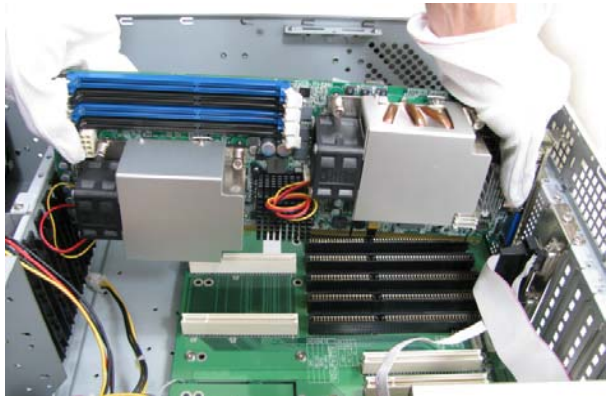
SBC Handling and Installation Notice

- 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.





■ Fix your SBC in System

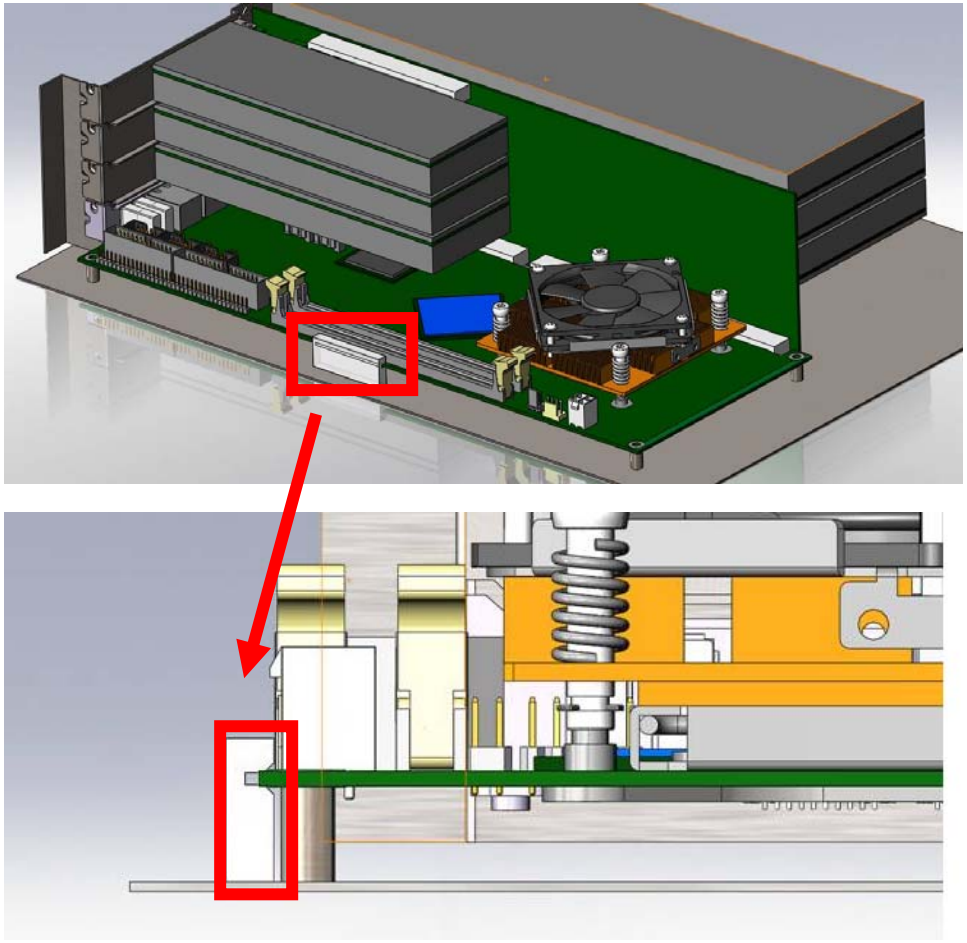
Caution: Suggest your S.I or vendor to use a metal bracket to hold/fix the desktop or server grade SBC to avoid the vibration damage during transportation. Heavy processor cooler may bend the SBC when systems are during transportation without any holder.

Example:

- 4U chassis :

➔ Use L type mental or plastic or rubber bracket to hold SBC.

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



1 Introduction

ROBO-8115VG2AR, a PICMG 1.3 Single Host Board (SHB) with the latest Intel 10th Generation Core processors supported from W series Xeon processors to Core i3 processors. Portwell's ROBO-8115VG2AR 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-8115VG2AR adopt Intel W480E and Q470E PCH. Providing up to 128GB DDR4 2666 Long-DIMM system memory supported with ECC or non-ECC option. ROBO-8115VG2AR with the 10th 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 DVI-I (VGA and DVI-D) and HDMI up to 4Kx2K. Rich I/O functions are also provided by ROBO-8115VG2AR single host board, which is 6x USB 3.2(Gen2), 8x USB 2.0 (4 ports via backplane), 5x SATA III ports (dual ports via backplane), 2x RS232 ports, 2x smart COM ports which select RS232/422/485 mode by bios adjustment, and dual Intel GbE LAN ports. It also supports on board TPM 2.0 to secure your applications.

For the industries who already have large install based systems, ROBO-8115VG2AR not only provides a way to upgrade to use the latest Intel processors, but also supporting legacy elements such as VGA, four PCI expansion, four Serial ports and PS/2 Keyboard and Mouse.

2 Specifications

Main Processor	◆Intel® Comet Lake-S W series and Core™ i Processors
System BIOS	◆ AMI UEFI BIOS
Main Memory	◆ Up to 128 GB ECC or non-ECC DDR4 on four Long-DIMM sockets. Supports dual channel DDR4 2666 MHz SDRAM
Graphics	◆ Controller: Intel® Gfx Gen 9, HD graphics 630 ◆ VGA: Resolution up to 1920 x 1200 @ 60Hz ◆ DVI-D: Resolution up to 1920 x 1200 @ 60Hz (VGA+DVI-D on bracket by DVI-I port) ◆ HDMI: Resolution up to 4096 x 2160 @ 24Hz
Expansion Interface	◆ 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	◆ Five SATA III ports (SATA 6Gb/s), dual ports via backplane
Input/Output	◆ Serial Ports: 2x RS-232 & 2x RS-232/422/485 selectable by bios ◆ USB Port: 2x USB 3.2(Gen2) on bracket, 4x USB 3.2(Gen2) on board header ◆ GPIO connector: 8GPI + 8GPO ◆ Audio Interface: Mic-In / Line-Out / Line-in (on-board header)
Ethernet	◆ 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
TPM	◆ On-board TPM 2.0 support (TPM IC: Infineon SLB9665TT2.0)
High Drive GPIO	◆ One pin-header for GPIO (8bit in &8bit out)

Mechanical and environmental specifications	◆ Operating temperature: 0 ~ 60° C ◆ Storage temperature:-20 ~ 80° C ◆ Humidity: 5 ~ 90% non-condensing ◆ Power supply voltage: ATX ◆ Board size: 338.5mm x 126.39mm, 13.33" (L) x 4.98" (W)

2.1 Supported Operating Systems

The ROBO-8115VG2AR supports the following operating systems.

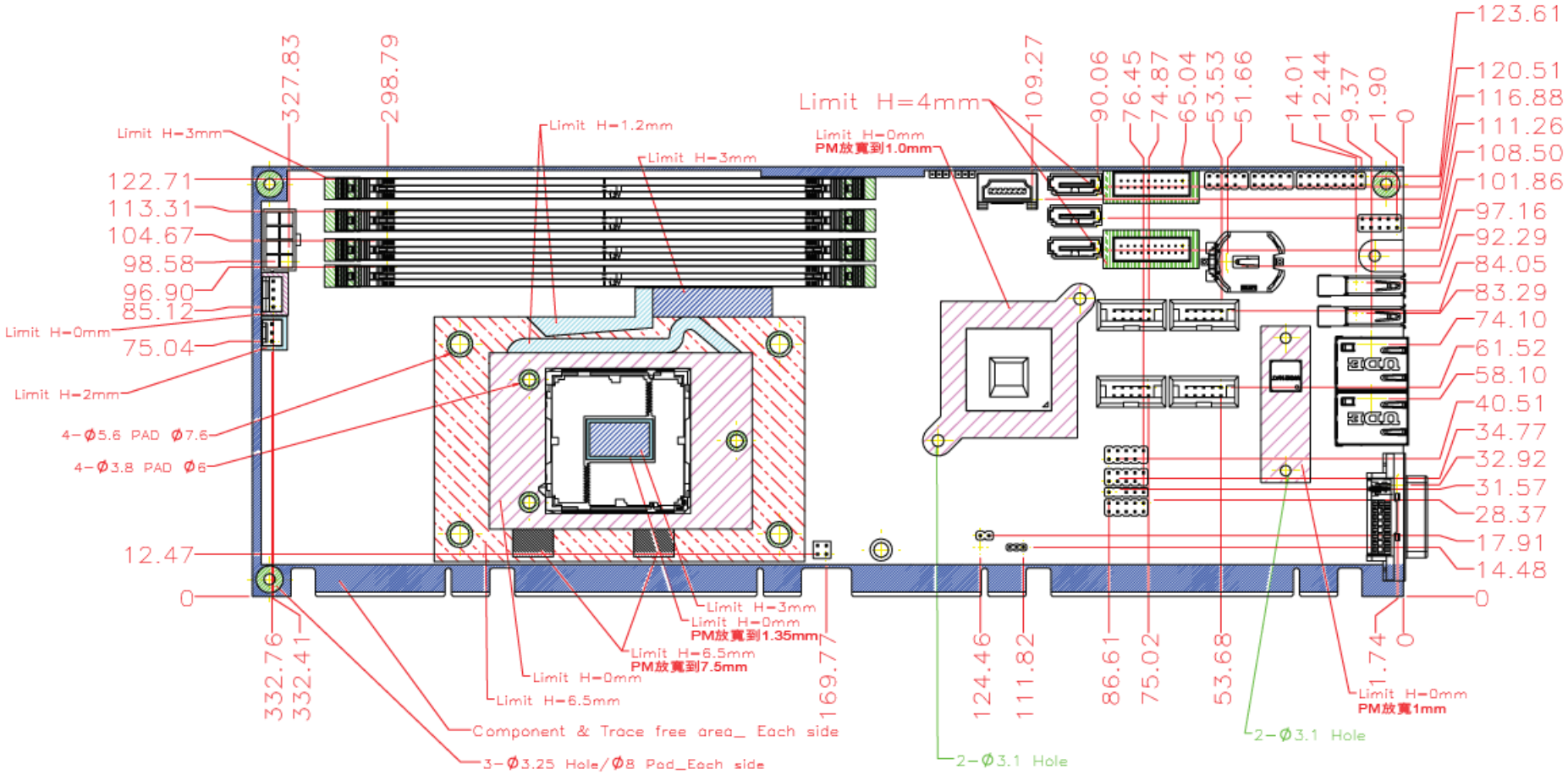
✧ Windows* 10 IOT Enterprise RS51(64-bit)

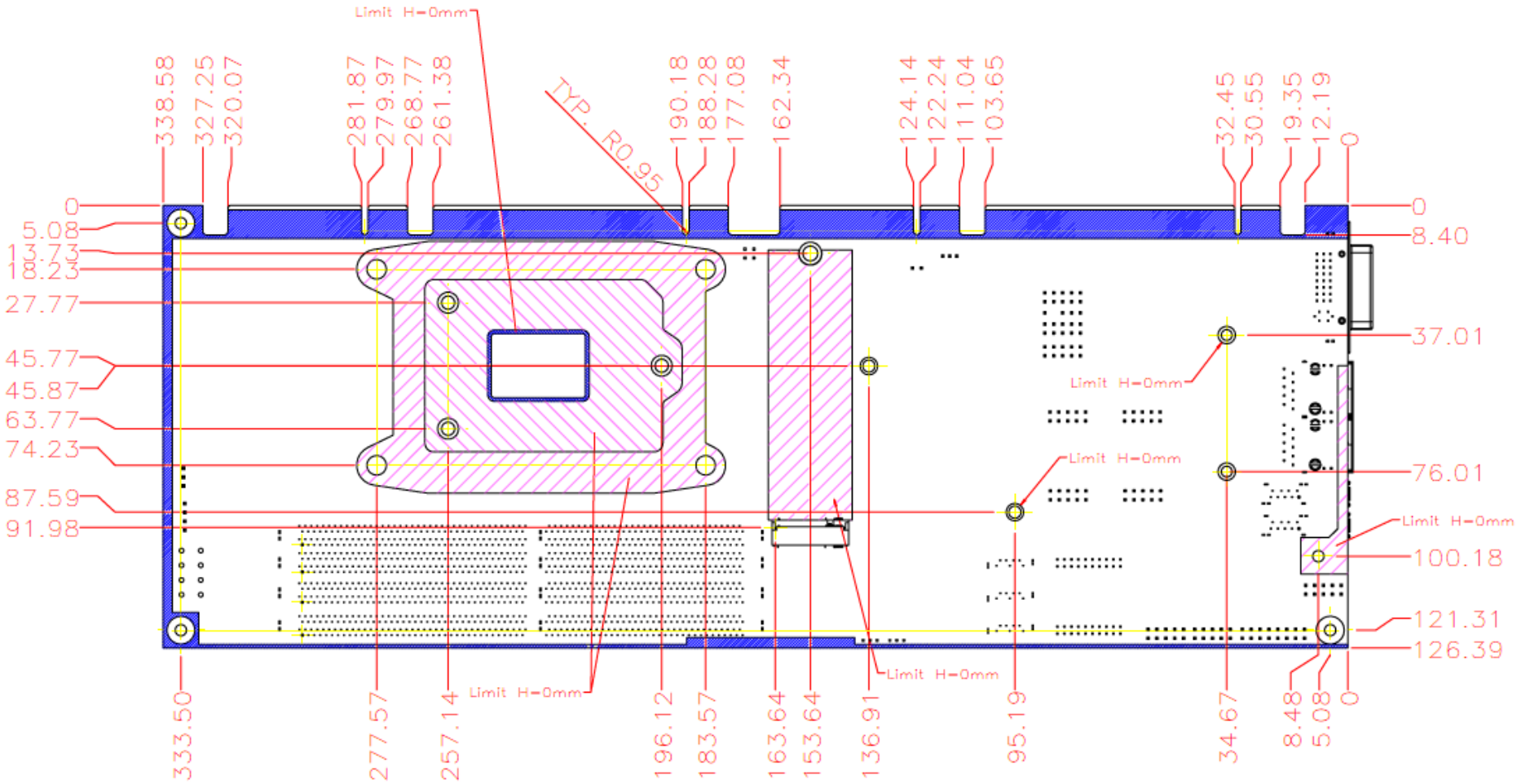
✧ Ubuntu, SuSe, Redhat Enterprise 1,2 (Kernel 4.14)

✧ Yocto Project* BSP tool-based embedded Linux distribution1 (64-bit)

✧ Wind River VxWorks 7.0

2.2 Mechanical Dimensions




Limit H=0mm
338.58
327.25
320.07
281.87
279.97
268.77
261.38
TYP. R0.95
190.18
188.28
177.08
162.34
124.14
122.24
111.04
103.65
32.45
30.55
19.35
12.19
0
0
5.08
8.40
18.23
27.77
45.77
45.87
63.77
74.23
87.59
91.98
37.01
76.01
100.18
121.31
126.39
333.50
277.57
257.14
196.12
183.57
163.64
153.64
136.91
95.19
34.67
8.48
5.08
0

2.3 Power Consumption

Test Configuration	
CPU Type	Intel(R) Xeon(R) W-1270E CPU@3.4GHz
SBC BIOS	Portwell,Inc.R0B0-8115VG2AR BIOS Rev.:0.0.1(11192020)
Memory	SAMSUNG DDR4 2666V/32GB*2
VGA Card	Onboard，Intel(R) UHD Graphics P630
VGA Driver	Intel(R) UHD Graphics P630，Verson:27.20.100.8336
LAN Card #1	Intel(R) Ethernet Connection(11)I219-LM
LAN Driver #1	Intel(R) Ethernet Connection(11)I219-LM ，Version:12.18.9.20
LAN Card #2	Intel(R) I210 Gigabit Network Connection
LAN Driver #2	Intel(R) I210 Gigabit Network Connection ，Version:12.18.9.6
Audio Card	Realtek High Definition Audio
Audio Driver	Realtek High Definition Audio ，Version:6.0.1.6039
Chip Driver	Intel(R) Chipset Device Software，Version:10.0.19041.1
USB 2.0 Driver	USB Composite Device，Version:10.0.19041.1
USB 3.0 Driver	Intel(R)USB 3.1 eXtensible Host Controller-1.10(Microsoft)，Version:10.0.19041.423
EC Version	0.1(11/02/2020)
Hard Drive	WDC WD1004FBYZ-01YCBB2
Power Supply	GPS-500BBC REV:03F
Carrier Board	PBPE-12P4
Boot Mode Select	UEFI MODE

Power consumption

ATX:

Item	Power ON	Full Loading 10Min	Full Loading 30Min
CPU +12V	2.87 A	8.16 A	8.21 A
System +12V	0.47 A	1.26 A	1.25 A
System +3.3V	1.29 A	2.16 A	2.17 A
System +5V	2.20 A	3.78 A	3.92 A
System+ Device +12V	2.07 A	1.49 A	1.51 A
System+ Device +5V	1.70 A	2.27 A	2.42 A
CPU +Device +12V	3.15 A	8.12 A	8.14 A

2.4 Environmental Specifications

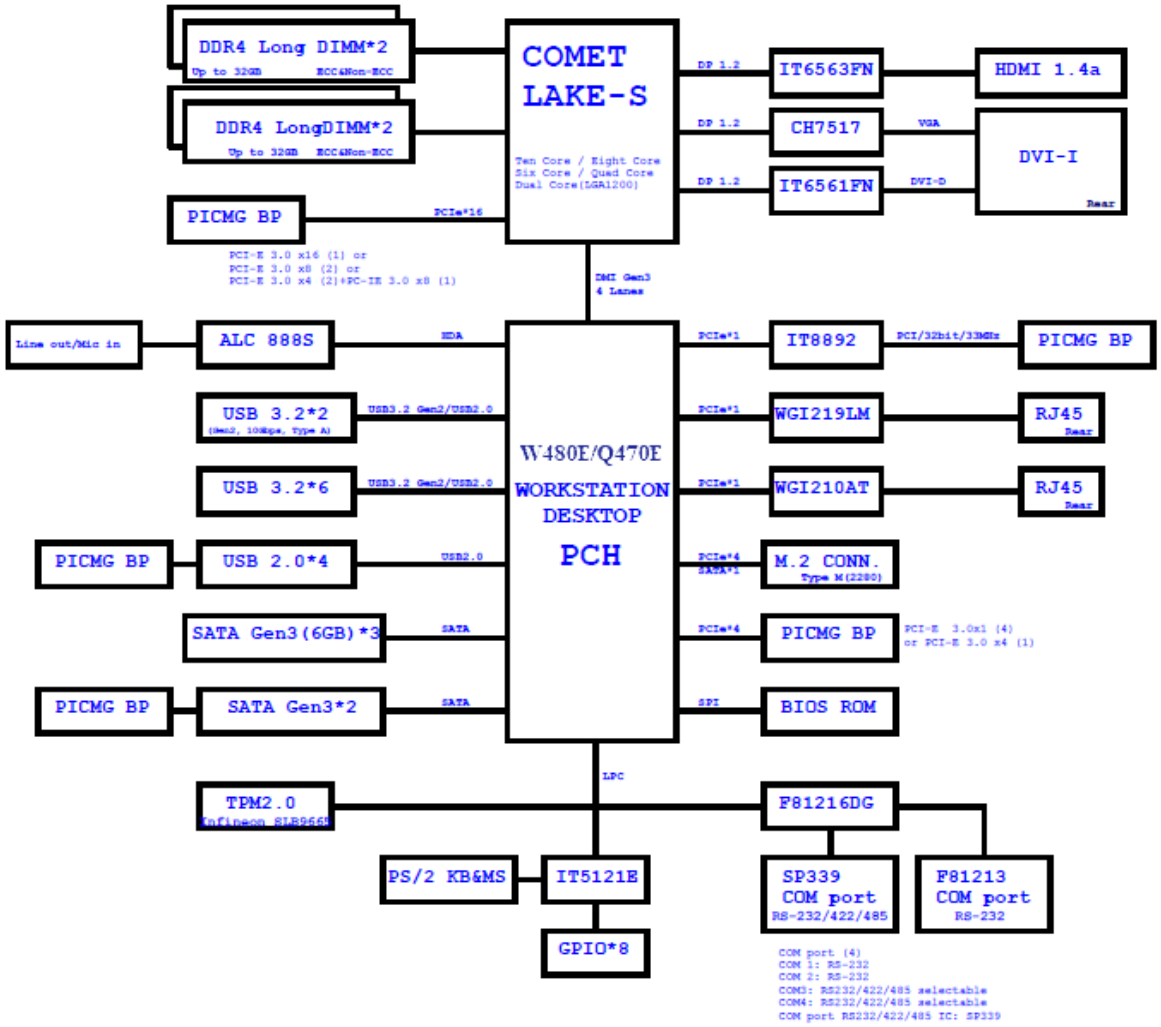
Storage Temperature : -20~80°C

Operation Temperature : 0~60°C

Storage Humidity : 5~90%

Operation Humidity: 10~90%

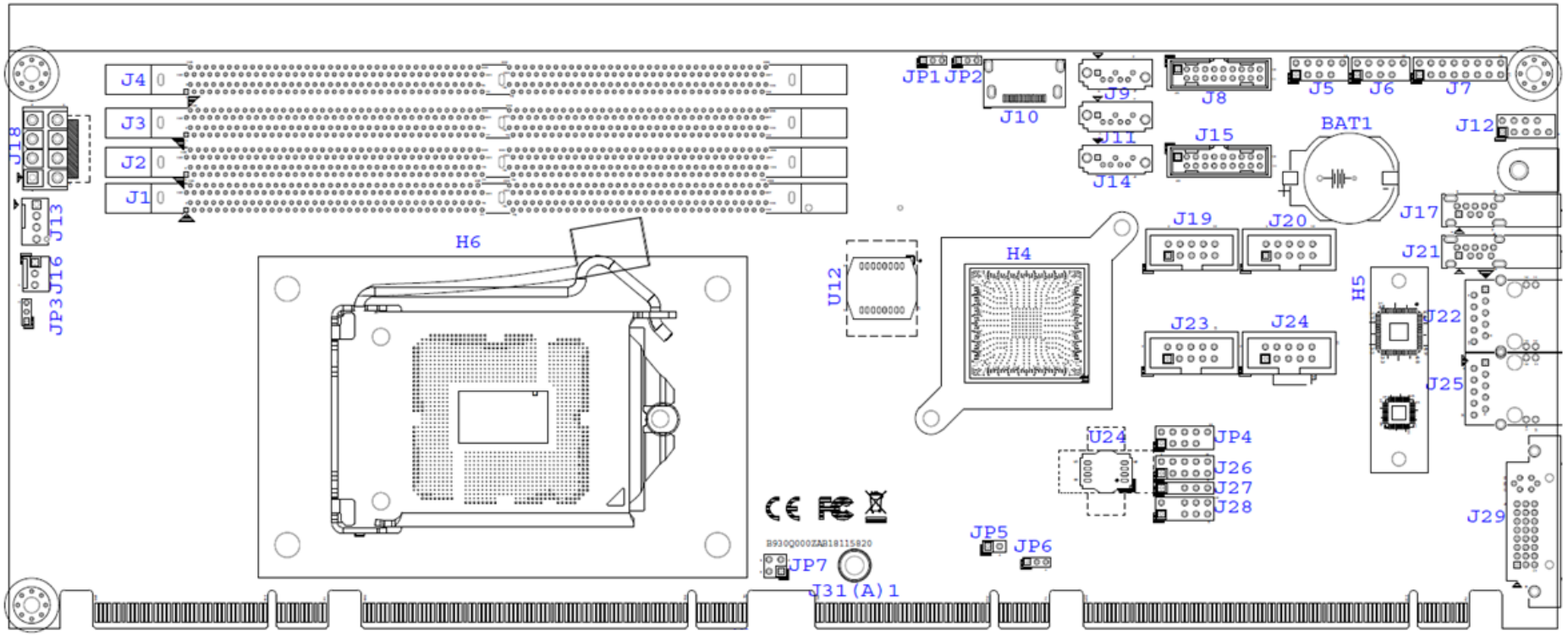
Block Diagram

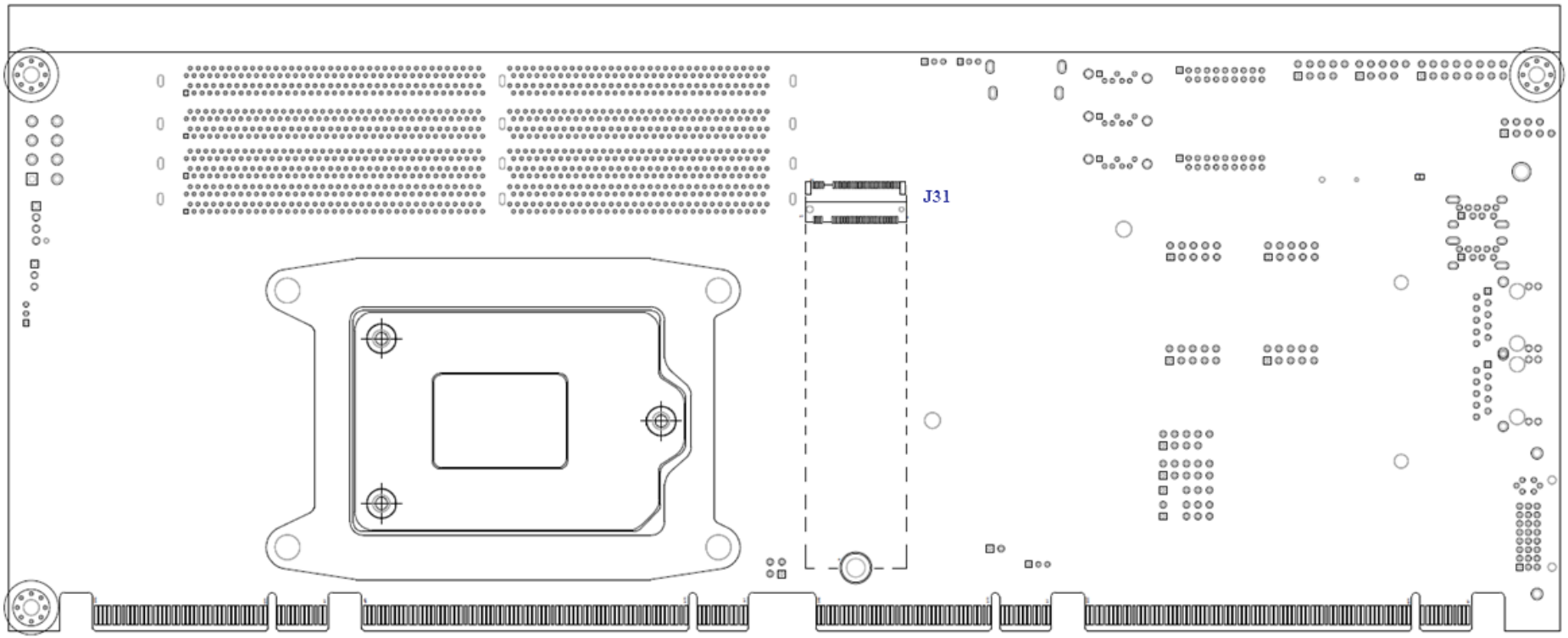


3 Hardware Configuration

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.





3.2 Jumpers Settings

For users to customize ROBO-8115VG2AR'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:

Jump Function List:

Jumper	Function	Remark
JP1	Clear CMOS setting	Pitch 2.0mm
JP2	Reserve	
JP3	Reserve for IMVP8 PWM program	
JP4	LPC pin header	
JP6	ATX/AT Select Pin	Pitch 2.0mm
JP7	PCI-EX16 Configuration select	Pitch 2.54mm

JP1: CMOS Setup(Pitch 2.0mm)

PIN No.	Description
1-2	★Normal
2-3	Clear CMOS

JP6: AT/ATX Mode Selection(Pitch 2.0mm)

PIN No.	Description
1-2(Short)	AT Mode
2-3(Short)	★ATX Mode

JP7: Configure PCIEX16,X8(Pitch 2.54mm): (Reserve)

PIN No.		Description
1-2	3-4	Configuration
Short	Short	1x8,2x4
Open	Short	Reserve
Close	Open	2x8
Open	Open	★1x16

3.3 Connector Settings

Connector Allocation

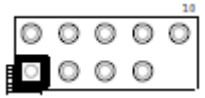
I/O peripheral devices are connected to the interface connectors

Connector Function List

Connector	Function	Remark
J1	DDR4 Long DIMM Channel A0.	
J2	DDR4 Long DIMM Channel A1	
J3	DDR4 Long DIMM Channel B0	
J4	DDR4 Long DIMM Channel B1	
J5	USB2.0 Connector	Pitch 2.54mm
J6	USB2.0 Connector.	Pitch 2.54mm
J7	Front panel Connector.	
J8	USB2.0/3.0 connector	
J9	SATA Connector.	
J10	HDMI Connector.	
J11	SATA Connector.	
J12	Audio Pin Header	
J13	CPU FAN Connector.	

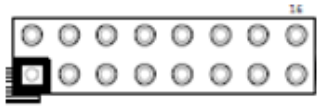
J14	SATA Connector	
J15	USB2.0/3.0 connector.	
J16	System FAN Connector	
J17	USB2.0/3.0 connector(D-Sub).	
J18	ATX 8 Pin Connector(For CPU Power).	
J19	COM1 Pin Header.	
J20	COM2 Pin Header.	
J21	USB2.0/3.0 connector(D-Sub).	
J22	RJ45 Connector for I210.	
J23	COM4 Pin Header.	
J24	COM3 Pin Header.	
J25	RJ45 Connector for I219.	
J26	GPIO Pin Header.	
J27	SM Bus Pin Header.	
J28	PS2 KB/MS Pin Header.	
J29	DVI-I(DSUB).	
J31	M.2 Connector.	

J5/J6: USB2.0 Connector(Pitch 2.54mm)



PIN No.	Description	PIN No.	Description
1	5V_DUAL	2	5V_DUAL
3	USB2A_DN	4	USB2B_DN
5	USB2A_DP	6	USB2B_DP
7	GND	8	GND
9	NC(Key)	10	NC

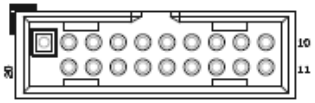
J7: Front Panel Connector(Pitch 2.54mm)



PIN No.	Description	PIN No.	Description
1	5VSB	2	VCC
3	SUS_LED Signal	4	NC
5	VCC3_LAN Power	6	NC
7	I219 LINK/ACT Signal	8	BUZZER
9	I210 LED Signal	10	Ground
11	VCC3_LAN Power	12	Power Button Signal

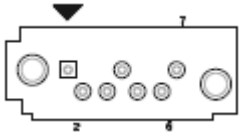
13	VCC3	14	Reset Signal
15	SATA LED Signal	16	Ground

J8/J15: USB2.0/3.0 connector(Pitch 2.0mm):



PIN No.	Description	PIN No.	Description
1	5V_Dual		
2	USB3.0_RX_N	19	5V_Dual
3	USB3.0_RX_P	18	USB3.0_RX_N
4	Ground	17	USB3.0_RX_P
5	USB3.0_TX_N	16	Ground
6	USB3.0_TX_P	15	USB3.0_TX_N
7	Ground	14	USB3.0_TX_P
8	USB2.0_N	13	Ground
9	USB2.0_P	12	USB2.0_N
10	Ground	11	USB2.0_P

J9/J11/J14: SATA Connector

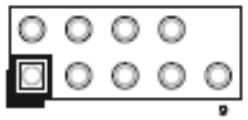


PIN No.	Description
1	Ground
2	TX_P
3	TX_N
4	Ground
5	RX_N
6	RX_P
7	Ground

J10: HDMI Connector

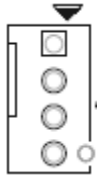
PIN No.	Description	PIN No.	Description
1	HDMI_D0_P	2	GND
3	HDMI_D0_N	4	HDMI_D1_P
5	GND	6	HDMI_D1_N
7	HDMI_D2_P	8	GND
9	HDMI_D2_N	10	HDMI_D3_P
11	GND	12	HDMI_D3_N
13	N/C	14	N/C
15	HDMI_DDC_CLK	16	HDMI_DDC_DATA
17	GND	18	5V_HDMI
19	HDMI_HPD		

J12: Audio Pin Header(Pitch 2.54mm)



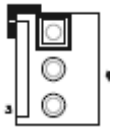
PIN No.	Description	PIN No.	Description
1	MIC_IN	2	Ground
3	LINE_IN_L	4	Ground
5	LINE_IN_R	6	Ground
7	AUDIO_OUT_L	8	Ground
9	AUDIO_OUT_R	10	Ground

J13:CPU FAN Connector(Pitch 2.54mm)



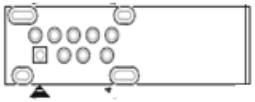
PIN No.	DESCRIPTION
1	GND
2	+12V
3	FAN_IN
4	FAN_OUT

J16:SYSTEM FAN Connector(Pitch 2.54mm)



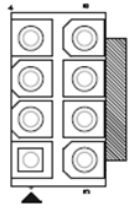
PIN No.	Description
1	GND
2	+12V
3	FAN_IN

J17/J21: USB2.0/3.0 connector(D-Sub)



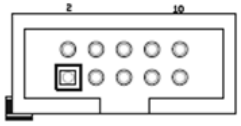
PIN No.	Description
1	5VDUAL
2	USB2_N
3	USB2_P
4	GND
5	USB_RX_N
6	USB_RX_P
7	GND
8	USB3_TX_N
9	USB3_TX_P

J18: ATX 8 Pin Connector(For CPU Power)



PIN No.	Description	PIN No.	Description
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

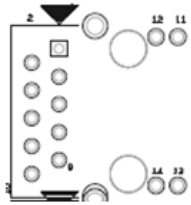
J19/J20/J23/J24: COM1/COM2/COM3/COM4 Pin Header(Pitch 2.54mm)



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

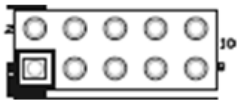
Note:COM3/COM4 with BIOS set for RS232/RS422/RS485

J22/J25: LAN(RJ45)



PIN No.	Description	PIN No.	Description
1	MDIO_P	2	MDIO_N
3	MDI1_P	4	MDI1_N
5	LAN_CT1	6	LAN_CT2
7	MDI2_P	8	MDI2_N
9	MDI3_P	10	MDI3_N
11	LED_100	12	LED_1000
13	LED_LINK#/ACT#	14	ACT_LED

J26: GPIO Pin Header(Pitch 2.54mm)

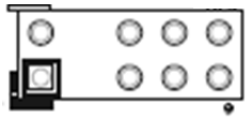


PIN No.	Description	PIN No.	Description
1	GPIO_0	2	GPIO_4
3	GPIO_1	4	GPIO_5
5	GPIO_2	6	GPIO_6
7	GPIO_3	8	GPIO_7
9	Ground	10	VCC

J27: SM BUS Pin Header(Pitch 2.54mm)

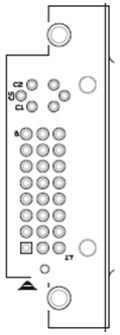
PIN No.	Description
1	SM_CLK
2	NC(Key)
3	GND
4	SM_DATA
5	+5V

J28: PS2 KB/MS Pin Header(Pitch 2.54mm)



PIN No.	Description	PIN No.	Description
1	Mouse Data	2	Keyboard Data
3	NC	4	NC
5	Ground	6	Ground
7	5V_Dual	8	5V_Dual
9	Mouse Clock	10	Keyboard Clock

J29: DVI-I(D-SUB)



PIN No.	Description	PIN No.	Description
1	DVI_D2_N	16	DVI_HPD
2	DVI_D2_P	17	DVI_D0_N
3	GND	18	DVI_D0_P
4	N/C	19	GND
5	N/C	20	N/C
6	DDC_CLK	21	N/C
7	DDC_DATA	22	GND
8	VSNC	23	DVI_CLK_P
9	DVI_D1_N	24	DVI_CLK_N
10	DVI_D1_P	C1	RED
11	GND	C2	GREEN
12	N/C	C3	BLUE
13	N/C	C4	HYSNC
14	DVI_VCC	C5	GND
15	GND	C6	GND

J31: M.2 KEY-M slot

PIN No.	Description	PIN No.	Description
1	GND	2	3.3V
3	GND	4	3.3V
5	RX3_N	6	N/C
7	RX3_P	8	N/C
9	GND	10	LED#
11	TX3_N	12	3.3V
13	TX3_P	14	3.3V
15	GND	16	3.3V
17	RX2_N	18	3.3V
19	RX2_P	20	N/C
21	GND	22	N/C
23	TX2_N	24	N/C
25	TX2_P	26	N/C
27	GND	28	N/C
29	RX1_N	30	N/C
31	RX1_P	32	N/C
33	GND	34	N/C
35	TX1_N	36	N/C

37	TX1_P	38	DEVSLP
39	GND	40	N/C
41	RX0_N/SATA_B+	42	N/C
43	RX0_P/SATA_B-	44	N/C
45	GND	46	N/C
47	TX0_N/SATA_A-	48	N/C
49	TX0_P/SATA_A+	50	PERST#
51	GND	52	CLKREQ#
53	CLK_N	54	PEWAKE#
55	CLK_P	56	N/C
57	GND	58	N/C
59	KEY-M	60	KEY-M
61	KEY-M	62	KEY-M
63	KEY-M	64	KEY-M
65	KEY-M	66	KEY-M
67	N/C	68	SUSCLK
69	PEDET	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND	76	

4 Signal Descriptions

4.1 Watch Dog Signal

```
#include <stdio.h>
#include <unistd.h>
#include <stdint.h>
#include <sys/io.h>

#define EC_IOSpace 0xE300    // EC IO Space Base Addr = 0xE000
                             // EC Internal Offset = 0x300
                             // EC IO Address = Base Addr + Internal offset

#define WDTCFG               0x06      // WDT Timer Coutrol Register
                             // Bit 6: Write 1 to clear WDT pin event (COMe Only)
                             // Bit 4: 1: Driving WDT pin to Carrier (COMe Only)
                             //        0: System Reset
                             // Bit 1: 1: Min Mode
                             //        0: Second Mode
                             // Bit 0: 1: Enable WDT
#define WDTMIN               0x07      // WDT Timer Counter Register (Minute)
#define WDTSEC               0x08      // WDT Timer Counter Register (Second)
```

```
int Read_EC_SRAM(int offset)
{
        int Temp;
        Temp = inb_p(EC_IOSpace+offset);
        return Temp;
}

void Write_EC_SRAM(int offset, int value)
{
      outb_p(value,EC_IOSpace+offset);
}

//---------------------------------
// Reset WDT pin status
//---------------------------------
int WDT_Reset()
{
      int Temp;

      Temp = Read_EC_SRAM(WDTCFG);
      Write_EC_SRAM(WDTCFG,(Temp|0x40));    // Bit 6: Write 1 to clear WDT pin event
}
```

```
//--------------------------------
// Main Function
//--------------------------------
int main (int argc, char ** argv)
{
	int Temp;

	// Initial
	if(iopl(3)!=0){
		printf("error: I/O Permission Error!\n");
		return 1;
	}

	// Enable WDT 10min, 20sec
	Write_EC_SRAM(WDTSEC,5);			// 5 Sec
	Write_EC_SRAM(WDTMIN,1);			// 1 min

	// Enable WDT 5sec and WDT pin mode
	Temp = Read_EC_SRAM(WDTCFG);
	Write_EC_SRAM(WDTCFG,(Temp|0x13));	// Bit4: 1: Driving WDT pin
						// BIT1: 1: Minute Mode
						// Bit0: 1: Enable WDT
```

```
        // Check Current WDT status
        while((Read_EC_SRAM(WDTCFG)&0x01) != 0)
        {
                printf("WDT Counting: %d M., %d S!\n",Read_EC_SRAM(WDTMIN),Read_EC_SRAM(WDTSEC));
        }
}
```

4.2 GPIO Signal

```
#include <stdio.h>
#include <unistd.h>
#include <stdint.h>
#include <sys/io.h>

#define EC_IOSpace 0xE300    // EC IO Space Base Addr = 0xE000
                             // EC Internal Offset = 0x300
                             // EC IO Address = IO Space Base Addr + Internal offset

#define GPCR 0x2B  // GPIO Coutrol Register, Bit7 = GPO3, Bit6 = GPO2, ...,
                             //                        Bit3 = GPI3, Bit2 = GPI2, ...,
                             // 0: Output; 1: Input

#define GPDR 0x2C  // GPIO Status Register, Bit7 = GPO3, Bit6 = GPO2, ...,
                             //                       Bit3 = GPI3, Bit2 = GPI2, ...,
                             // 0: Low; 1: High
int Read_EC_SRAM(int offset)
{
        int Temp;
        Temp = inb_p(EC_IOSpace+offset);
        return Temp;
}
```

```
void Write_EC_SRAM(int offset, int value)
{
	outb_p(value,EC_IOSpace+offset);
}

int main (int argc, char ** argv)
{
	int Temp;

	// Initial
	if(iopl(3)!=0){
		printf("error: I/O Permission Error!\n");
		return 1;
	}
	// Get GPI status
	Temp = Read_EC_SRAM(GPDR);			//Bit3-0: GPI3-0 status

	// Set GPO4 Output & High
	Temp = Read_EC_SRAM(GPDR);
	Write_EC_SRAM(GPDR,Temp|0x80);		//Bit7-4: Set GPO3-0 status, 0: Low 1: High

	return 0;
```

```
}
```

5 System Resources

5.1 Intel® Comet lake-S PCH

Intel® Q470E Chipset
Intel® W480E Chipset

5.2 Main Memory

ROBO-8115VG2AR provides 4 x 288-pin LONG-DIMM sockets which supports DDR4 ECC/non-ECC memory. The maximum memory can be up to 128GB. 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-8115VG2AR 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-8115VG2AR 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-8115VG2AR is based on Intel® Q470E/W480E chipset and desktop/workstation processors including Xeon W series /Core™i9 / 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-8115VG2AR CD-title

5.3.2 Intel® HD Graphics 630

ROBO-8115VG2AR has integrated Intel® HD Graphics 630 which supports DirectX 12、OpenCL 2.0、OpenGL 4.5. It is the most advanced design to gain an outstanding graphic performance. ROBO-8115VG2AR supports VGA+DVI-D by DVI-I connector on bracket, and on board HDMI display output. This combination makes ROBO-8115VG2AR an excellent performance hardware.

Drivers Support

Please find the Graphic driver in the ROBO-8115VG2AR CD-title. The driver supports Windows 10.

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-8115VG2AR CD-title. The driver supports Windows 10.

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

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

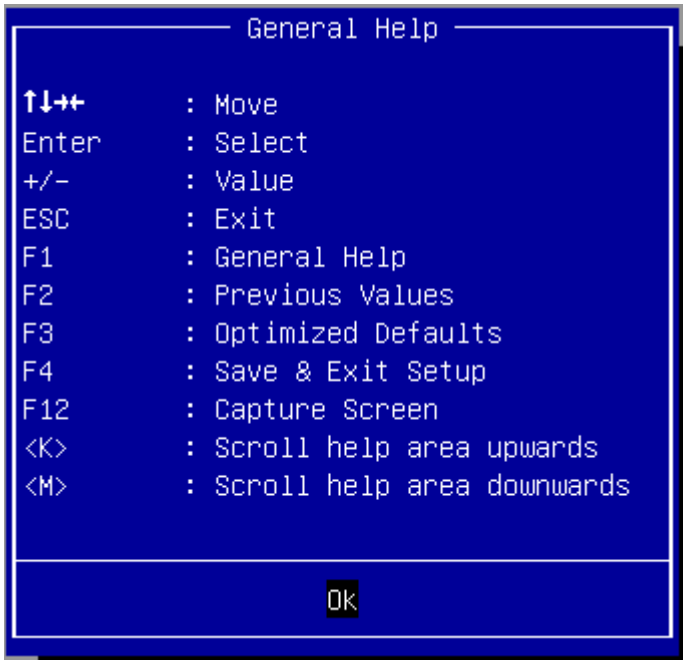
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

Press <ESC > or <Delete> 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.

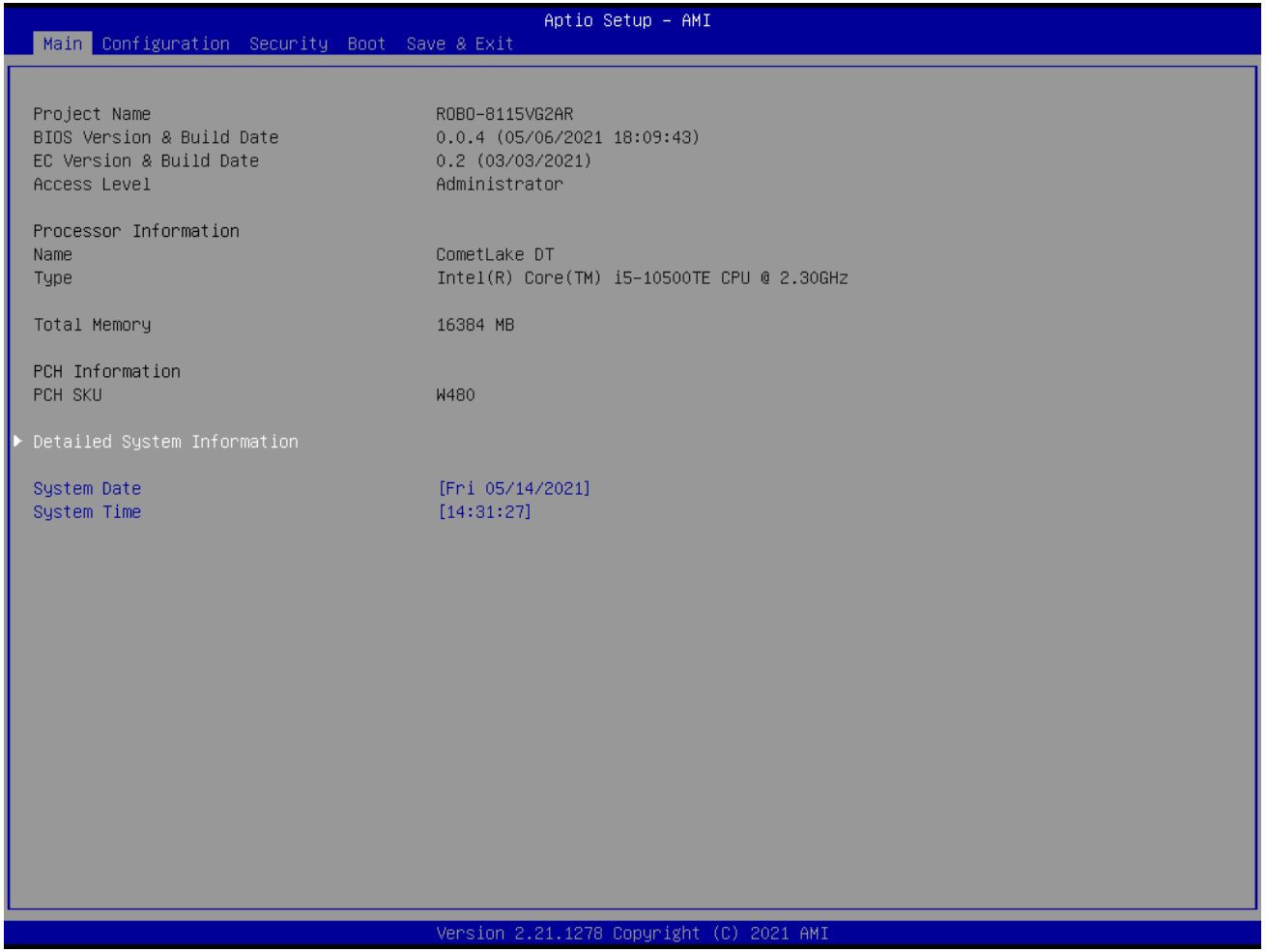
Press <F1> to Run General Help or Resume

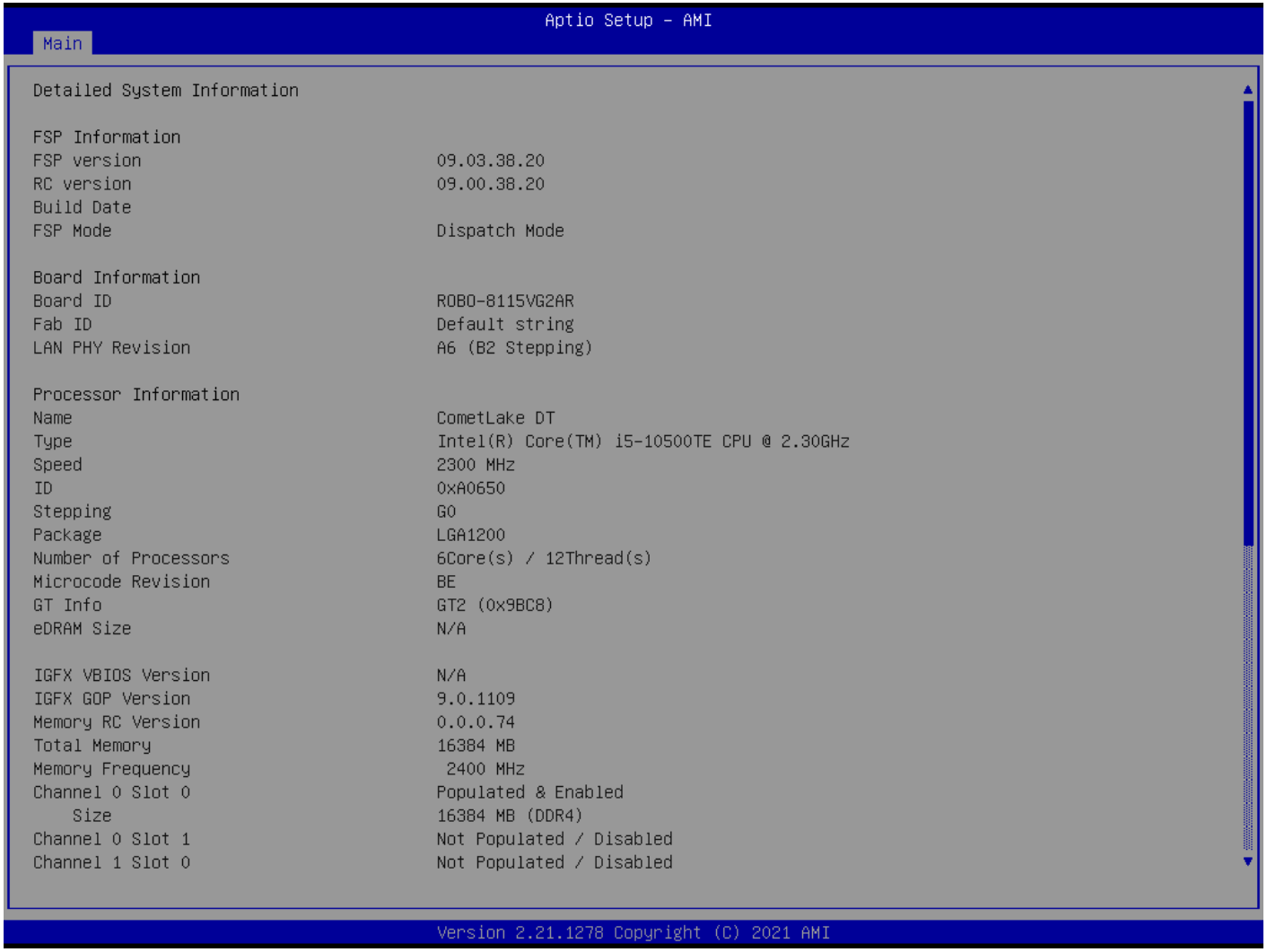
The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help Screen.

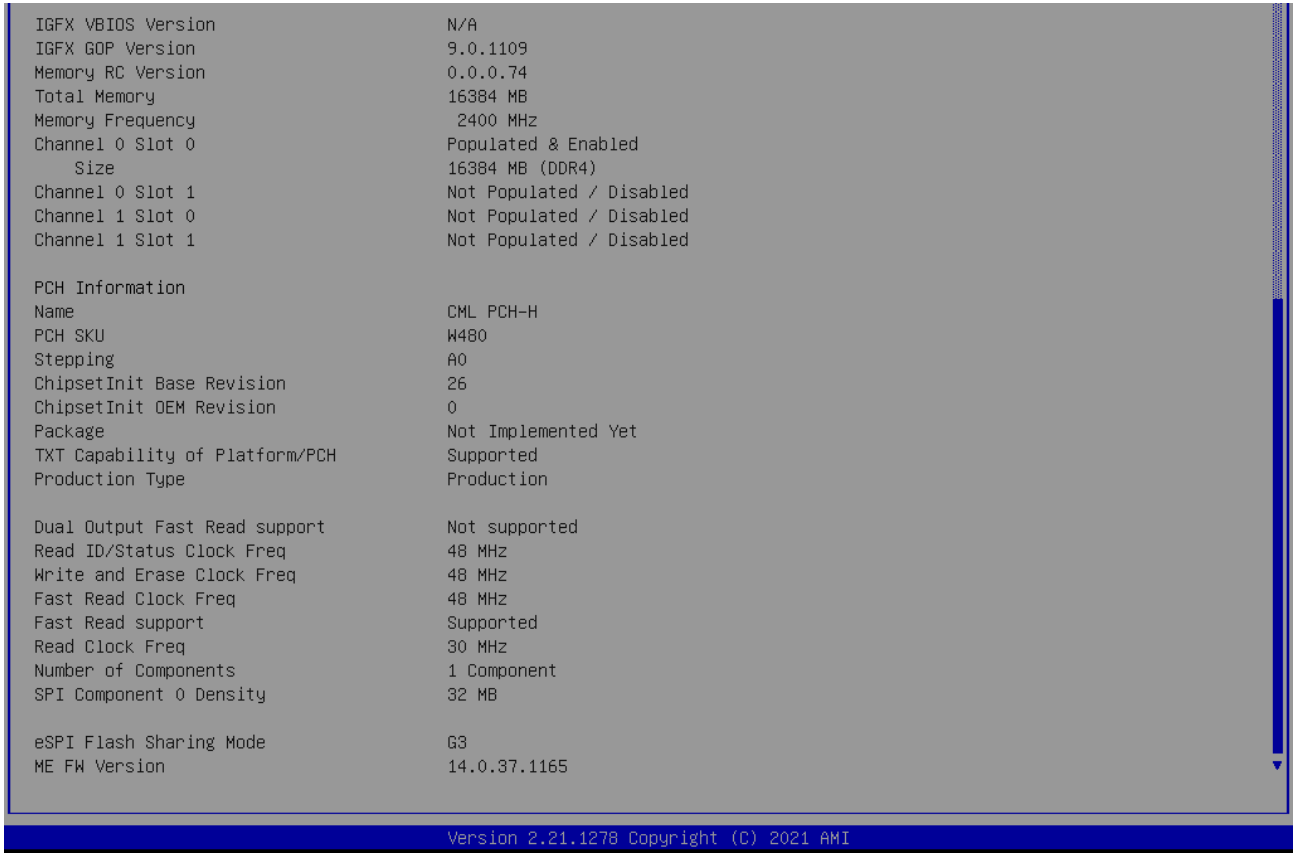

General Help
↑↓→← : Move
Enter : Select
+/- : Value
ESC : Exit
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit Setup
F12 : Capture Screen
<K> : Scroll help area upwards
<M> : Scroll help area downwards
Ok

6.2.1 Main

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



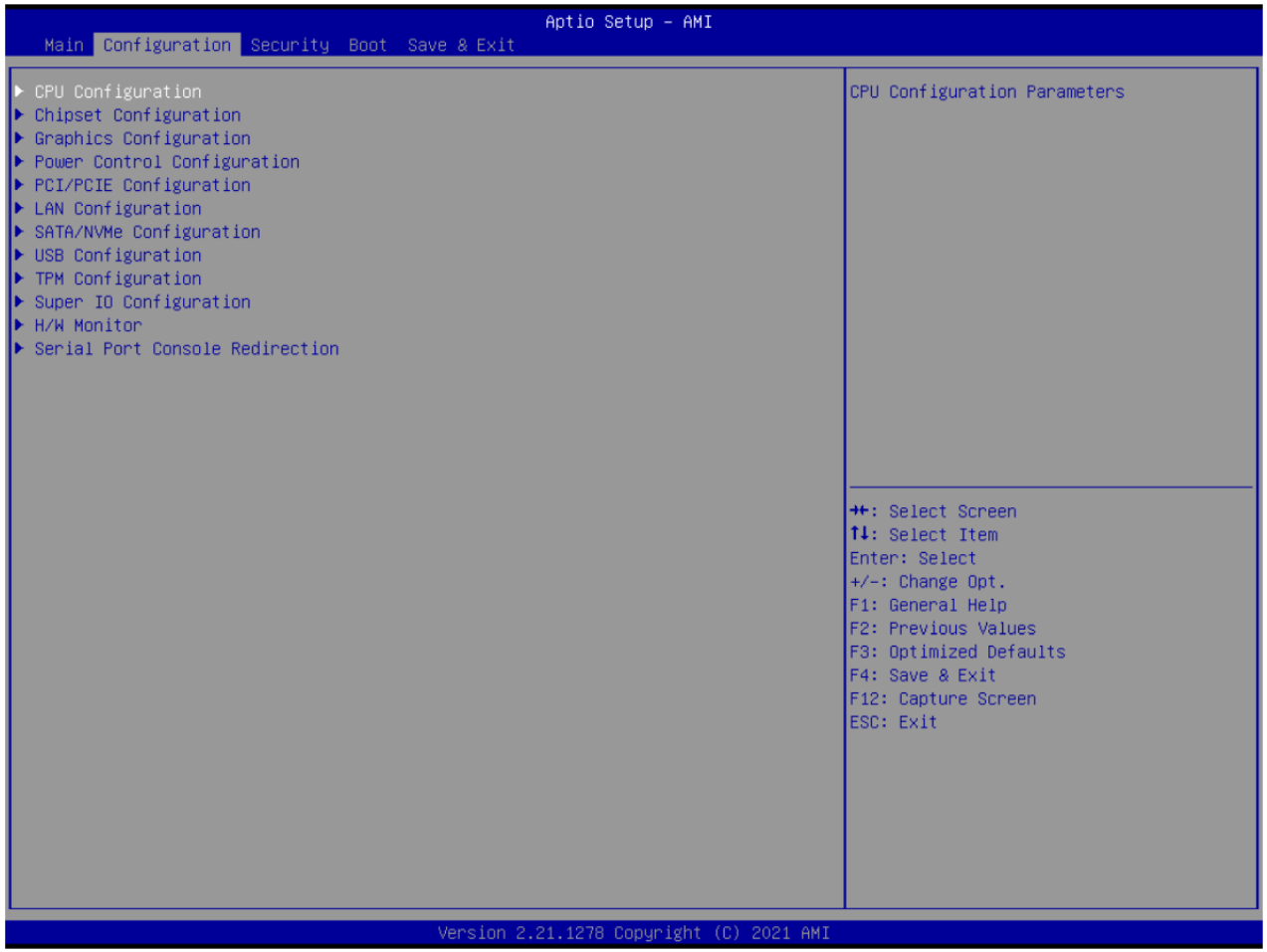

Aptio Setup – AMI
Main
Detailed System Information
FSP Information
FSP version 09.03.38.20
RC version 09.00.38.20
Build Date
FSP Mode Dispatch Mode
Board Information
Board ID ROBO-8115VG2AR
Fab ID Default string
LAN PHY Revision A6 (B2 Stepping)
Processor Information
Name CometLake DT
Type Intel(R) Core(TM) i5-10500TE CPU @ 2.30GHz
Speed 2300 MHz
ID 0xA0650
Stepping G0
Package LGA1200
Number of Processors 6Core(s) / 12Thread(s)
Microcode Revision BE
GT Info GT2 (0x9BC8)
eDRAM Size N/A
IGFX VBIOS Version N/A
IGFX GOP Version 9.0.1109
Memory RC Version 0.0.0.74
Total Memory 16384 MB
Memory Frequency 2400 MHz
Channel 0 Slot 0 Populated & Enabled
Size 16384 MB (DDR4)
Channel 0 Slot 1 Not Populated / Disabled
Channel 1 Slot 0 Not Populated / Disabled
Version 2.21.1278 Copyright (C) 2021 AMI



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

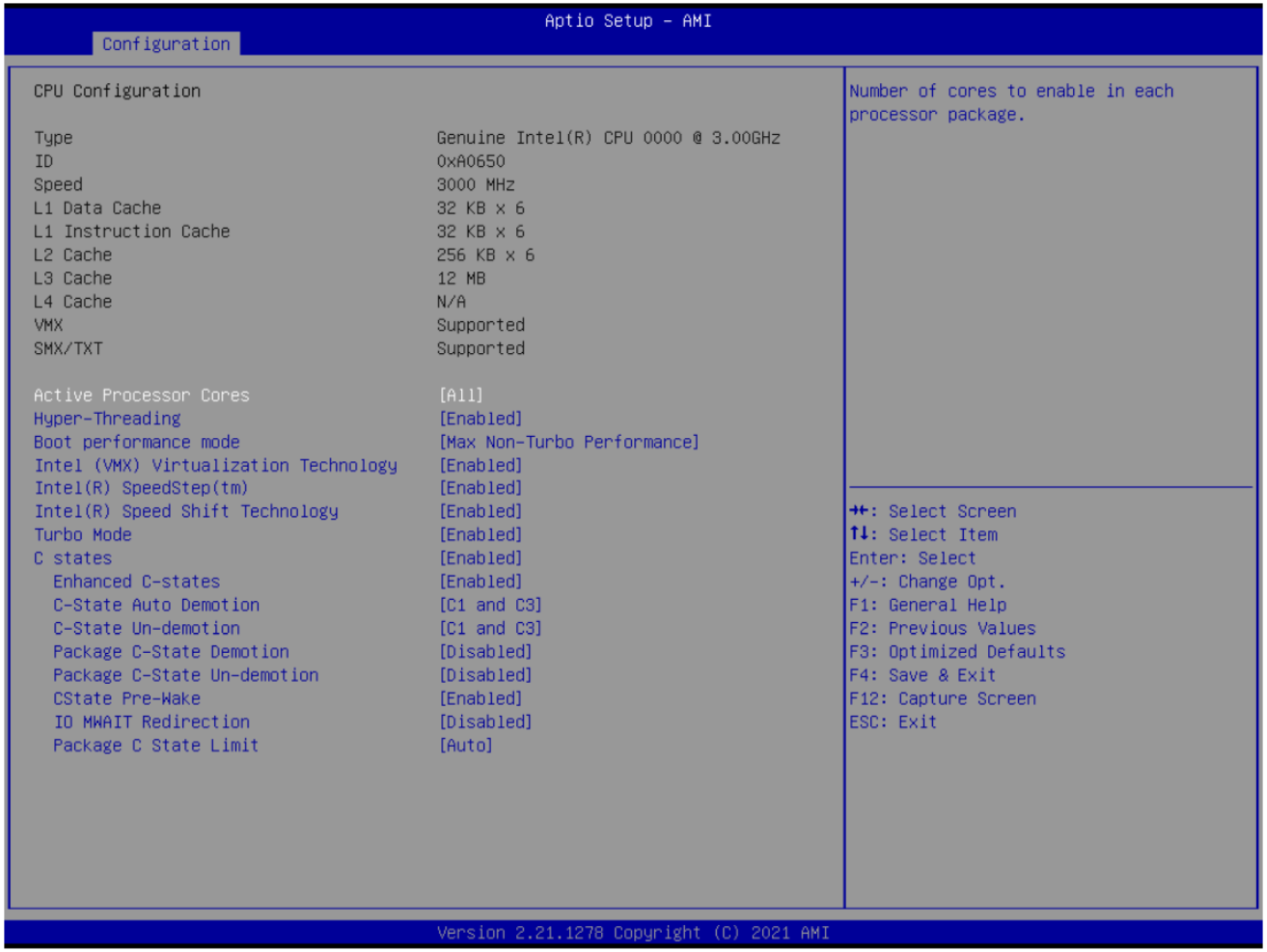
6.2.2 Configuration

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



CPU Configuration

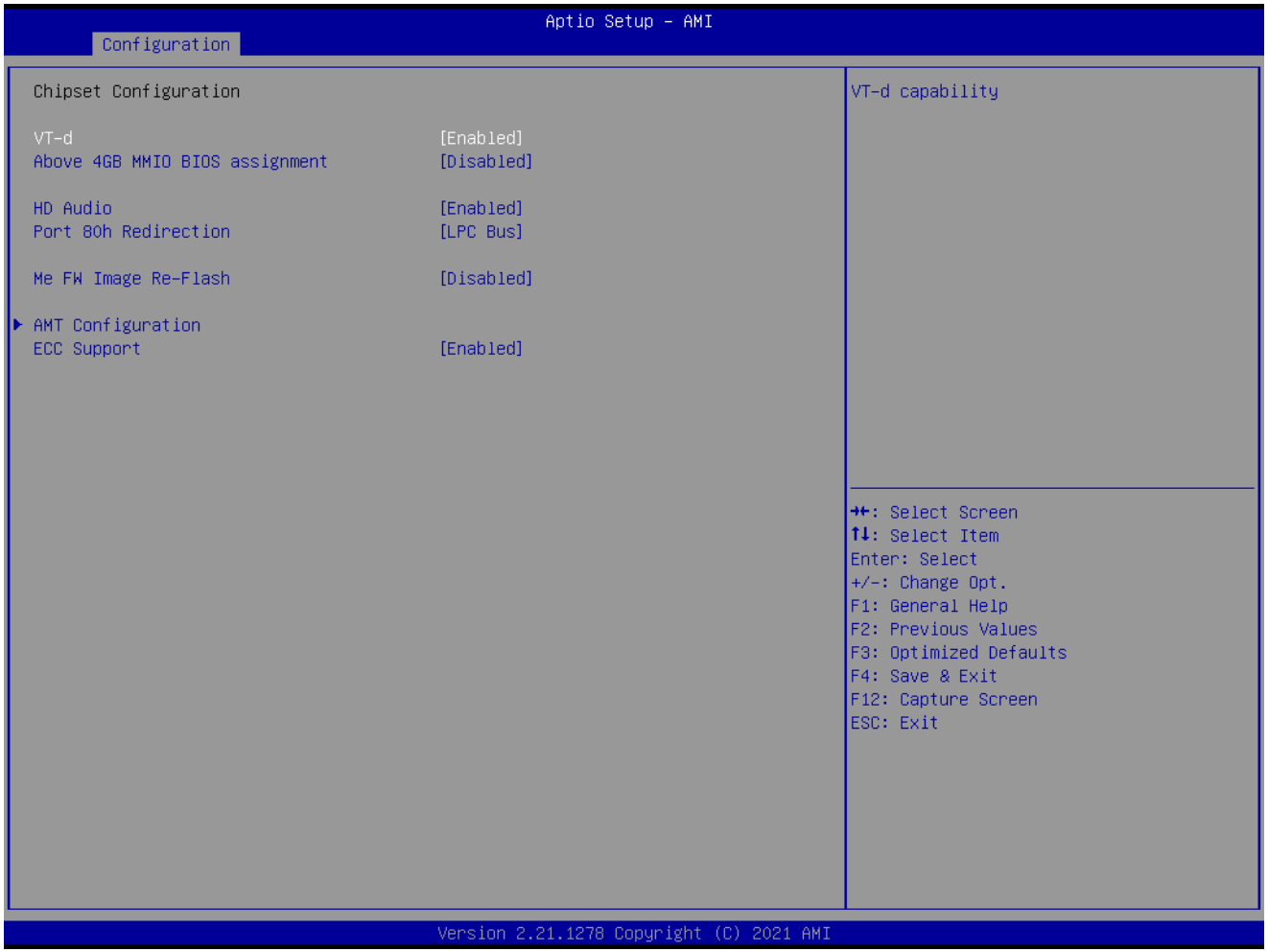
CPU Configuration Parameters



Feature	Description	Options
Active Processor Cores	Number of cores to enable in each processor package.	★All, 1, 2, 3,4,5
Hyper-Threading	Enable or Disable Hyper-Threading Technology	Disabled,★Enabled
Boot performance mode	Select the performance state that the BIOS will set starting from reset vector	Max Battery ★Max Non-Turbo Performance Turbo Performance
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology.	Disabled,★Enabled
Intel® Speed Step™	Allows more than two frequency ranges to be supported.	Disabled,★Enabled
Intel® Speed Shift Technology	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states	Disabled,★Enabled
Turbo Mode	Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled)	Disabled,★Enabled
C states	Enable/disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized	Disabled,★Enabled
Enhanced C-states	Enable/Disable C1E.When enabled, CPU will switch to minimum speed when all cores enter C-state	Disabled,★Enabled
C-State Auto Demotion	Configure C-State Auto Demotion	Disable, C1 ,C3 ★C1 and C3
C-State Un-demotion	Configure C-State Un-demotion	Disable, C1 ,C3 ★C1 and C3
Package C State Demotion	Package C-State Demotion	★Disabled, Enabled
Package C State Un-demotion	Package C-State Un-demotion	★Disabled, Enabled
CState Pre-Wake	Disable – Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the Cstate Pre-Wake	Disabled,★Enabled
IO MWAIT Redirection	When set, will map IO_read instructions sent to IO registers PMG_IO_BASE_ADDRBASE+offset to MWAIT(offset)	★Disabled, Enabled
Package C State Limit	Maximum Package C State Limit Setting. Cpu Default: Leaves to Factory default value. Auto: Initializes to deepest available Package C States Limit	C0/C1,C2,C3,C6,C7,C7S,C8,C9,C10,Cpu Default,★Auto

Chipset Configuration

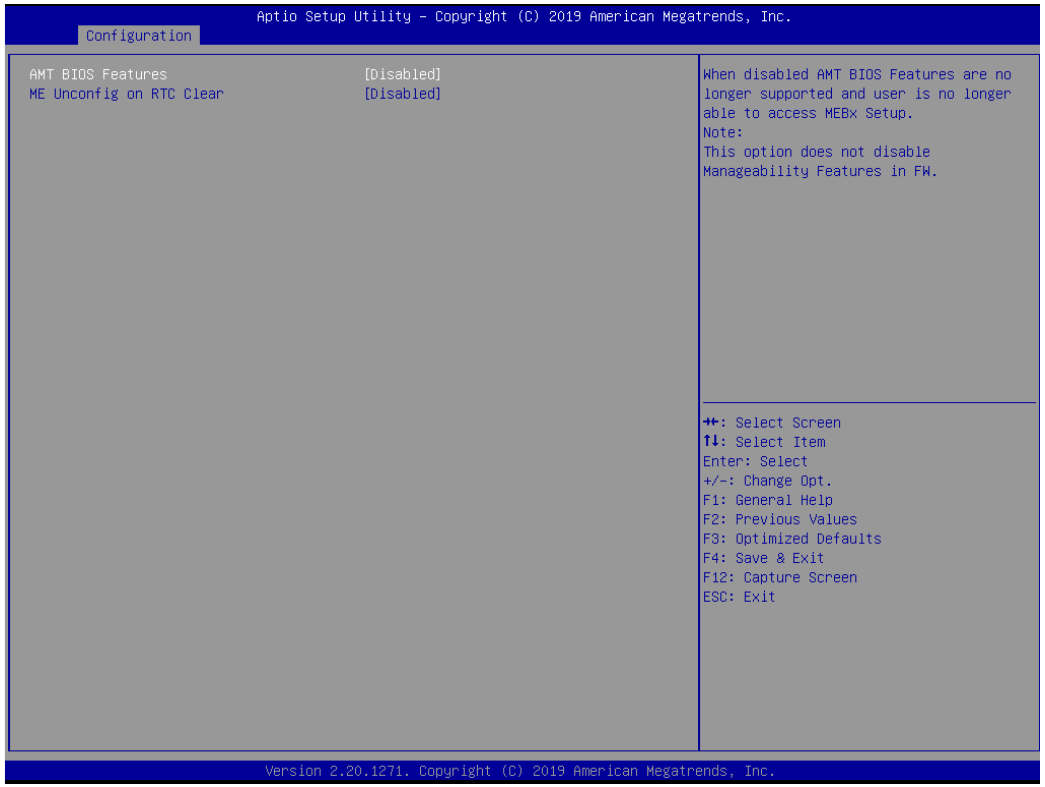
Configuration Chipset feature



Feature	Description	Options
VT-d	VT-d Capability	Disabled, ★Enabled
Above 4GB MMIO BIOS assignment	Enable/Disable above 4GB MemoryMappedIO BIOS assignment This is enabled automatically when Aperture Size is set to 2048MB	★Disabled, Enabled
HD Audio	Control Detection of the HD-Audio device	Disabled, ★Enabled
Port 80h Redirection	Control where the Port 80h cycles are sent	★LPC Bus, PCIE Bus
Me FW Image Re-Flash	Enable/Disable Me FW Image Re-Flash function.	★Disabled, Enabled
ECC Support	Enable/disable DDR ECC Support	Disabled, ★Enabled

AMT Configuration

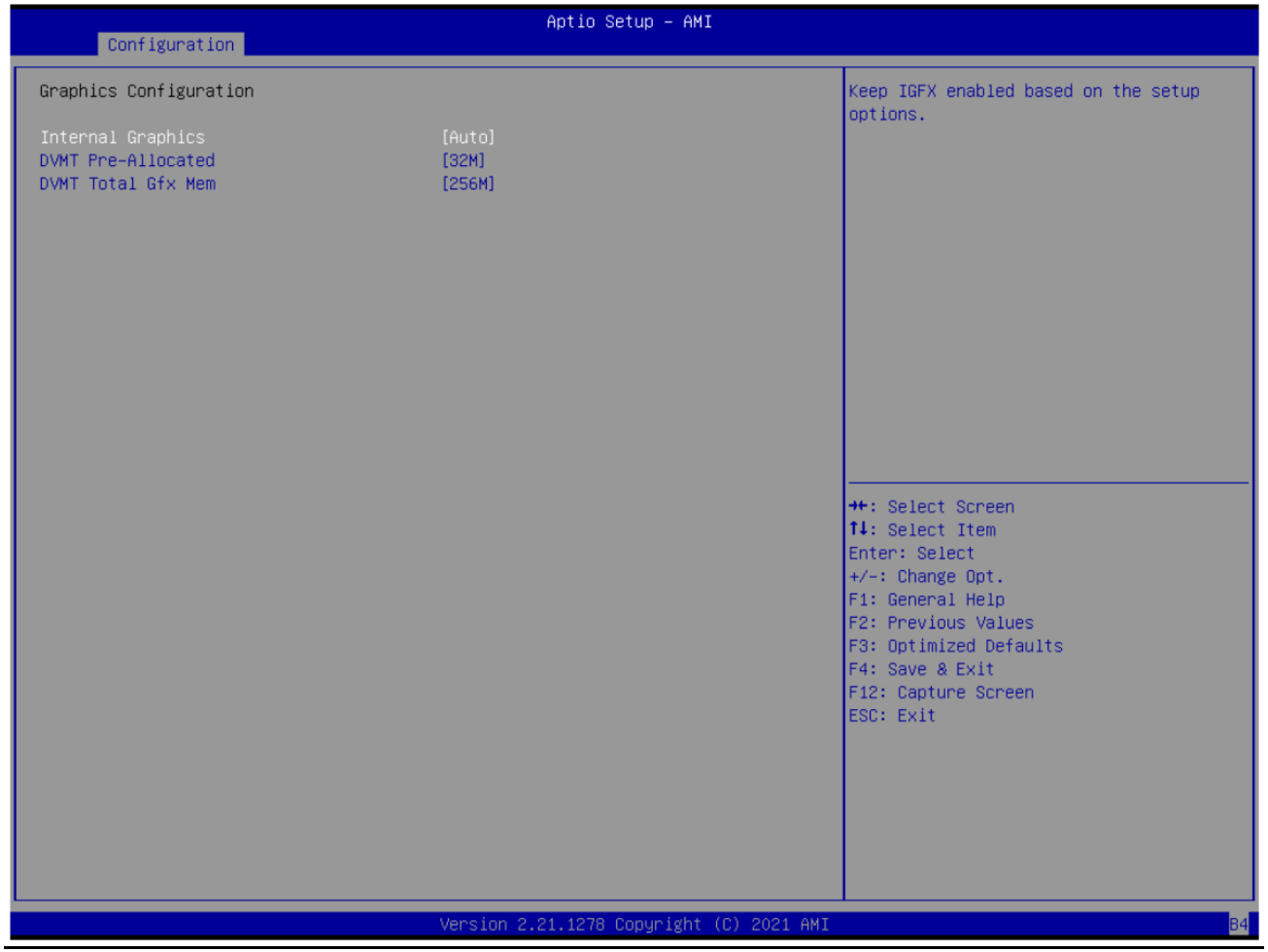
Configure Intel® Active Management Technology Parameters



Feature	Description	Options
AMT BIOS Features	When disable AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW	★Disabled, Enabled
ME Unconfig on RTC Clear	When Disable ME will not be unconfigured on RTC Clear	★Disabled, Enabled

Graphics Configuration

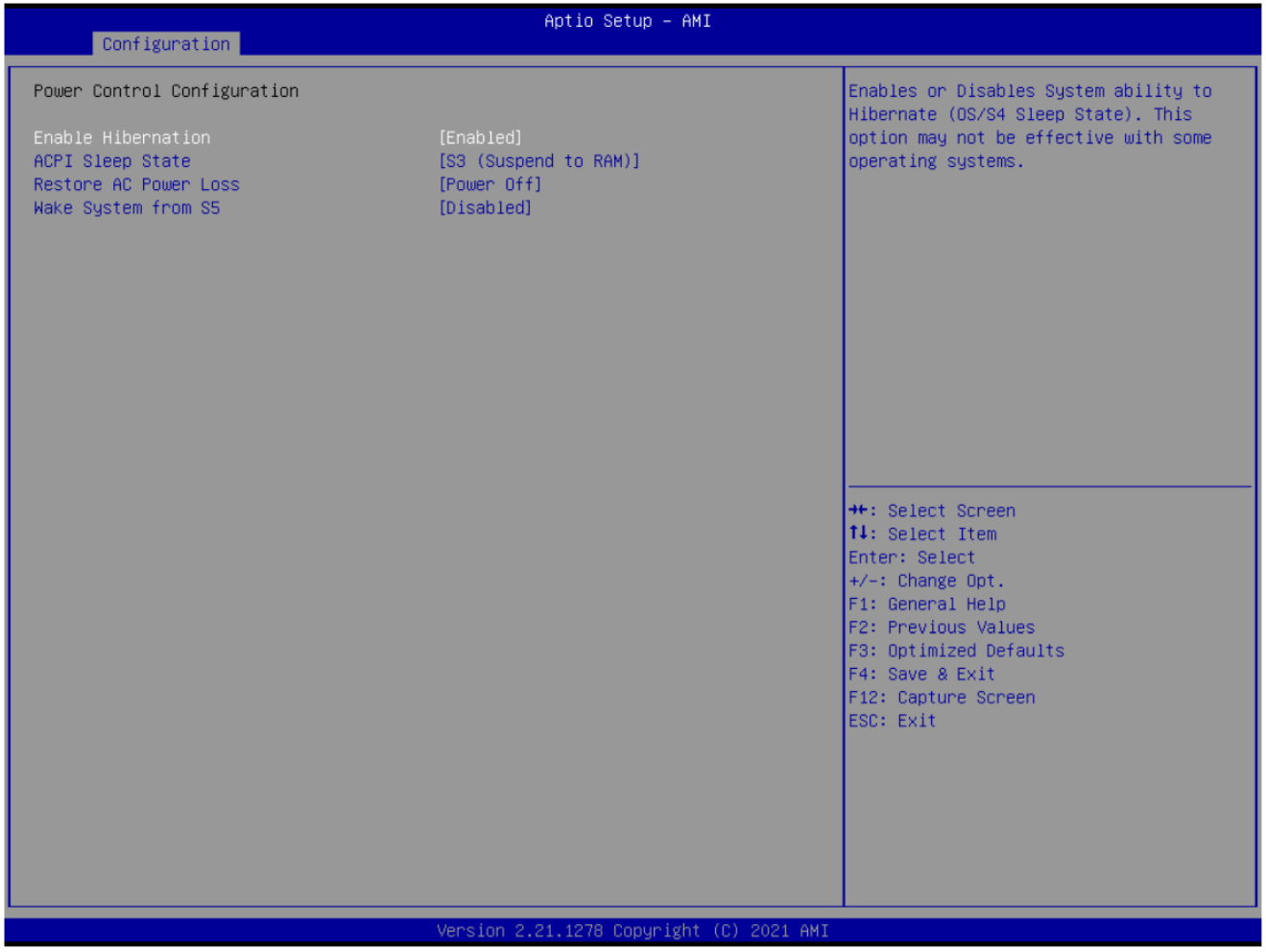
Configuration Graphics Settings



Feature	Description	Options
Internal Graphics	Keep IGFX enable based on the setup options.	★Auto, Disable, Enable
DVMT Pre-Allocated	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.	0M,★32M,64M,4M,8M,12M, 16M,20M,24M,28M,32M/F7,36M, 40M,44M,48M,52M,56M,60M
DVMT Total Gfx Mem	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device	★256M, 128M, MAX

Power Control Configuration

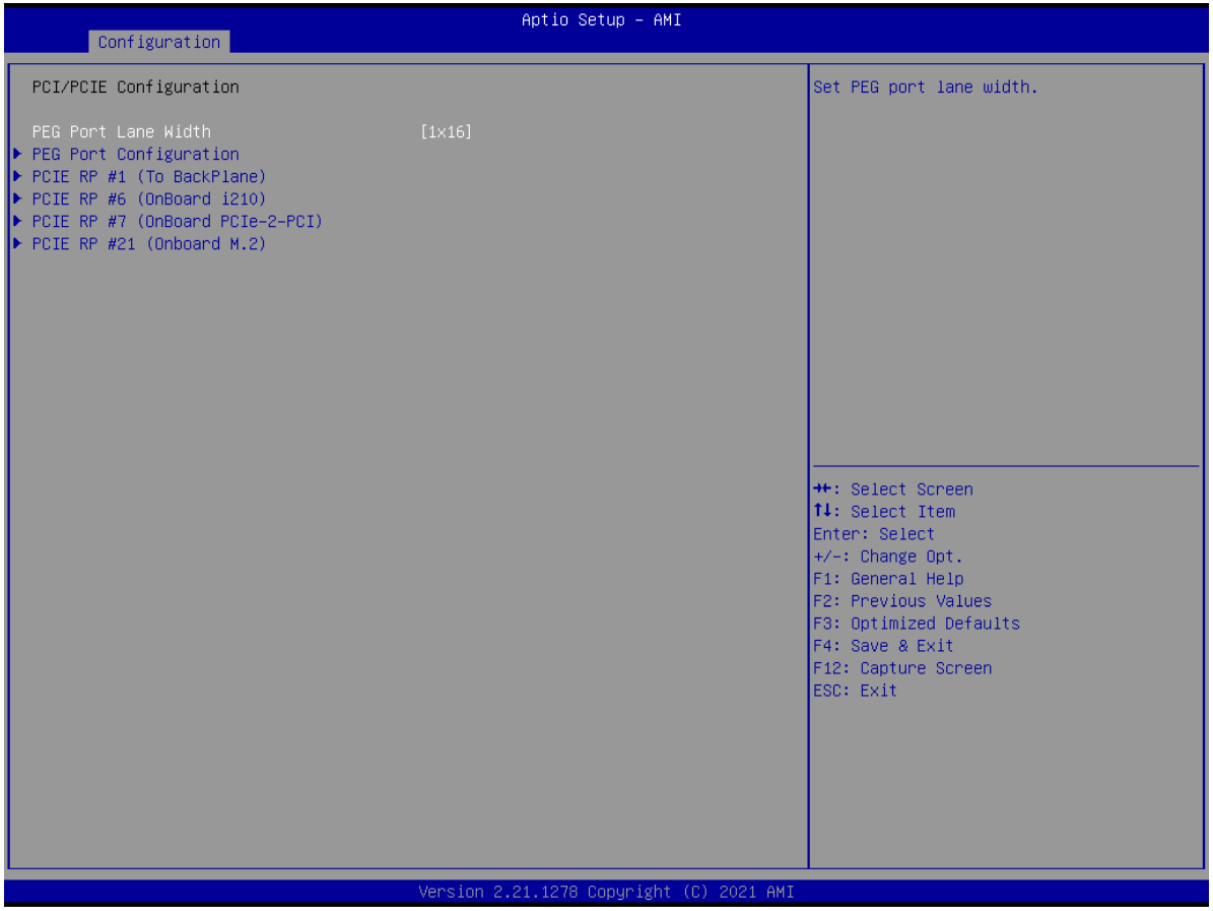
System Power Control Configuration Parameters



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, Last State
Wake System from S5	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec Specified/programmed by the Tools from OS	★Disabled, Enabled

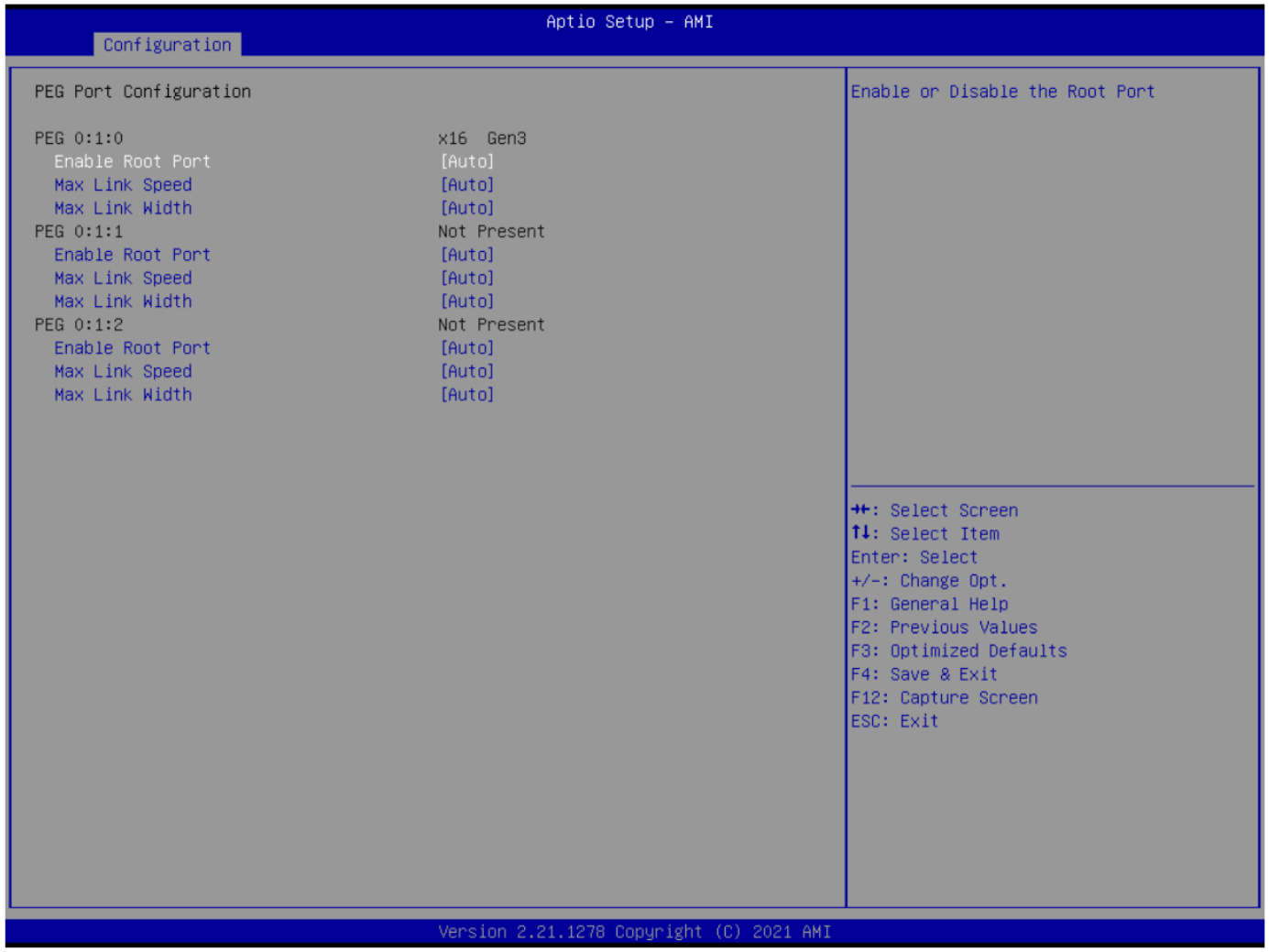
PCI/PCIE Configuration

PCI, PCI-X and PCI Express Settings



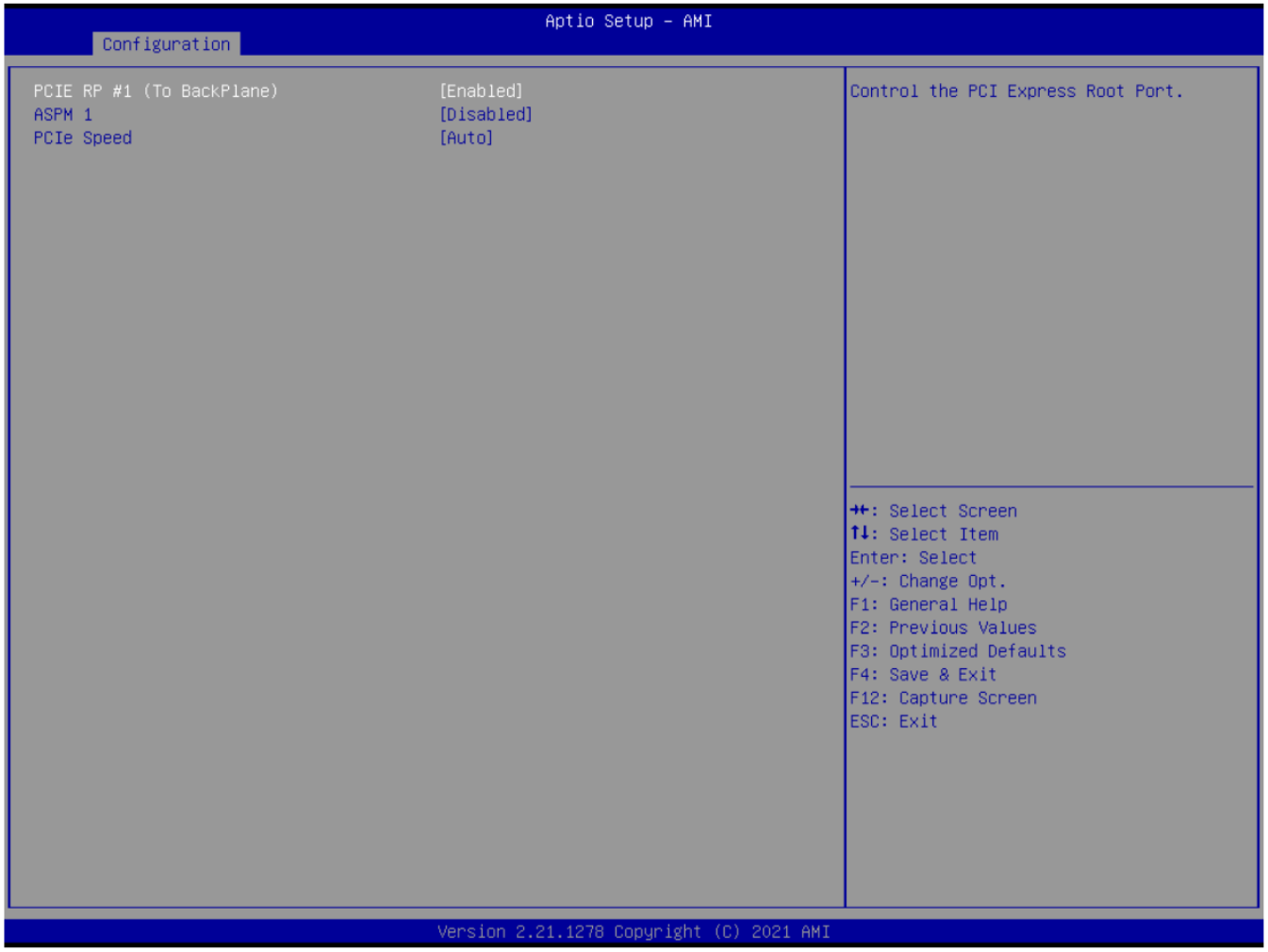
Feature	Description	Options
PEG Port Lane Width	Set PEG port Lane width	★1x16, 2x8,1x8. 2x4

PEG Port Configuration



Feature	Description	Options
Enable Root Port	Enable or Disable the Root Port	★AUTO, Disable, Enable
Max Link Speed	Confugure PEG 0:1:0 / 0:1:1 / 0:1:2 Max Speed	★AUTO, Gen1, Gen2, Gen3
Max Link Width	Force PEG link to retrain to x1/2/4/8	★AUTO, Force x1, Force x2, Force x4, Force x8,

PCIE RP #1(To BackPlane) / #6(Onboard I210) / #7(Onboard PCIe-2-PCI) / #21(Onboard M.2)



Feature	Description	Options
PCIE RP #1(To BackPlane) #6(Onboard I210) #7(Onboard PCIe-2-PCI) #21(Onboard M.2)	Control the PCI Express Root Port.	★Enabled , Disabled
ASPM 1/6/7/21	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

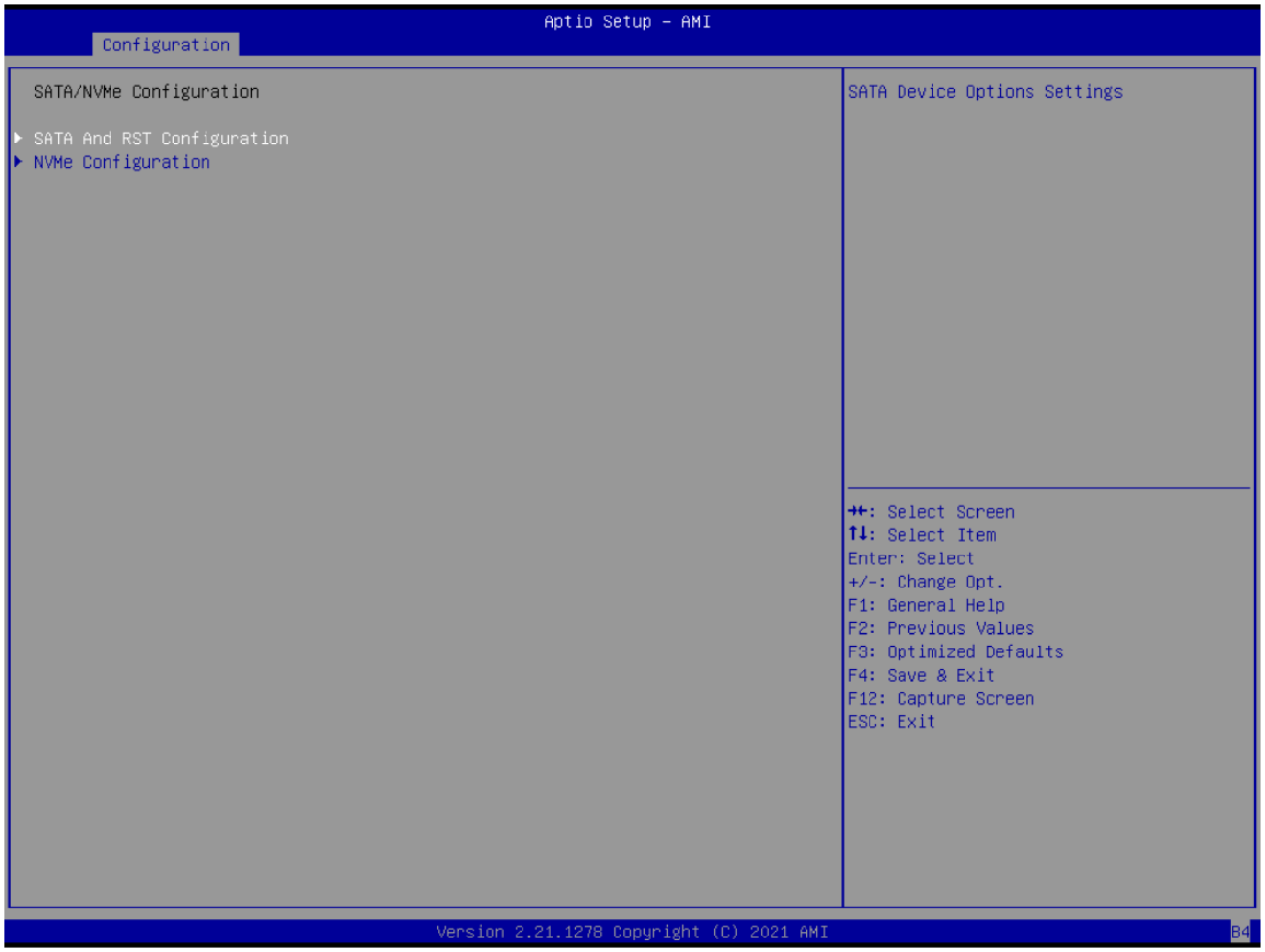
LAN Configuration

Configuration onboard LAN device.

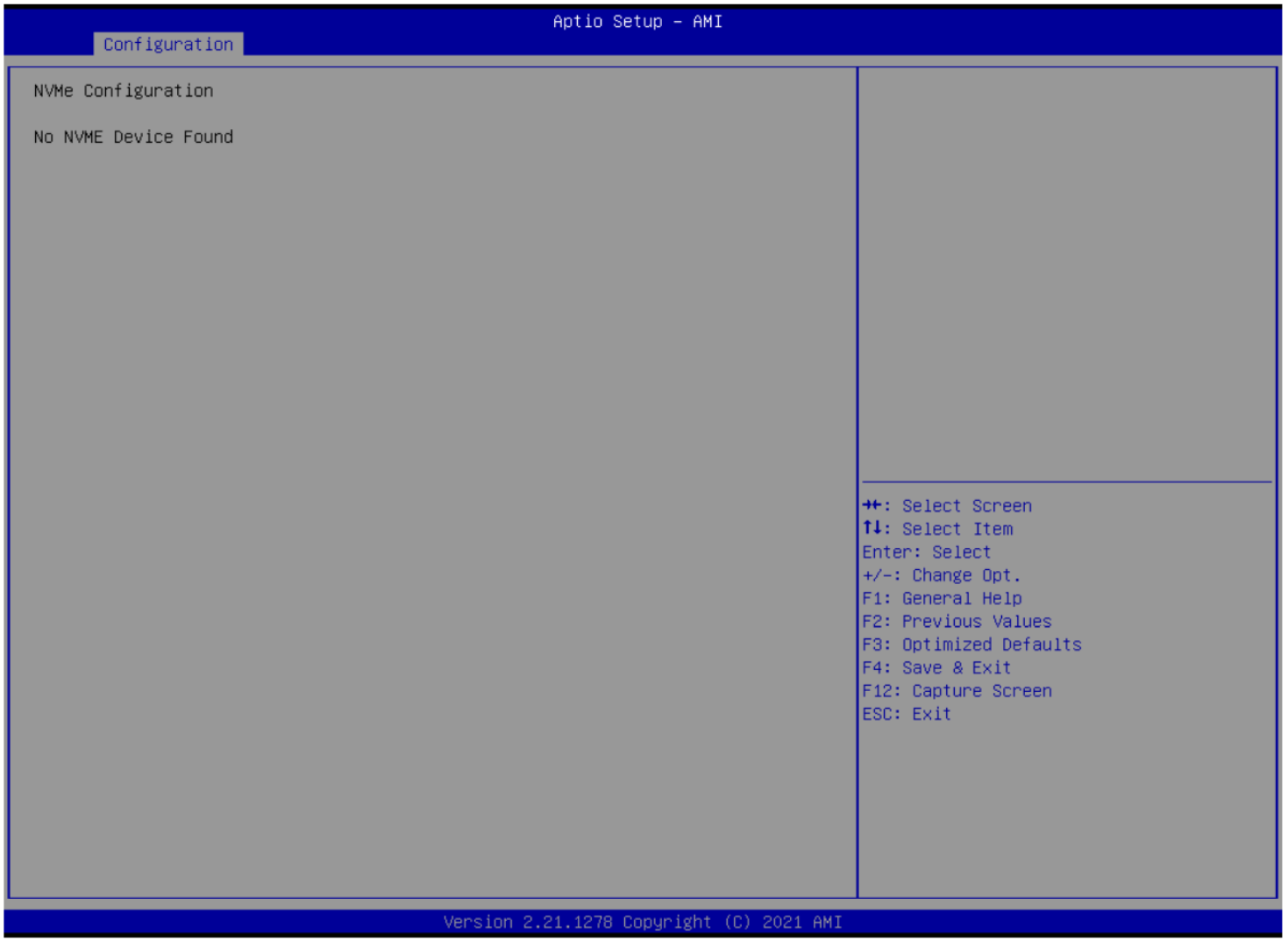
Feature	Description	Options
PCH LAN Controller	Enable or disable onboard NIC	★Enabled , Disabled
Wake on LAN	Enable or disable integrated LAN to wake the system.	★Enabled , Disabled
Launch UEFI PXE Rom	Enable/Disable UEFI Network Stack	★Disabled, Enabled
Ipv4 PXE Support	If disable, IPv4 PXE boot support will not be available.	Disabled, ★Enabled
Ipv4 HTTP Support	If disable, IPv4 HTTP boot support will not be available.	Disabled, ★Enabled
Ipv6 PXE Support	If disable, IPv6 PXE boot support will not be available.	Disabled, ★Enabled
Ipv6 HTTP Support	If disable, IPv6 HTTP boot support will not be available.	Disabled, ★Enabled
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot	★0
Media detect count	Number of times the presence of media will be checked	★1

SATA / NVMe Configuration

SATA / NVMe Device Options Settings



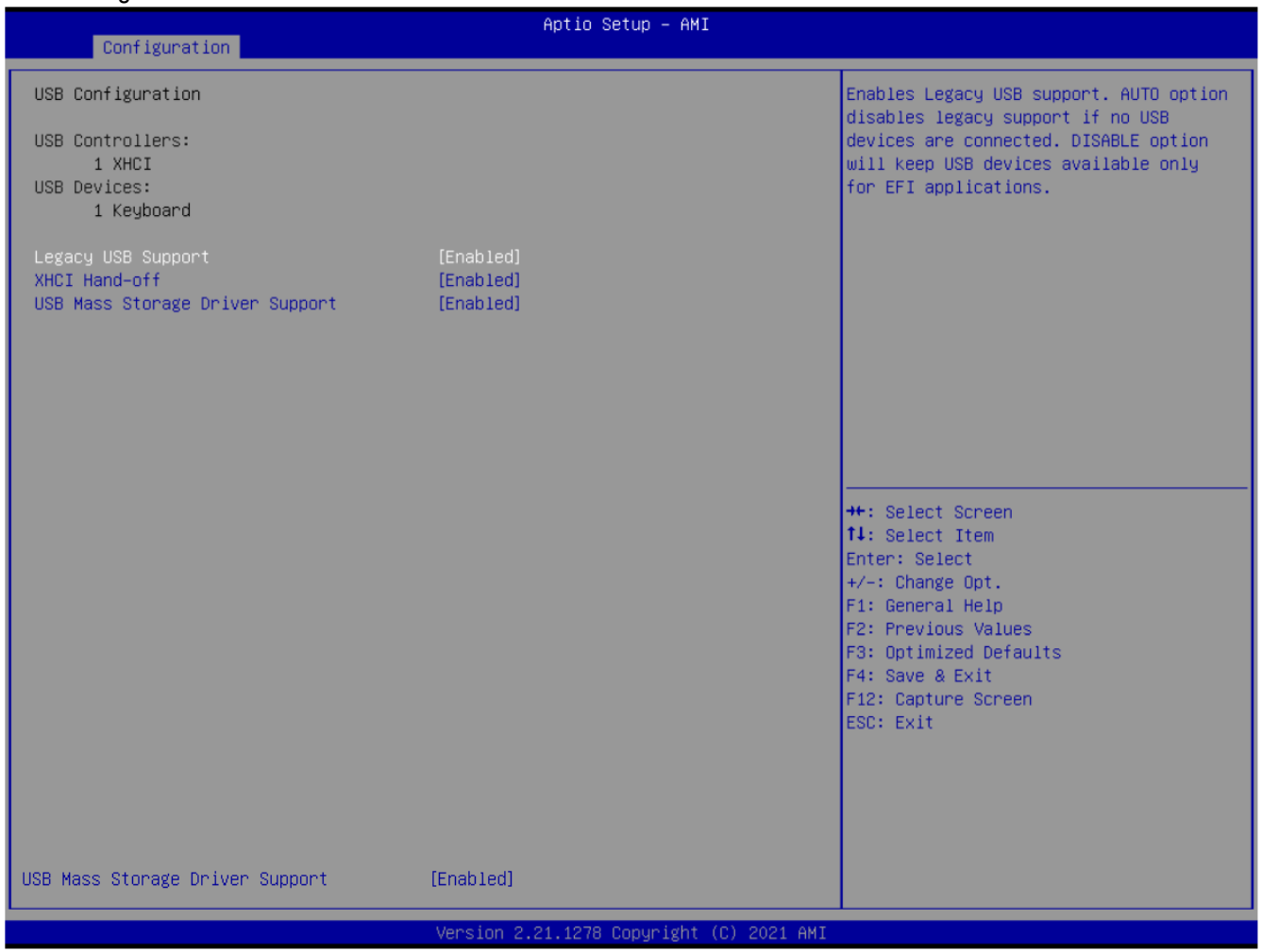

Configuration
SATA And RST Configuration
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
SATA Controller Speed [Default]
Serial ATA Port 0 (OnBoard J9) Empty
Software Preserve Unknown
Port 0 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]
Serial ATA Port 1 (OnBoard J11) Empty
Software Preserve Unknown
Port 1 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]
Serial ATA Port 2 (OnBoard J14) Empty
Software Preserve Unknown
Port 2 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]
Serial ATA Port 3 (BackPlane) Empty
Software Preserve Unknown
Port 3 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]
Serial ATA Port 4 (BackPlane) Empty
Software Preserve Unknown
Port 4 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]
Serial ATA Port 5 (OnBoard M.2) Empty
Software Preserve Unknown
Port 5 [Enabled]
Hot Plug [Disabled]
Configured as eSATA Hot Plug supported
SATA Device Type [Hard Disk Drive]


Aptio Setup – AMI
Configuration
NVMe Configuration
No NVME Device Found
→←: 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 2.21.1278 Copyright (C) 2021 AMI

Feature	Description	Options
SATA Controller(s)	Enable/disable SATA Device.	★Enabled , Disabled
SATA Mode Selection	Determines how SATA controller(s) operate.	★AHCI, Intel RST Premium with Intel Optane System Acceleration
SATA Controller Speed	Indicates the maximum speed the SATA controller can support	★Default,Gen1,Gen2,Gen3
Serial ATA Port Port 0: onboard J9 Port 1: onboard J11 Port 2: onboard J14 Port 3: backplane Port 4: backplane Port 5: onboard M.2		
Port 0~5	Enable or Disable SATA Port	Disabled, ★Enabled
Hot Plug	Designates this port as Hot Pluggable	★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

USB Configuration

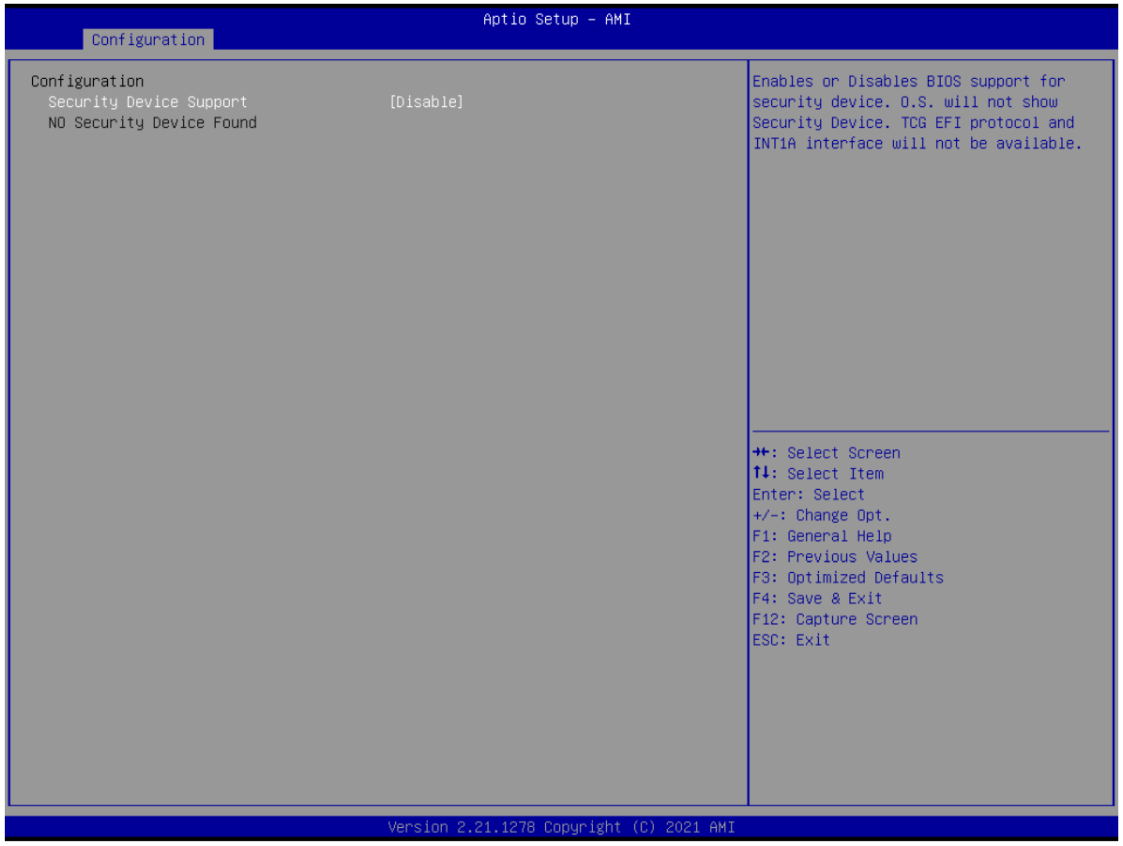
USB Configuration Parameters



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 application	★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 Driver Support	Enable/Disable USB Mass Storage Driver Support	★Enabled , Disabled

TPM Configuration

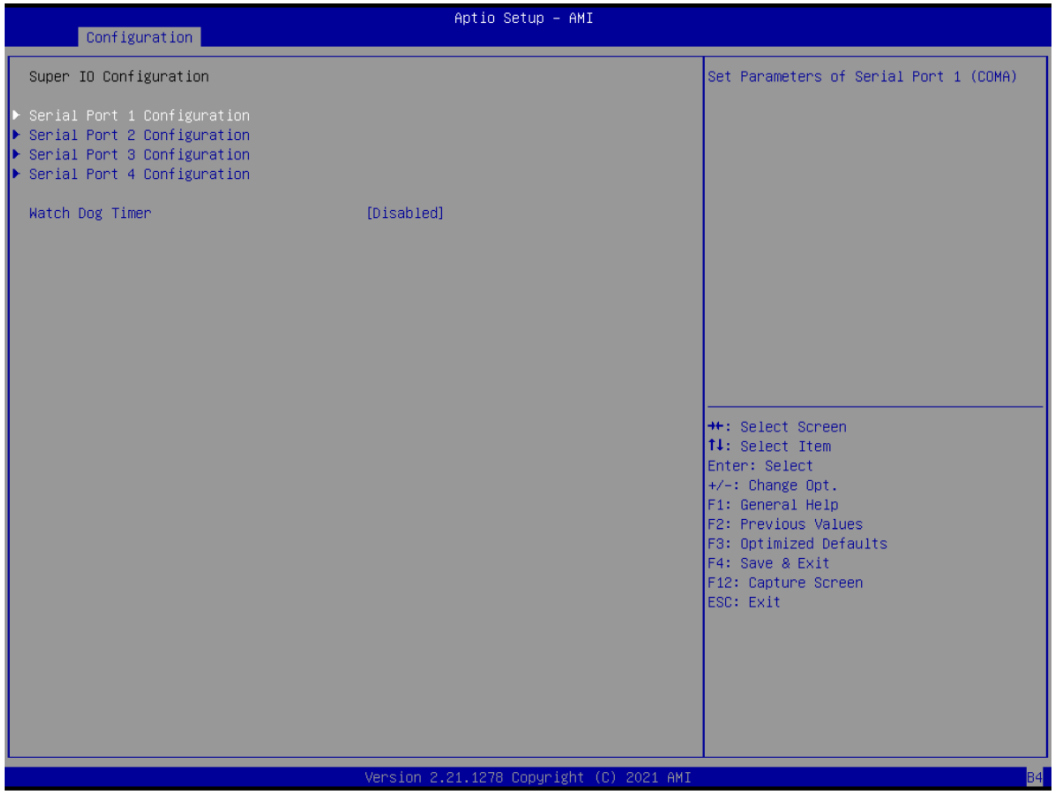
Trusted Computing Setting



Feature	Description	Options
Security Device Support	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A Interface will not be available.	★Disabled, Enabled

Super IO Configuration

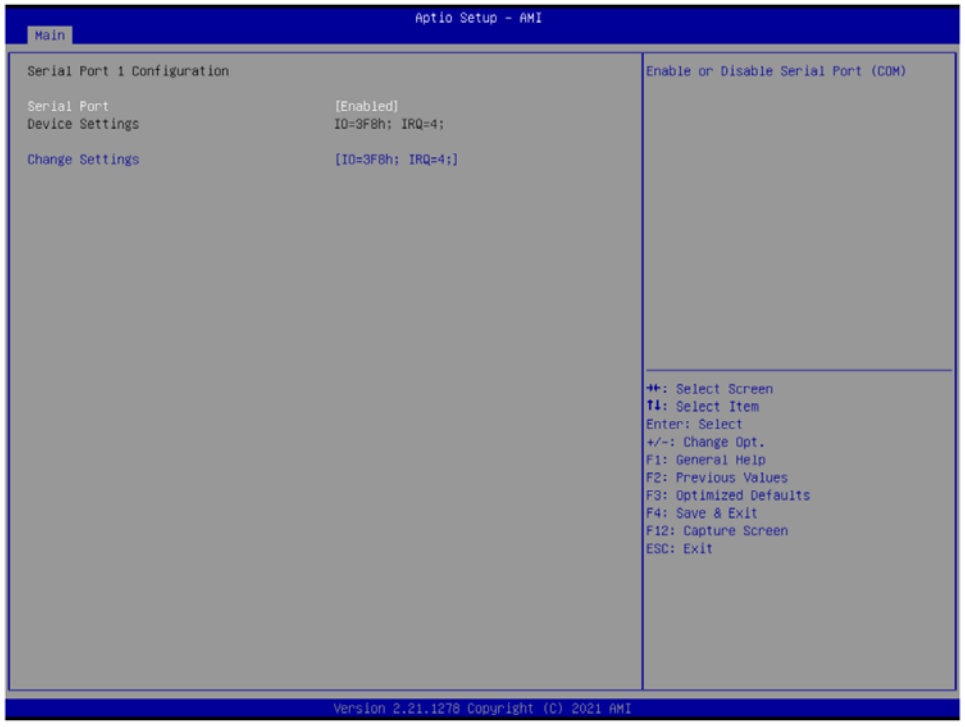
System Super IO Chip Parameters.



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

Serial Port 1 Configuration

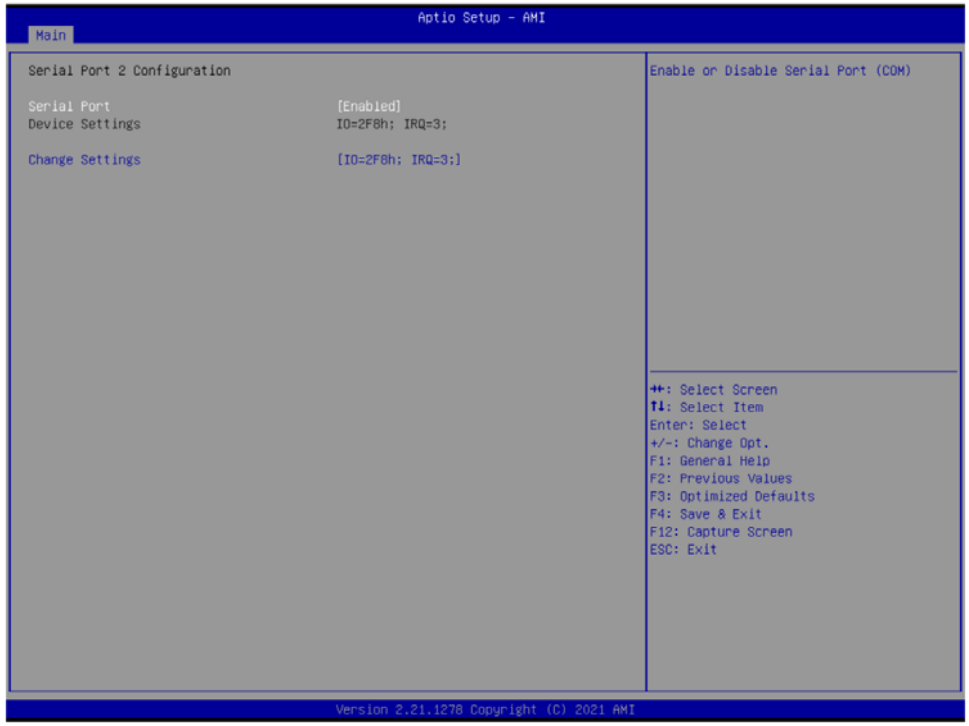
Set Parameters of Serial Port 1



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled, Disabled
Change Settings	Select an optimal settings for Super IO Device	★IO=3F8h; IRQ=4, Auto, IO=240h; IRQ=3,4,5,6,7,10,11,12 IO=248h; IRQ=3,4,5,6,7,10,11,12 IO=250h; IRQ=3,4,5,6,7,10,11,12 IO=258h; IRQ=3,4,5,6,7,10,11,12

Serial Port 2 Configuration

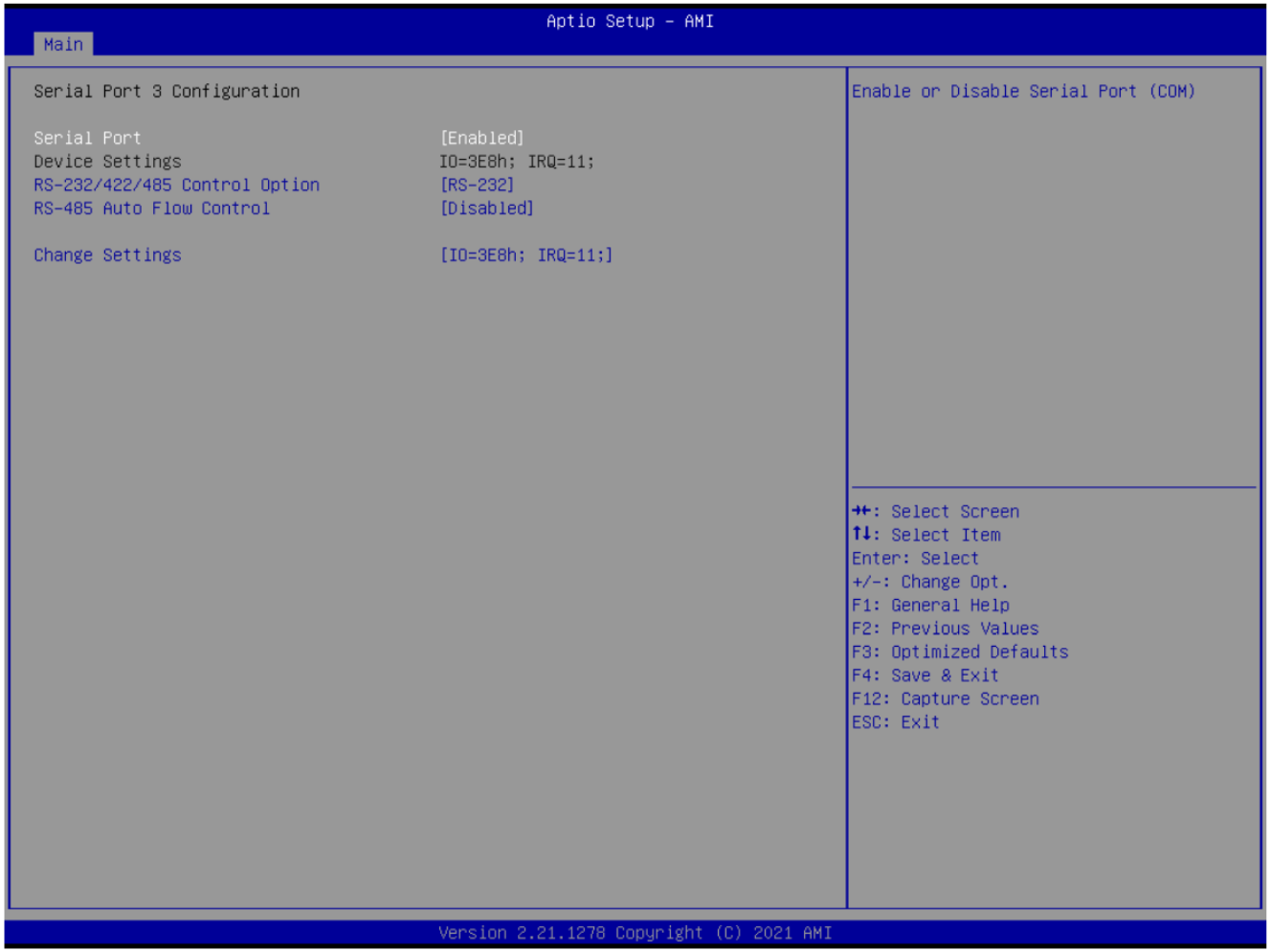
Set Parameters of Serial Port 2



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled, Disabled
Change Settings	Select an optimal settings for Super IO Device	★IO=2F8h; IRQ=3, Auto, IO=240h; IRQ=3,4,5,6,7,10,11,12 IO=248h; IRQ=3,4,5,6,7,10,11,12 IO=250h; IRQ=3,4,5,6,7,10,11,12 IO=258h; IRQ=3,4,5,6,7,10,11,12

Serial Port 3 Configuration

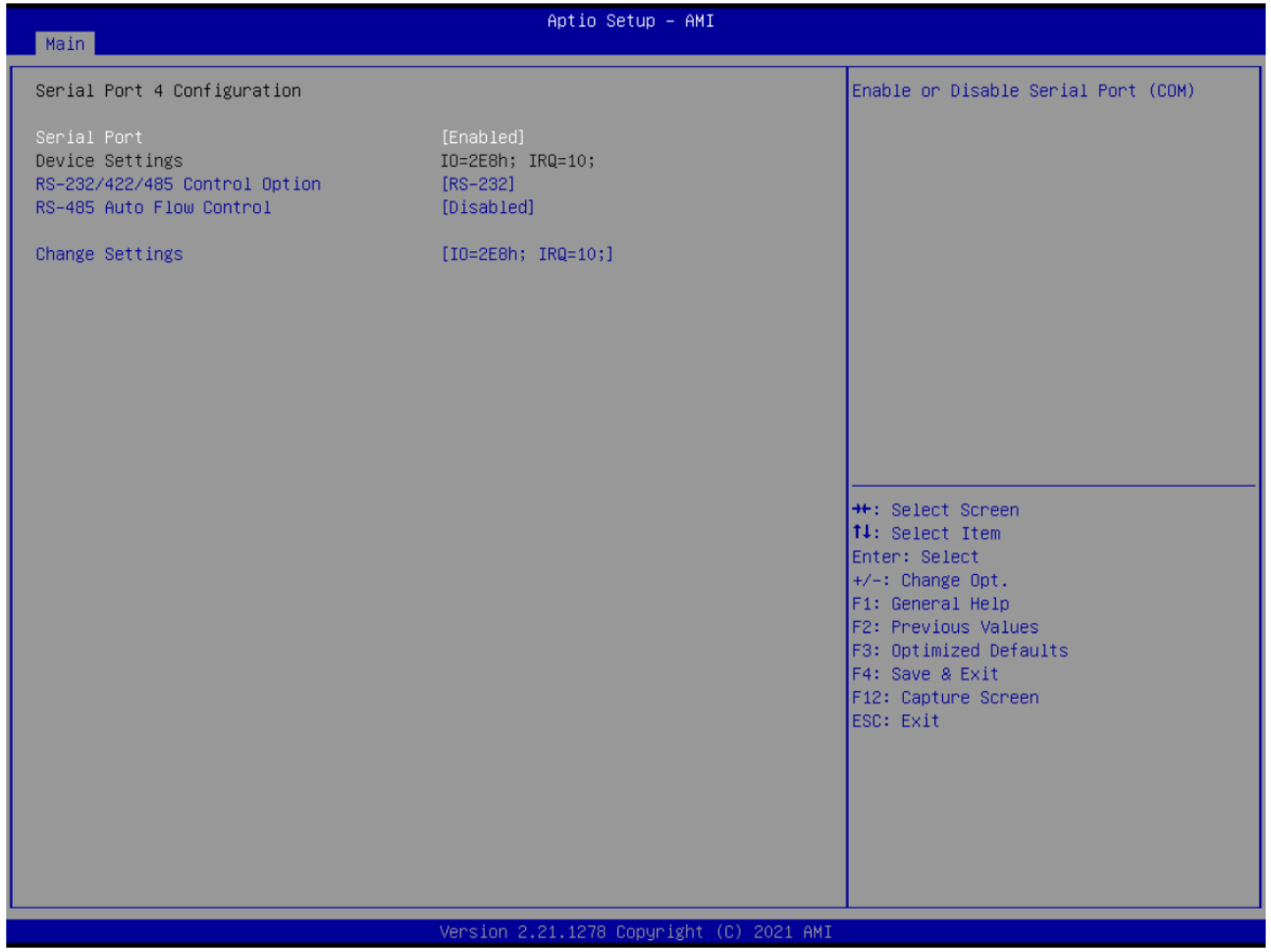
Set Parameters of Serial Port 3



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled, Disabled
RS-232/422/485 Control Option	Serial port 3 RS-232/422/485 Control Option	★RS-232, RS 485 HALF DUPLEX, RS-422 FULL DUPLEX
RS-485 Auto Flow Control	Enable/Disable RS-485 Auto Flow Function	★Disabled, Enabled
Change Settings	Select an optimal settings for Super IO Device	★IO=3E8h; IRQ=11, Auto, IO=240h; IRQ=3,4,5,6,7,10,11,12 IO=248h; IRQ=3,4,5,6,7,10,11,12 IO=250h; IRQ=3,4,5,6,7,10,11,12 IO=258h; IRQ=3,4,5,6,7,10,11,12

Serial Port 4 Configuration

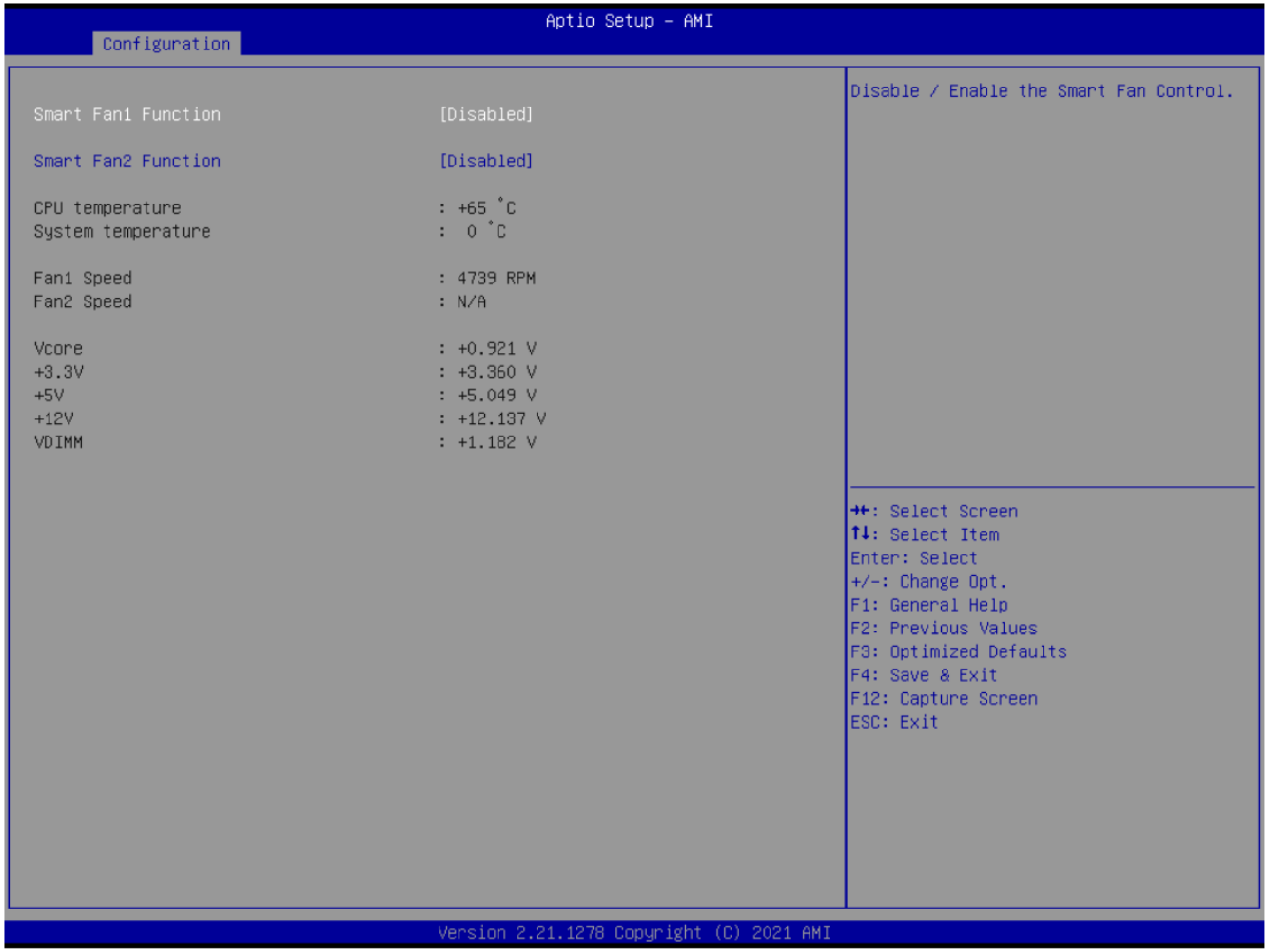
Set Parameters of Serial Port 4



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled, Disabled
RS-232/422/485 Control Option	Serial port 3 RS-232/422/485 Control Option	★RS-232, RS 485 HALF DUPLEX, RS-422 FULL DUPLEX
RS-485 Auto Flow Control	Enable/Disable RS-485 Auto Flow Function	★Disabled, Enabled
Change Settings	Select an optimal settings for Super IO Device	★IO=2E8h; IRQ=10, Auto, IO=240h; IRQ=3,4,5,6,7,10,11,12 IO=248h; IRQ=3,4,5,6,7,10,11,12 IO=250h; IRQ=3,4,5,6,7,10,11,12 IO=258h; IRQ=3,4,5,6,7,10,11,12

H/W Monitor

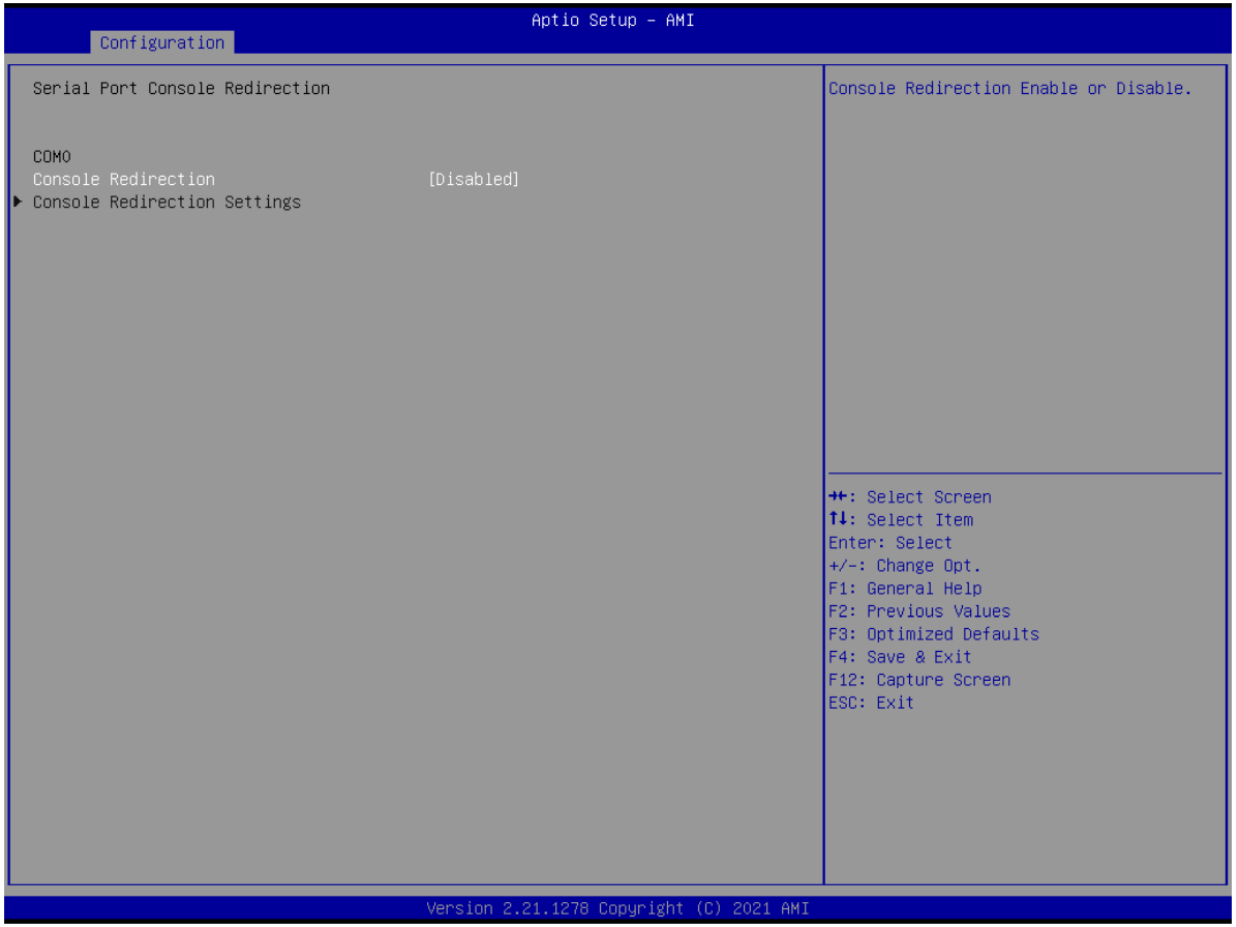
Monitor hardware status



Feature	Description	Options
Smart Fan1/2 Function	Enable or Disable Smart Fan Control	★Disabled, Enabled
Smart Fan1/2 Control Mode	Smart Fan Mode Select	★Thermal Cruise™ Mode, Fan Speed Cruise™ Mode Smart Fan™ III Mode Fan Control Mode
Fan1/2 Tolerance Temp	In Thermal Cruise Mode\ Smart Fan III Mode: Tolerance of Target Temperature. In Fan Speed Cruise Mode: Tolerance of Target Speed.	★5
Fan1/2 Start Target Temp	In Thermal Cruise Mode: Start Temperature. In Fan Speed Cruise Mode: High Byte of Target Speed. In Smart Fan III Mode: Target Temperature. In Fan Control Mode: Fan Speed (0-100%)	★40
Fan1/2 Full Target Temp	In Thermal Cruise Mode: Full speed Temperature. In Fan Speed Cruise Mode: Low Byte of Target Speed.	★60
Fan1/2 Low End	In Thermal Cruise Mode\ Smart Fan III Mode: Low End of Fan Speed (0-100%)	★5

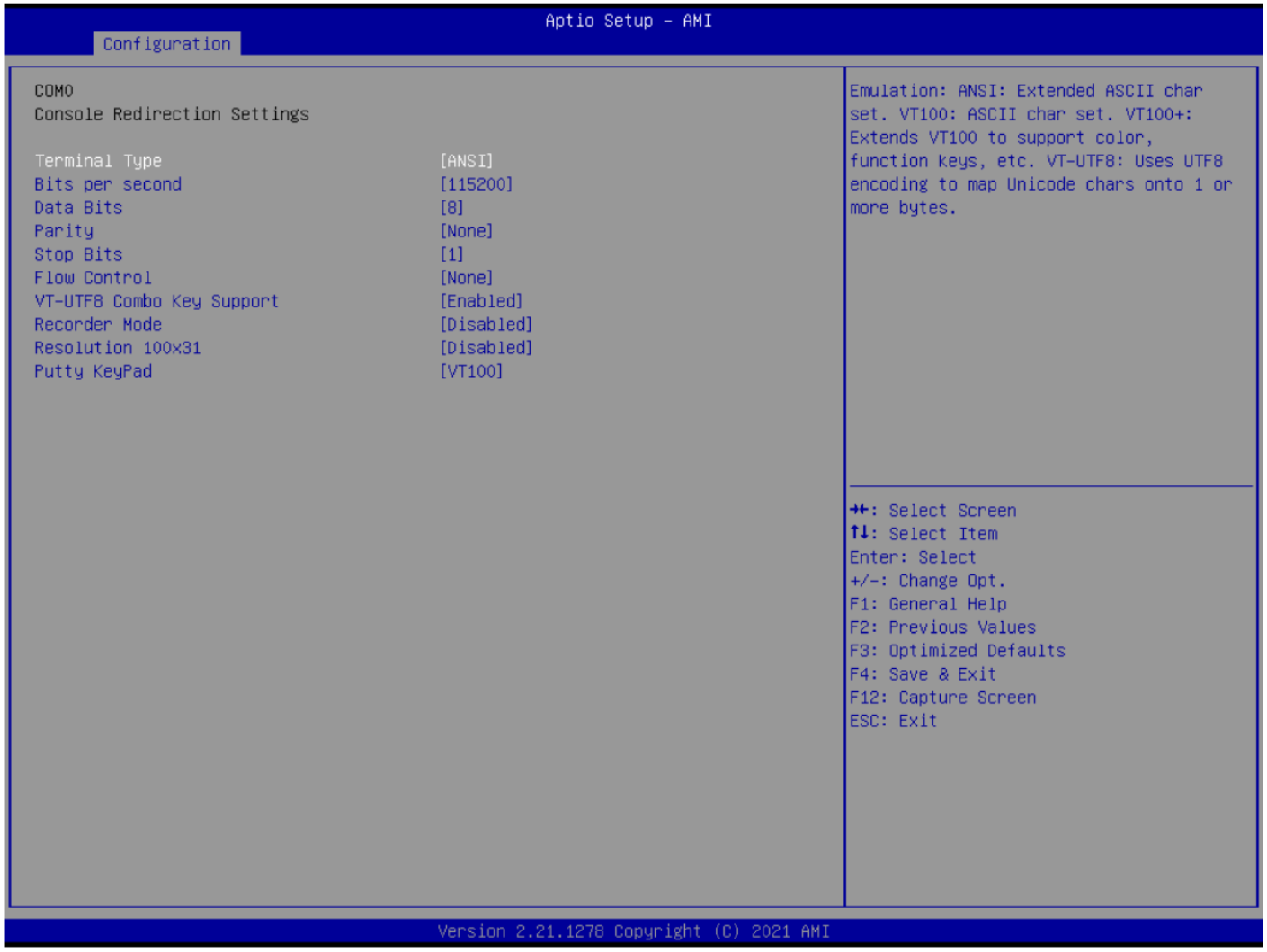
Serial Port Console Redirection

Serial Port Console Redirection



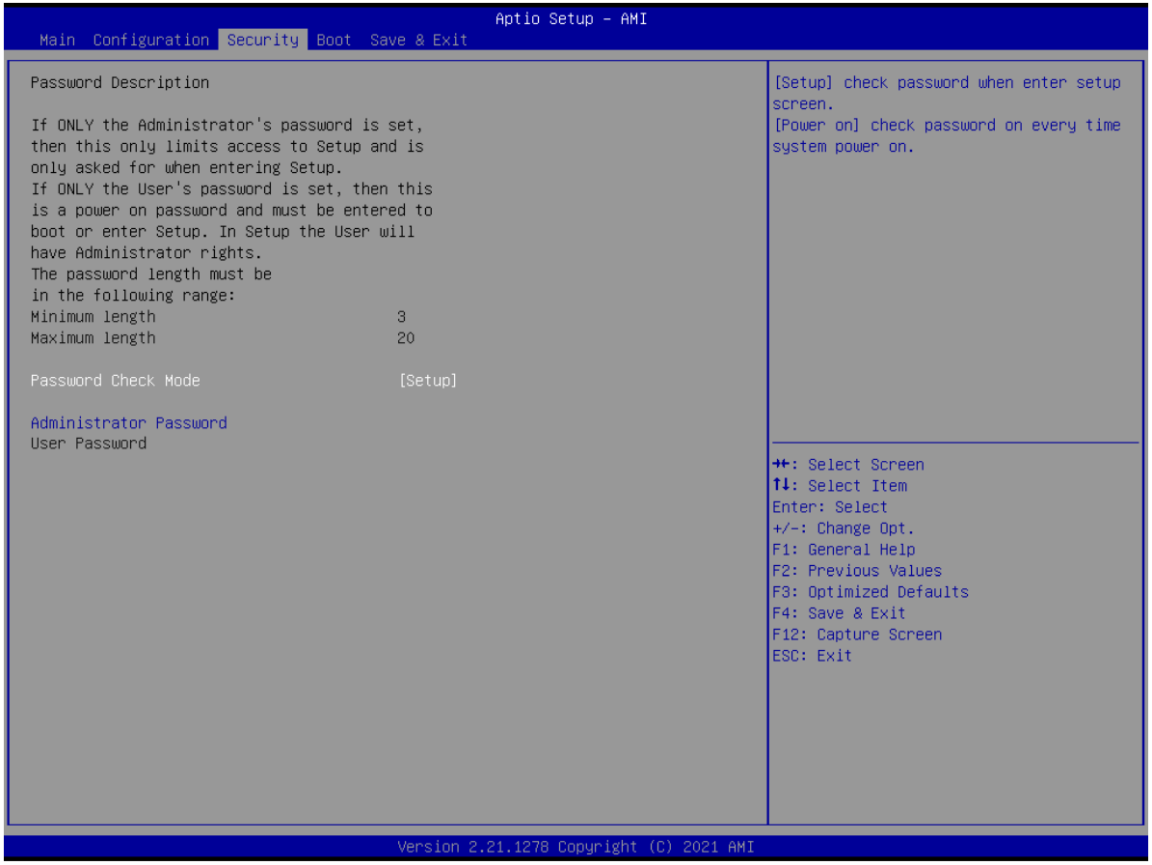
Feature	Description	Options
Console Redirection	Console Redirection Enable or Disable	★Disabled, Enabled

Console Redirection Settings



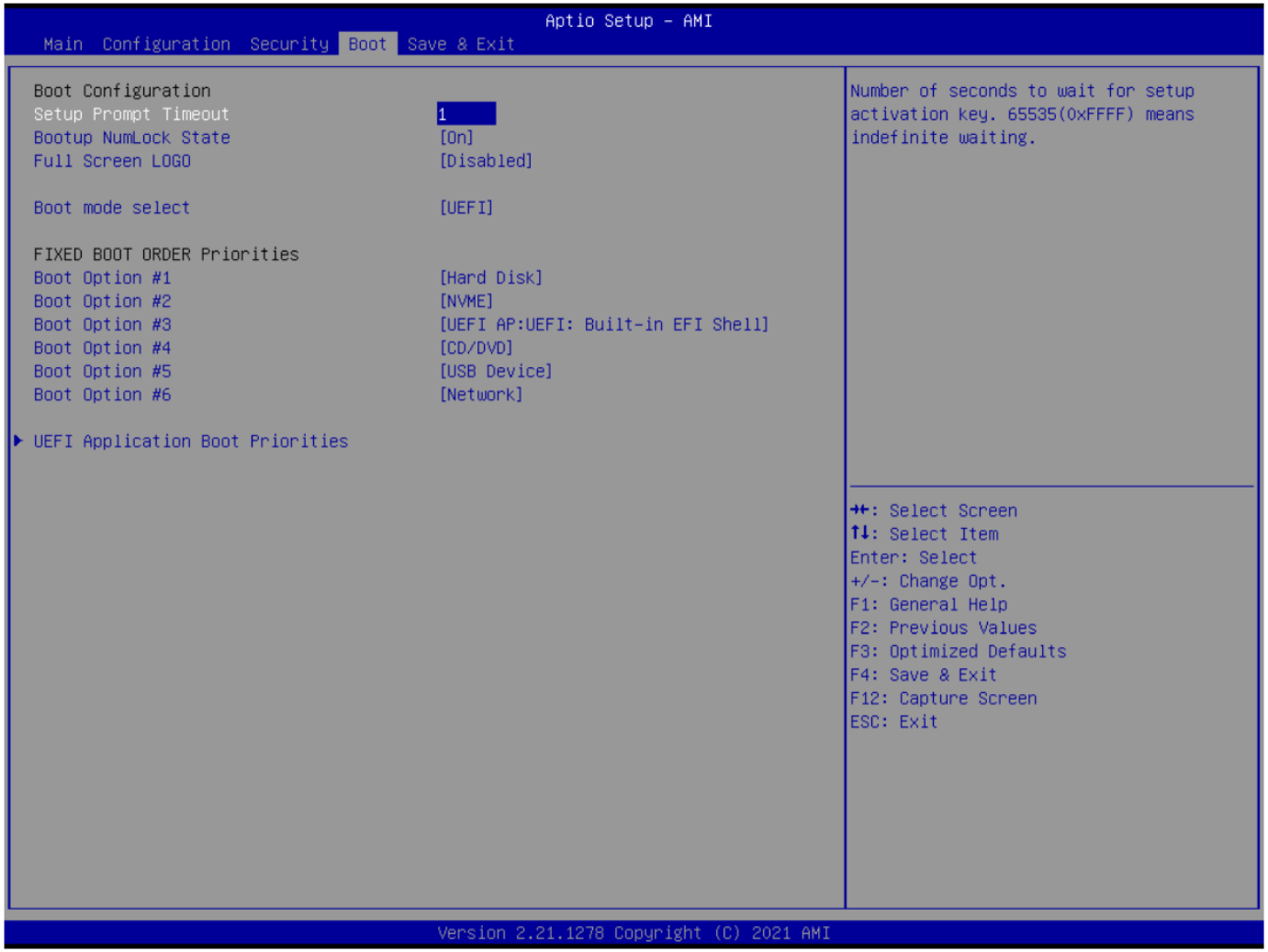
Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	★ANSI, VT100, VT100+, VT-UTF8
Bits per second	Select Serial port transmission speed. The speed must be matched on 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 signal.	★None, Hardware RTS/CTS
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
Putty KeyPad	Select FunctionKey and KeyPad on Putty	★VT100, LINUX,XTERMR6, SCO,ESCN,VT400

6.2.3 Security



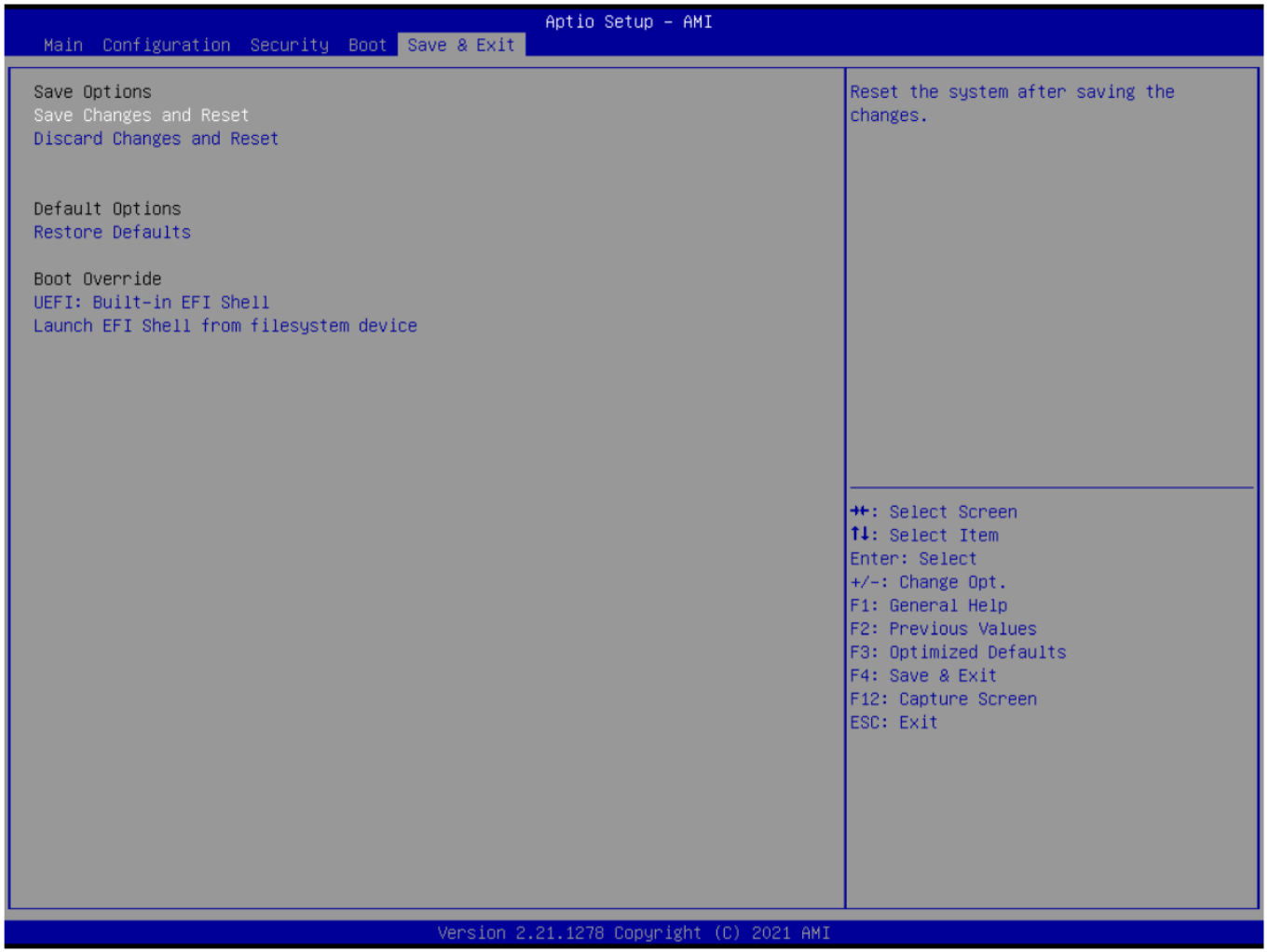
Feature	Description	Options
Password Check Mode	[Setup] check password when enter setup screen. [Power on] check password on every time system power on.	★Setup, Power on
Administrator Password	Set Administrator Password	

6.2.4 Boot


Aptio Setup – AMI
Main Configuration Security Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Full Screen LOGO [Disabled]
Boot mode select [UEFI]
FIXED BOOT ORDER Priorities
Boot Option #1 [Hard Disk]
Boot Option #2 [NVME]
Boot Option #3 [UEFI AP:UEFI: Built-in EFI Shell]
Boot Option #4 [CD/DVD]
Boot Option #5 [USB Device]
Boot Option #6 [Network]
UEFI Application Boot Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: 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 2.21.1278 Copyright (C) 2021 AMI

Feature	Description	Options
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	★1
Bootup NumLock State	Select the keyboard NumLock state	★On, Off
Full Screen LOGO	Enables or disables Quiet Boot option and Full screen Logo.	★Disabled, Enabled
Boot mode select	Select boot mode LEGACY/UEFI	★UEFI, Legacy
Boot Option #1~6	Sets the system boot order	★UEFI, Legacy
UEFI Application Boot Priorities	Specifies the Boot Device Priority sequence from available UEFI Application	

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	Reset the system after saving the changes. (Boot option filter: UEFI only)	
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.	

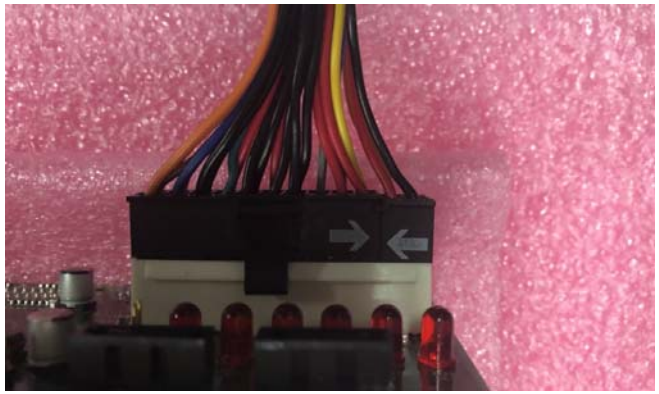
7 Troubleshooting

This section provides a few useful tips to quickly get ROBO-8115 running with success. This section will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

7.1 Hardware Quick Installation

ATX Power Setting

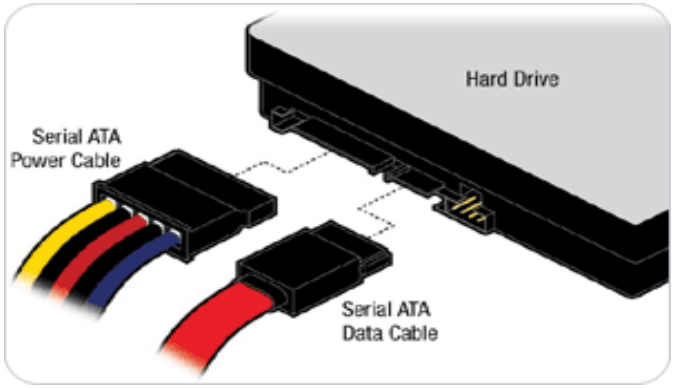
Unlike other Single board computer, ROBO-8115 supports ATX PSU only. Therefore, there is no other setting that needs to be set up. However, there are only two connectors that must be connected— J18 (ATX 8 Pin Connector (For CPU Power)) on the ROBO-8115 board & 20+4 pins ATX Power Connector on the backplane.



Serial ATA

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time;

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.



ROBO-8115 can support four SATA interface (SATAIII, 6.0Gb/s) on board. It has SATA ports on board.

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. DDR4 long DIMM Memory, keyboard, mouse, SATA hard disk, VGA connector, power cable of the device, 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-8115, 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: I forgot my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the JP1 on the ROBO-8115 board 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.

JP1: CMOS Setup(Pitch 2.0mm)

PIN No.	Description
1-2	★Normal
2-3	Clear CMOS

Question: How to update the BIOS file of ROBO-8115

Answer:

1. Please visit web site of Portwell download center as below hyperlink
https://www.portwell.com.tw/support-center/download-center/
2. Select "Search download" and type the keyword "ROBO-8115".
3. Find the "BIOS "page and download the ROM file and flash utility.
4. 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
5. 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.
6. When you see the "Programming success" message, which means the BIOS update processes finished. Please cut the AC power off and wait for 10 seconds before powering on.

Question: What are the display options while using ROBO-8115 board?

Answer: - The ROBO-8115 supports DVI-I and HDMI display output.

Note:

Please visit our Download Center to get the Catalog, User manual, BIOS, and driver files.
https://www.portwell.com.tw/support-center/download-center/
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.
https://www.portwell.com.tw/support-center/technical-request/?lang=zh-hant
We will do our best to provide a suggestion or solution for you.
Thanks

8 Portwell Software Service

1. If you have customized requirements of BIOS, you can contact person of our company or branch.
2. If you have requirements of WDT、GPIO APP, you can contact our headquarter or branch, and we can render you assistance on developing.

Portwell Worldwide:	
Portwell, Inc.	E-mail: info@portwell.com.tw
Shanghai Portwell	E-mail: info@portwell.com.cn
Portwell Japan, Inc	E-mail: info@portwell.co.jp
American Portwell Technology	E-mail: info@portwell.com
European Portwell Technology	E-mail: info@portwell.eu
Portwell UK Ltd.	E-mail: info@portwell.co.uk
Portwell Deutschland GmbH	E-mail: info@portwell.eu
Portwell India Technology	E-mail: info@portwell.in
Portwell Korea, Inc.	E-mail: info@portwell.co.kr
Portwell Latin America	E-mail: vendas@portwell.com.br

9 Industry Specifications

9.1 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