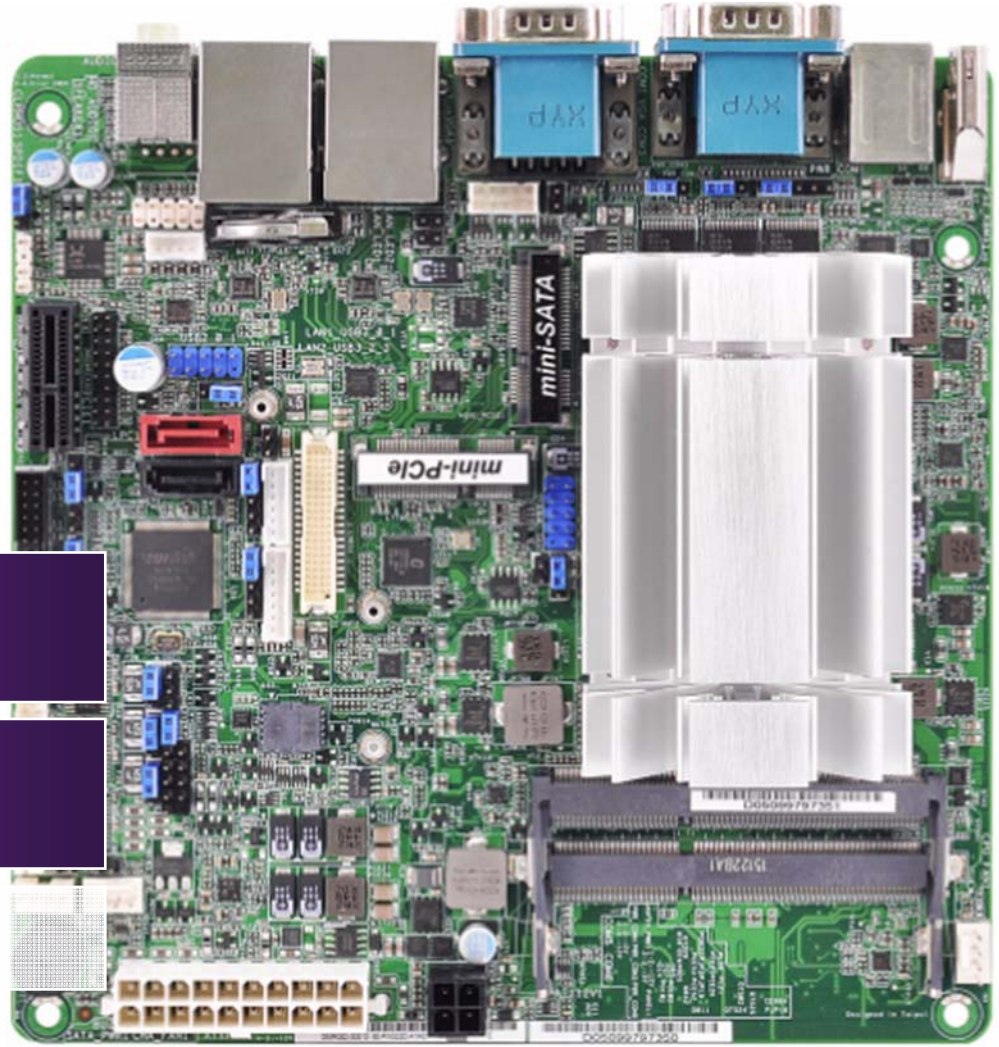
WADE-8171

Industrial Mini-ITX Board



Version 0.1

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Revision History

R0.1	Preliminary

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Contents

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Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the WADE-8171. This document should be referred to when designing Mini-ITX application. The other reference documents that should be used include the following:

- ✧ Intel Braswell Design Guide
- ✧ Intel Braswell Specification

Please contact Portwell Sales Representative for above documents.

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1 Introduction

WADE-8171 based on the Intel® Core™ Processor which offers 14nm Hi-K process technology with energy efficient architecture. WADE-8171 support dual channels DDR3LSO- DIMM up to 8GB.

Desktop solution is still popular in the market of DVR and Factory Automation which can fulfill most of these applications; therefore, with high performance and high-end specifications, Braswell SoC is our first generation Atom chip architecture on Mini-ITX line.

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2 Specifications

Main Processor	◆Intel® Braswell SoCProcessors
System BIOS	◆AMI UEFI BIOS
Main Memory	◆Up to 8 GB in 2 slots DDR3L SO-DIMM sockets. Supports dual channel DDR3L 1333/1600 MHz SDRAM
Graphics	◆Controller: Intel® Gfx Gen 8, HD graphics ◆VGA: Supports VGA up to resolution 1920 x 1200 ◆LVDS: Supports DVI-D up to resolution 1920 x 1200 @ 60Hz ◆HDMI: Supports HDMI up to resolution 1920 x 1200 @ 60Hz
Expansion Interface	◆OneMini-PCIe socket ◆One mSATA socket
SATA Interface	◆Two SATA ports(SATA 6Gb/s)
Input/Output	◆Serial Ports: Threeserial ports, 3 x RS-232 & 2 x RS-232/422/485 ◆Support Keyboard and PS/2 mouse connector (Rear I/O) ◆USB Port: 4 x USB 3.0 ◆GPIO connector: 8GPI + 8GPO ◆Audio Interface: Connector for Mic-In and Line-Out
Ethernet	◆Supports dual 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus which provides 500 MB/s data transmission rate

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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: +3.3 V, +5 V, +12 V, 5 Vsb ◆Board size: 170mm x 170 mm

2.1 Supported Operating Systems

The WADE-8171 supports the following operating systems.

- ✧ Windows* 8.1u (64 bit)
- ✧ * Windows* Embedded Industry 8.1 (64 bit)
- ✧ Windows* 7 (32/64 bit)
- ✧ Windows* 7 (POS ready 7 & WES7) (32/64 bit)
- ✧ Windows 10* (64 bit)
- ✧ Fedora* (19 or later) Distribution (64 bit)
- ✧ Ubuntu*, SuSe Enterprise*, Red hat* Enterprise (64 bit)
- ✧ ** Yocto* Tool-based Embedded Linux Distribution (64 bit)
- ✧ VxWorks* (RTOS) (64 bit)

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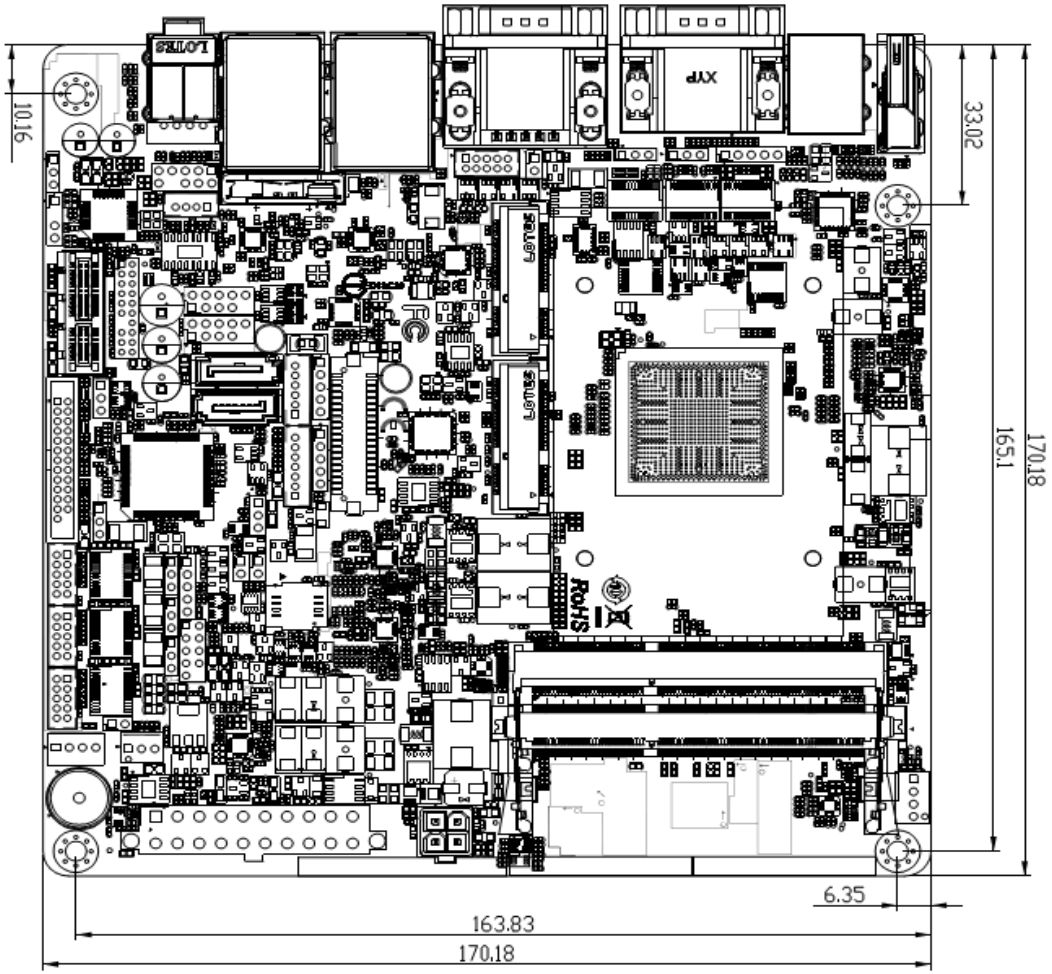
2.2 Mechanical Dimensions



2.3 Power Consumption

Test Configuration	
CPU Type	Intel® Celeron® N3050 CPU @ 1.60GHz L2:2MByte
BIOS Date	05/15/2015 17:18:39
Memory	WARIS DDR3L SO-DIMM 1600 4GB*1 (hynix H5TC2G3EFR)
VGA Card	Onboard Intel(R) HD Graphics
VGA Driver	Intel(R) HD Graphics Version 10.18.14.4175
LAN Card	Onboard Realtek RTL8111GPCIe GBE Family Controller
LAN Driver	Realtek RTL8111GPCIe GBE Family Controller Version 8.25.108.2014
LAN Card #2	Onboard Realtek RTL8111GPCIe GBE Family Controller#2
LAN Driver #2	Realtek RTL8111GPCIe GBE Family Controller#2 Version 8.25.108.2014
Audio Card	Onboard Realtek ALC887 High Definition Audio
Audio Driver	Realtek ALC887 High Definition Audio Version 6.0.1.7464
Chipset Driver	Intel® Braswell Chipset Device Software Version: 10.0.13
SATA HDD	HITACHI H2T250854SEA7N250GB
SATA DOM	ASUS DRW-24B3ST ATA Device
USB DVDROM	PIONEER DVD-RW DVR-XD11
Power Supply	FSB GROUP FSP460-60PFB 460W

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Power consumption

ATX:

Item	*Power ON*	*Full Loading 10Min*	*Full Loading 30Min*
System +12V	0.09	0.14	0.07
System +3.3V	0.72	0.74	0.64
System +5V	0.56	0.92	0.88
System+ Device +12V	0.13	0.20	0.07
System+ Device +5V	0.94	0.97	0.82
USB2.0 Loading Test	5.05 V/ 560mA		
USB3.0 Loading Test	5.01 V/ 1090mA		

DCIN

Item	*S0*	*S3*	*S4*	*S5*
+12V	0.09	0.12	0.12	0.08
+5VSB	0.08	0.11	0,10	0.09

2.4 Environmental Specifications

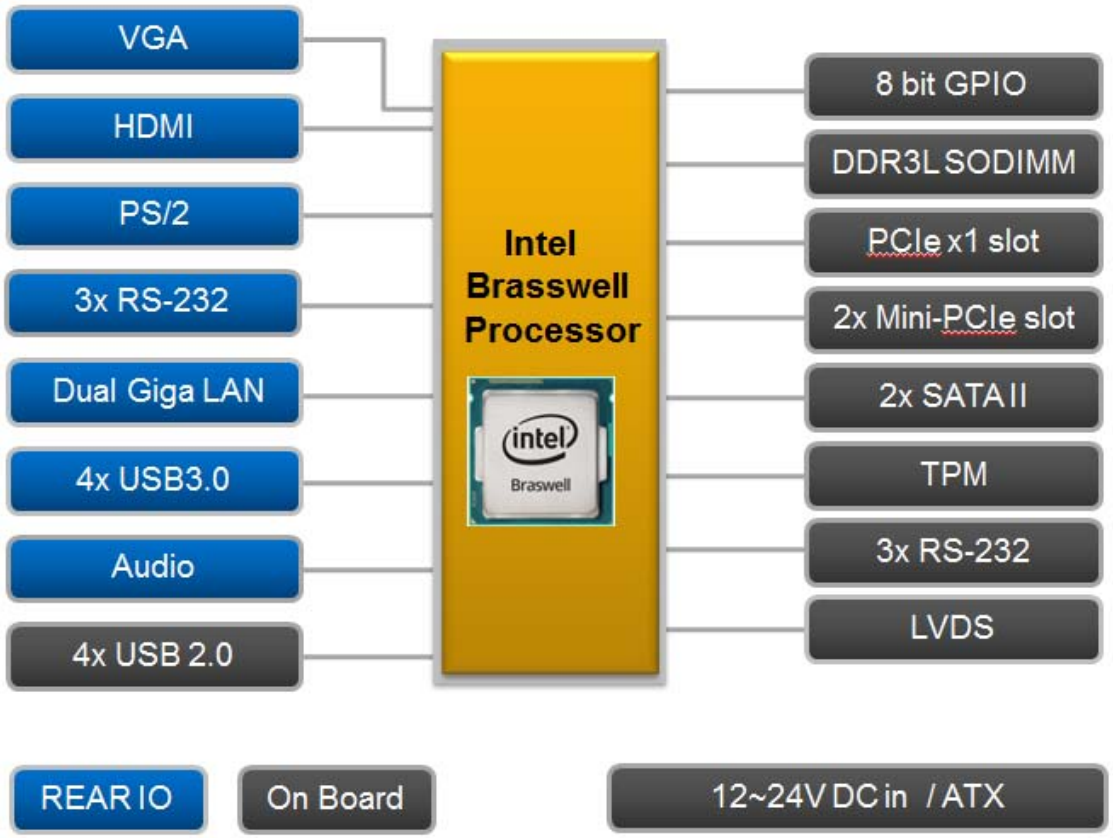
Storage Temperature : -20~80°C

Operation Temperature : 0~60°C

Storage Humidity : 5~90%

Operation Humidity: 10~90%

3 Block Diagram



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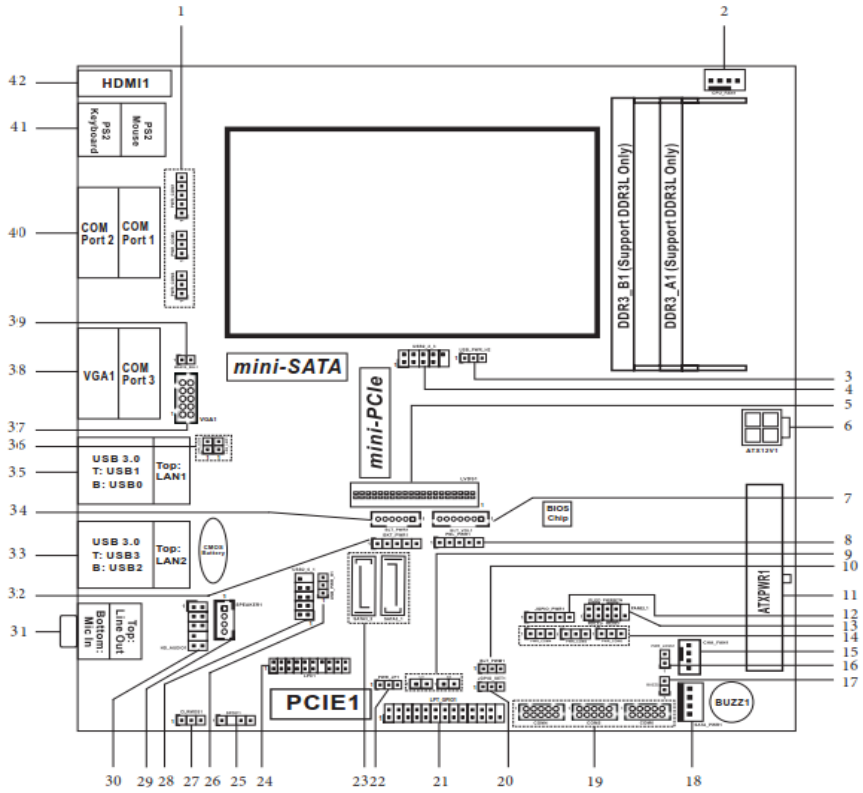
4 Hardware Configuration

4.1 Jumpers and Connector

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



4.2 Jumpers Setting

For users to customize WADE-8171's features. In the following sections, Short means covering a jumper cap over jumperpins; 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:

Jumper Function List	
1	COM Port PWR Setting Jumpers
2	4-Pin CPU FAN Connector(+12V)
3	USB2 Power Setting Jumper(for USB2_2_3)
4	USB2.0 Connector(USB2_2_3)
5	LVDS Panel Connector
6	ATX Power Connector(Input 12V-24V)
7	Backlight Volume Control(BLT_VOL1)
8	Panel Power Selection (LCD_VCC)(PNL_PWR1)
9	Chassis Intrusion Headers(CI1, CI2)
10	BLT_PWM1
11	20-pin ATX Power Input Connector
12	Digital Input/Output Power Select
13	System Panel Header
14	COM Port PWR Setting Jumpers

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15	4-Pin Chassis FAN Connector(+12V)
16	Power Loss Jumper
17	2-Pin Buzzer Header
18	SATA Power Output Connector
19	COM4, 5, 6 Headers(RS232)
20	Digital Input / Output Default Value Setting(JGPIO_SET1)
21	Printer Port / GPIO Header(LPT_GPIO1)
22	ATX/AT Mode Select
23	SATA3 Connectors (SATA3_1,SATA3_2)
24	LPC Header
25	SPDIF Header
26	USB2 Power Setting Jumper(for USB2_0_1)
27	Clear CMOS Header
28	USB2.0 Connector(USB2_0_1)
29	3W Audio AMP Output Wafer
30	Front Panel Audio Header
31	Audio Output
32	Backlight Power Select(LCD_BLT_VCC)(BKT_PWR1)
33	Top:RJ45 LAN port(LAN2)
34	Backlight Power Connector(BLT_PWR1)
35	Top:RJ45 LAN port(LAN1)
36	LAN LED

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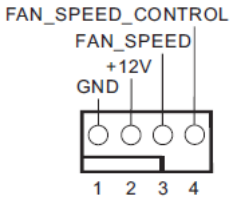
37	VGA Header
38	TOP:COM Port 3 (RS232/422/485) Bottom: VGA/D-Sub Port
39	mSATA Select
40	Top: COM Port 1(RS232/422/485)* Bottom: COM Port 2(RS232/422/485)*
41	PS/2 Mouse/Keyboard Port
42	HDMI Port

1 : COM Port PWR Setting Jumpers

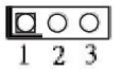
PWR_COM1 (For COM Port1)
1-2: +5V
2-3: +12V
3-4: +12V
4-5: +5VSB

PWR_COM2 (For COM Port2)
PWR_COM3 (For COM Port3)
1-2: +5V
2-3: +12V

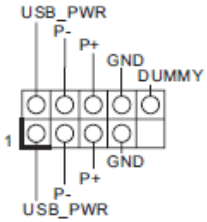
2 : 4-Pin CPU FAN Connector (+12V)



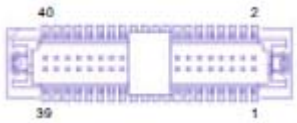
3 : USB2 Power Setting Jumper
(for USB2_2_3)
1-2: +5V
2-3: +5VSB



4 : USB2.0 Connector (USB2_2_3)



5 : LVDS Panel Connector



PIN	Signal Name	PIN	Signal Name
2	LCD_VCC	1	LCD_VCC
4	LDDC_CLK	3	+3.3V
6	LVDS_A_DATA0#	5	LDDC_DATA
8	GND	7	LVDS_A_DATA0
10	LVDS_A_DATA1	9	LVDS_A_DATA1#
12	LVDS_A_DATA2#	11	GND
14	GND	13	LVDS_A_DATA2
16	LVDS_A_DATA3	15	LVDS_A_DATA3#
18	LVDS_A_CLK#	17	GND
20	GND	19	LVDS_A_CLK
22	LVDS_B_DATA0	21	LVDS_B_DATA0#
24	LVDS_B_DATA1#	23	GND
26	GND	25	LVDS_B_DATA1
28	LVDS_B_DATA2	27	LVDS_B_DATA2#
30	LVDS_B_DATA3#	29	DPLVDD_EN
32	GND	31	LVDS_B_DATA3
34	LVDS_B_CLK	33	LVDS_B_CLK#
36	CON_LBKLT_EN	35	GND
38	LCD_BLT_VCC	37	CON_LBKLT_CTL
40	LCD_BLT_VCC	39	LCD_BLT_VCC

6 : ATX Power Connector
(Input 12V-24V)
1-2: GND
3-4: DC Input

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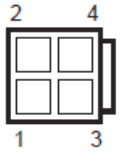

7 : Backlight Volume Control (BLT_VOL1)

PIN	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	LVDS1_BLUP
5	LVDS1_BLDW
6	GND
7	GND

8 : Panel Power Selection (LCD_VCC)
(PNL_PWR1)
1-2: LVDD: +3V
2-3: LVDD: +5V
4-5: LVDD: +12V

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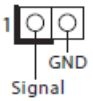
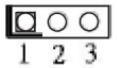
9 : Chassis Intrusion Headers
CI1:
Close: Active Case Open
Open: Normal
CI2:
Close: Normal
Open: Active Case Open



10 : BLT_PWM1
1-2: +3V Level
2-3: +5V Level



11 : 20-pin ATX Power Input
Connector

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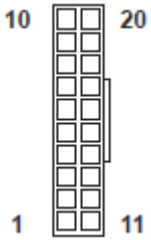
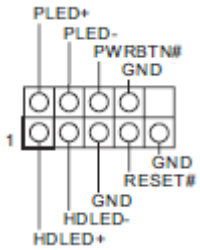


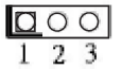
12 : Digital Input / Output Power Select

1-2: +12V
2-3: +5V
3-4: +5V
4-5: GND

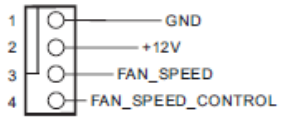
13 : System Panel Header



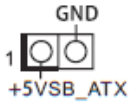
14 : COM Port PWR Setting Jumpers
PWR_COM4 (For COM Port4)
PWR_COM5 (For COM Port5)
PWR_COM6 (For COM Port6)
1-2: +5V
2-3: +12V



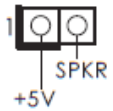
15 : 4-Pin Chassis FAN Connector (+12V)



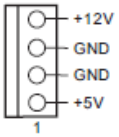
16 : Power Loss Jumper
Open: Power Loss
Close: no Power Loss



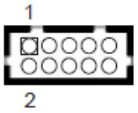
17 : 2-Pin Buzzer Header



18 : SATA Power Output Connector

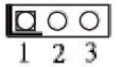


19 : COM4, 5, 6 Headers (RS232)



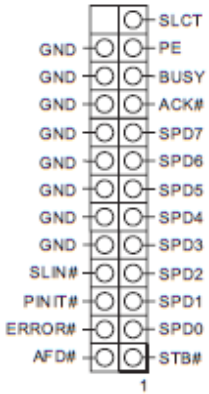
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	DDCD#	3	TTXD	5	GND	7	RRTS#	9	+5V
2	RRXD	4	DDTR#	6	DDSR#	8	CCTS#	10	+12V

20 : Digital Input / Output Default Value Setting (JGPIO_SET1)
1-2: Pull-High
2-3: Pull-Low



21 : Printer Port / GPIO Header (LPT_GPIO1)

Printer Port:



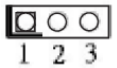
GPIO:

PIN	Signal Name	PIN	Signal Name
26	NC	25	NA
24	GND	23	SIO_GP30
22	GND	21	SIO_GP31
20	GND	19	SIO_GP32
18	GND	17	SIO_GP33
16	GND	15	SIO_GP34
14	GND	13	SIO_GP35
12	JGPIOPWR	11	SIO_GP36
10	JGPIOPWR	9	SIO_GP37
8	SIO_GP43	7	SIO_GP40
6	SIO_GP44	5	SIO_GP41
4	SIO_GP45	3	SIO_GP42
2	SIO_GP46	1	SIO_GP47

22 : ATX/AT Mode Select

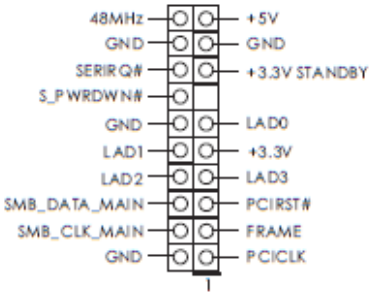
1-2: AT Mode

2-3: ATX Mode

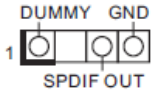


23 : SATA3 Connectors
(SATA3_1, SATA3_2)

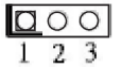
24 : LPC Header



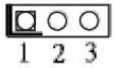
25 : SPDIF Header



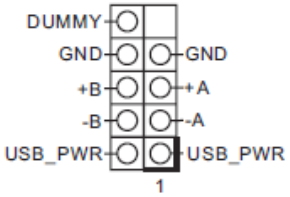
26 : USB2 Power Setting Jumper
(for USB2_0_1)
1-2: +5V
2-3: +5VSB



27 : Clear CMOS Header
1-2: Normal
2-3: Clear CMOS



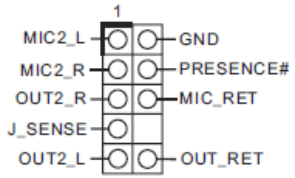
28 : USB2.0 Connector (USB2_0_1)



29 : 3W Audio AMP Output Wafer

PIN	Signal Name
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN

30 : Front Panel Audio Header



31 : Audio Output
Green – Line Out
Pink – Mic In

32 : Backlight Power Select
(LCD_BLT_VCC) (BKT_PWR1)
1-2: LCD_BLT_VCC: +5V
2-3: LCD_BLT_VCC: +12V
4-5: LCD_BLT_VCC: DC_IN

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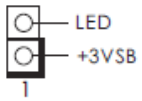
33 : Top: RJ45 LAN Port (LAN2)
Bottom: USB3.0 Ports (USB3_2_3)

34 : Backlight Power Connector (BLT_PWR1)

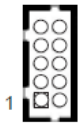
PIN	Signal Name
1	GND
2	GND
3	BL CTL
4	BL EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

35 : Top: RJ45 LAN Port (LAN1)
Bottom: USB3.0 Ports (USB3_0_1)

36 : LAN LED



37 : VGA Header



PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
10	DDC_DATA	8	VSYNC	6	GND	4	GND	2	GND
9	DDC_CLK	7	HSYNC	5	BLUE	3	GREEN	1	RED

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38 : Top: COM Port 3 (RS232/422/485)*
Bottom: VGA/D-Sub Port

39 : mSATA Select
Open: For SATA3_2
Close: For mSATA

40 : Top: COM Port 1 (RS232/422/485)*
Bottom: COM Port 2 (RS232/422/485)*

* This motherboard supports RS232/422/485 on COM1~3 ports. Please refer to below table for the pin definition. In addition, COM1~3 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to our user manual for details.

COM1~3 Ports Pin Definition

PIN	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	RX+	N/A
3	TXD	TX+	RTX+
4	DTR	RX-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	N/A	N/A
9	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V

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41 : Top (Green) – PS/2 Mouse Port
Bottom (Purple) – PS/2 Keyboard Port

42 : HDMI Port

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4.3 Connector Settings

Connector Allocation

I/O peripheral devices are connected to the interface connectors

Connector Function List

Connector	Function	Remark
U1	HDMI Port	
J1	DVI & VGA Port	QH11121-DBGH-4F. Foxconn
J2	COM Port 1 . 2	D-SUB 9Mx2
J3	Audio connector	Triple_AudioJack
J4	USB 3.0/100M/1G Lan Connector (LAN1) LAN WGI217LM	RJ45+USB3.0x2
J5	USB 3.0/100M/1G Lan Connector (LAN2) LAN WGI210AT	RJ45+USB3.0x2
J6	Front Panel System Connector	HEADER 8PX2
J7	ATX 4Pin 12V Power Connector	MA 2Px2. ATX4PT-L.TechBest
J8	SMBus Connector	PH5Px1-Pin2/2.54mm
J9	PS/2 Keyboard/Mouse Connector	HEADER5X2/nc3,4
J11	GPIO	Header5Px2/2.54mm
J12/J13/J14/J15	COM3~COM10 Serial Port Connector	BH5Px2/2.54mm

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J17/J18/J19/J20	COM7~COM10 Serial Port Connector (Option)	BH5Px2/2.54mm
J16	CPU FAN Power Connector	FAN_Header4Px1
J21/J26/J27/J28	DDR3 Long DIMM Connector	DDR3-Slot/240Pin
J25/J24/J23/J22	External USB Connector	HEADER 5PX2(-9)
J29/J30/J33/J34/ J37	SATA Connector(6Gb/s)	SATA/Blue
J31	TPM(Trusted Platform Module) Connector	BH10Px2/2.0mm
J32	CFEX Slot	CFEX
J35	ATX Power	ATX24/180D
J36	SYSTEM FAN Power Connector	Connector3Px1/2.54mm

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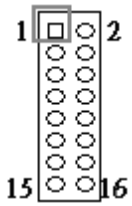
J6: Front Panel System Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	PWR_LED(+)	2	VCC
3	PWR_LED(-)	4	N/C
5	LAN1_ACT(+)	6	N/C
7	LAN1_LINK(-)	8	BUZZER
9	LAN2_LINK(-)	10	GND
11	LAN2_ACT(+)	12	Power Button
13	HDD_LED(+)	14	Rest
15	HDD_LED(-)	16	GND

J7: ATX 4Pin 12V Power Connector

PIN No.	Signal Description
1	Ground
2	Ground
3	+12V
4	+12V

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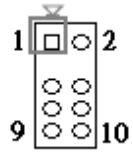
J8:SMBus Connector

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

J9: PS/2 Keyboard/Mouse Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	Mouse Data	2	Keyboard Data
3	N/C	4	N/C
5	Ground	6	Ground
7	PS2 Power	8	PS2 Power
9	Mouse Clock	10	Keyboard Clock

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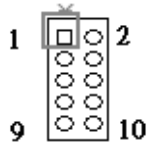
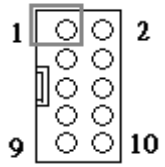
J11: GPIO



PIN No.	Signal Description	PIN No.	Signal Description
1	LPC_GPIO0	2	LPC_GPO4
3	LPC_GPIO1	4	LPC_GPO2
5	LPC_GPIO2	6	LPC_GPO3
7	LPC_GPIO3	8	LPC_GPO4
9	GND	10	Vcc

J12/J13/J14/J15: COM3~COM6 Serial Port Connector

J17/J18/J19/J20: COM7~COM10 Serial Port Connector(Option)



PIN No.	Signal Description	PIN No.	Signal Description
1	DCD (Data Carrier Detect)	2	DSR (Data Set Ready)
3	RXD (Receive Data)	4	RTS (Request to Send)
5	TXD (Transmit Data)	6	CTS (Clear to Send)
7	DTR (Data Terminal Ready)	8	RI (Ring Indicator)
9	GND (Ground)	10	N/C

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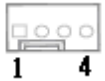
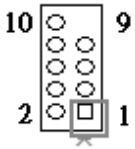
J16: CPU FAN Power Connector



PIN No.	Signal Description
1	Ground
2	+12V
3	Fan on/off output
4	Fan Speed control

J25/J24/J23/J22: External USB Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	5V Dual
3	USB-	4	USB-
5	USB+	6	USB+
7	Ground	8	Ground
9		10	N/C

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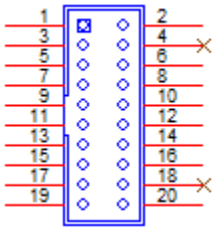
J29/J30/J33/J34/J37: SATA Connector(6Gb/s)

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

J31 TPM(Trusted Platform Module) Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	PCLK_TPM	2	Ground
3	LFRAME#	4	N/C
5	PLT_RST_N	6	LAD2
7	LAD3	8	LAD1
9	VCC3	10	Ground
11	LAD0	12	SMB_DATA_MAIN
13	SMB_CLK_MAIN	14	SERIRQ
15	3VSB	16	N/C
17	LPCPD#	18	LDRQ#1
19	Ground	20	Ground

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J32 CFEX Slot

PIN No.	Signal Description	PIN No.	Signal Description	PIN No.	Signal Description
1	GND	19	N/A	37	N/A
2	SPI_CLK	20	GND	38	VCC
3	SPI_MISO	21	N/A	39	N/A
4	GND	22	RX1-	40	N/A
5	GND	23	RX1+	41	N/A
6	GND	24	GND	42	GND
7	SPI_MOSI	25	GND	43	GND
8	GND	26	GND	44	GND
9	GND	27	WP0#	45	N/A
10	GND	28	GND	46	GND
11	N/A	29	TX0+	47	GND
12	N/A	30	TX0-	48	GND
13	VCC	31	SPI_CS#	49	WP1#
14	N/A	32	GND	50	GND
15	N/A	33	RX0-	51	N/A
16	N/A	34	RX0+	52	N/A
17	TX1+	35	SPI_WP#		
18	TX1-	36	N/A		

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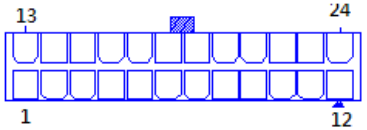
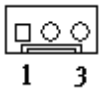
J35 ATX Power



PIN No.	Signal Description	PIN No.	Signal Description
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON#
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	ATX_PWROK	20	-5V
9	+5VSB	21	+5V
10	+12V1	22	+5V
11	+12V1	23	+5V
12	+3.3V	24	Ground

J36: SYSTEM FAN Power Connector



PIN No.	Signal Description
1	Ground
2	Fan speed control
3	Fan on/off output

5 Signal Descriptions

5.1 Watch Dog Signal

WatchDog program sample

WatchDog program sample

O 2E 87

O 2E 87

O 2E 07

O 2F 08 Select Logical Device 8.

O 2E 30

O 2F (BIT0) (0):WDT is inactive.(1):WDT is active.

O 2E F1

O 2F (XX) (XX):Watchdog Timer Counter Register(0x00~0xFF)

O 2E AA

5.2 GPIO Signal

GPI program sample

O 2E 87

O 2E 87

O 2E 07

O 2F 07 Select Logical Device 7

```
O 2E 30
O 2F 08      Active GPIO3(BIT3)
O 2E EC
O 2F FF      GPIO3 pins are programmed as input pins
O 2E ED      GPIO status 1:high, 0: low
I   2F yy    yy = GPIO status 1:high, 0: low
O 2E AA
```

GPO program sample

```
O 2E 87
O 2E 87
O 2E 07
O 2F 07      Select Logical Device 7
O 2E 30
O 2F 10      Active GPIO4 (BIT4)
O 2E F0      GP4x pins are programmed as output pins
O 2F 00     GP4x pins are programmed as output pins
O 2E F1      GPIO status 1:high, 0: low
O 2F yy      xx = GPIO status 1:high, 0: low
O 2E AA
```

6 System Resources

Memory Map

System Memory Address Map		
Memory Area	Size	Description
0000-003F	1K	Interrupt Area
0040-004F	0.3K	BIOS Data Area
0050-006F	0.5K	System Data
0070-0548	19K	DOS
0549-0FC2	41K	Program Area
0FC3-9AFF	556K	【Available】
9B00-9CFF	8K	Unused
First Meg	-- Conventional memory end at 628K --	
9D00-9DFF	4K	Extended BIOS Area
9G00-9FFF	8K	Unused
A000-AFFF	64K	VGA Graphics
B000-B7FF	32K	Unused
B800-BFFF	32K	VGA Text
C000-CE9F	58K	Video ROM
CEA0-D09F	8K	Unused

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I/O Address Assignment

Interrupt Request Lines IRQ		
IRQ#	Current Use	Default Use
IRQ 0	Unused	System Timer
IRQ 1	System ROM	Keyboard Event
IRQ 2	【Unassigned】	Usable IRQ
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	【Unassigned】	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	Unused	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	【Unassigned】	Usable IRQ
IRQ 10	【Unassigned】	Usable IRQ
IRQ 11	【Unassigned】	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	【Unassigned】	Usable IRQ

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7 BIOS Setup Items

7.1 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.

7.2 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 <F2> or <DEL>key will enter BIOS setup screen.

Press <F2>or <DEL>to enter SETUP

If the message disappears before respondingand 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 GeneralHelp 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.

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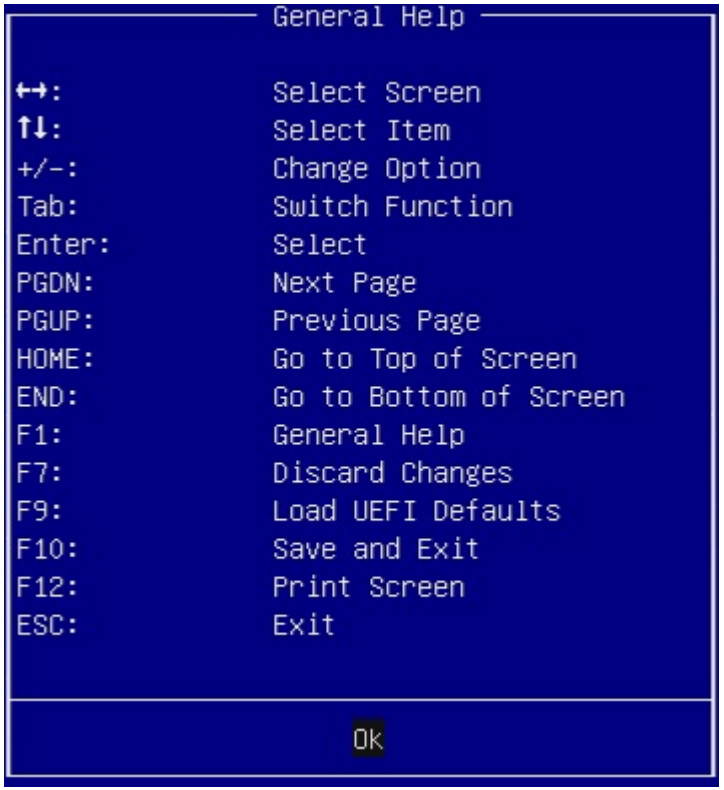

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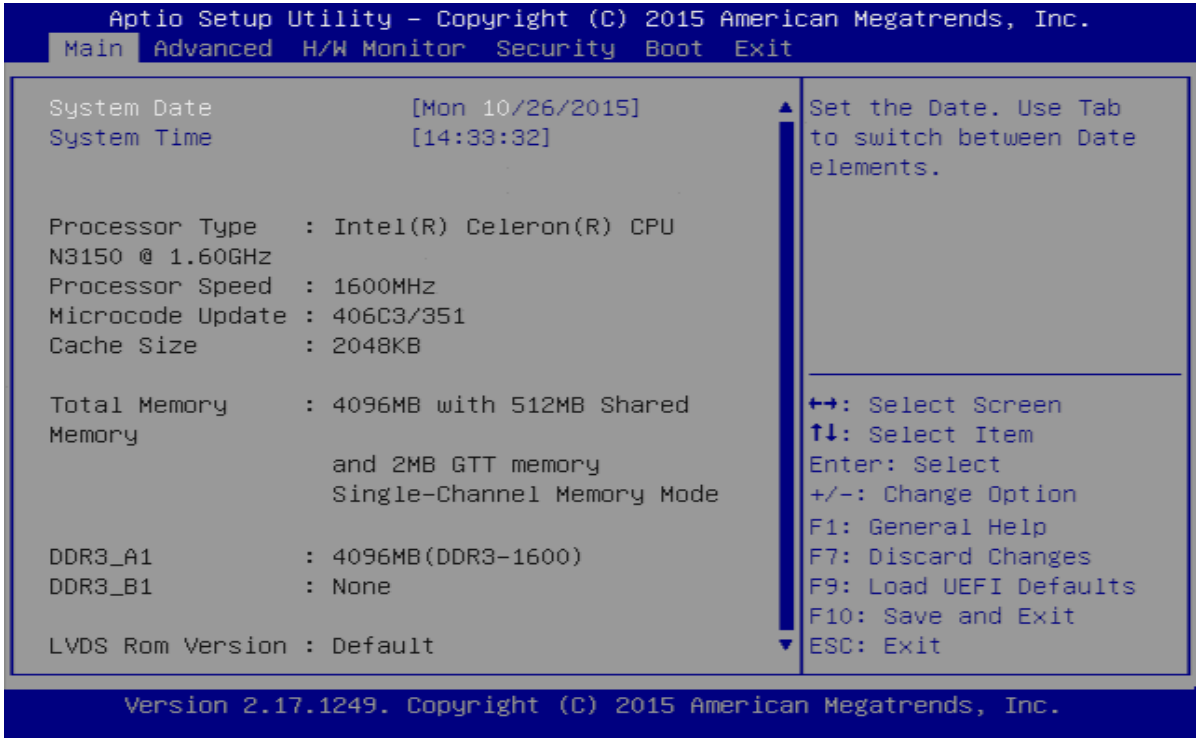
7.2.1 Main

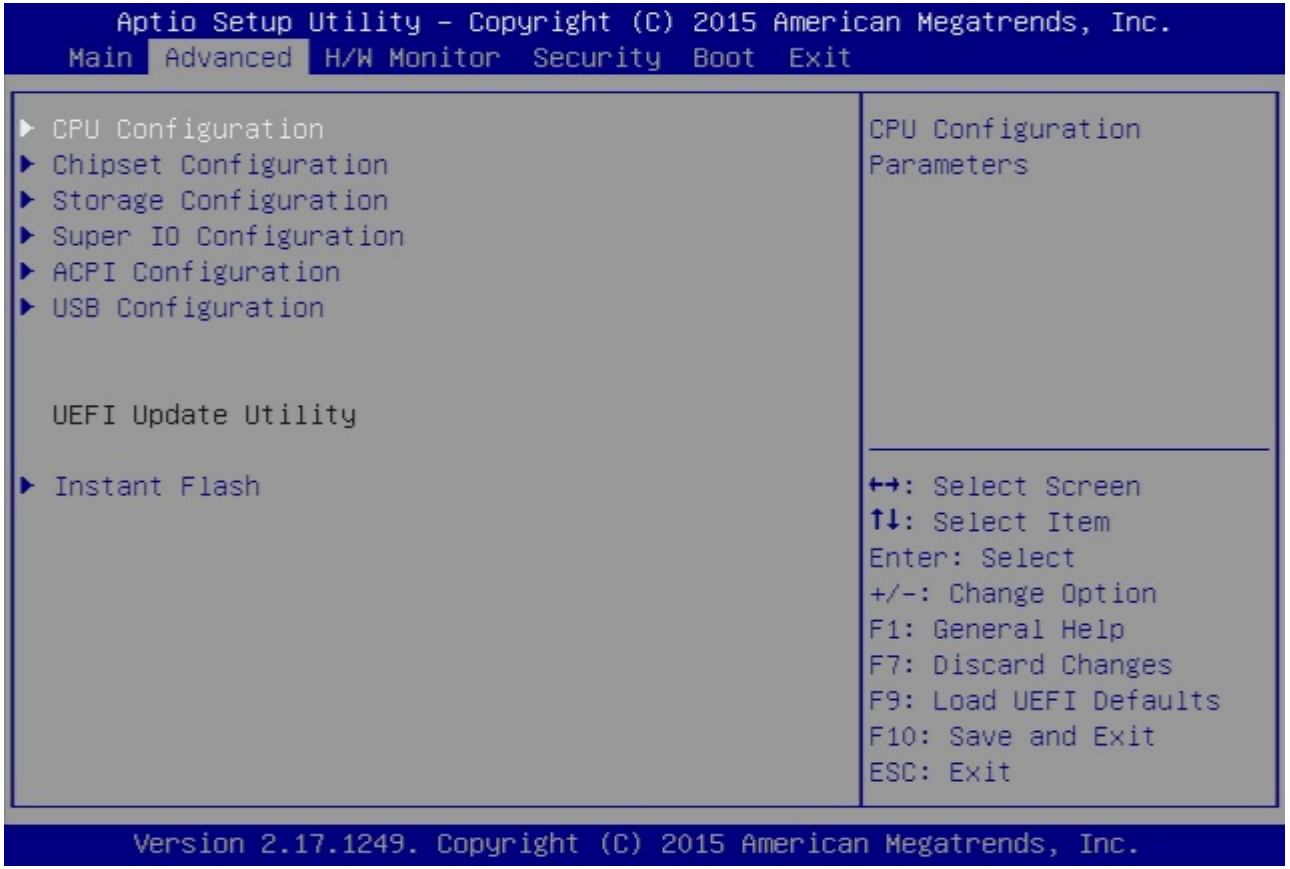
To set up the system time/date information.



Feature	Description	Options
System Date	Set the Date. Use Tab to switch between Date elements.	
System Time	Set the Time. Use Tab to switch between Time elements	

Advancd

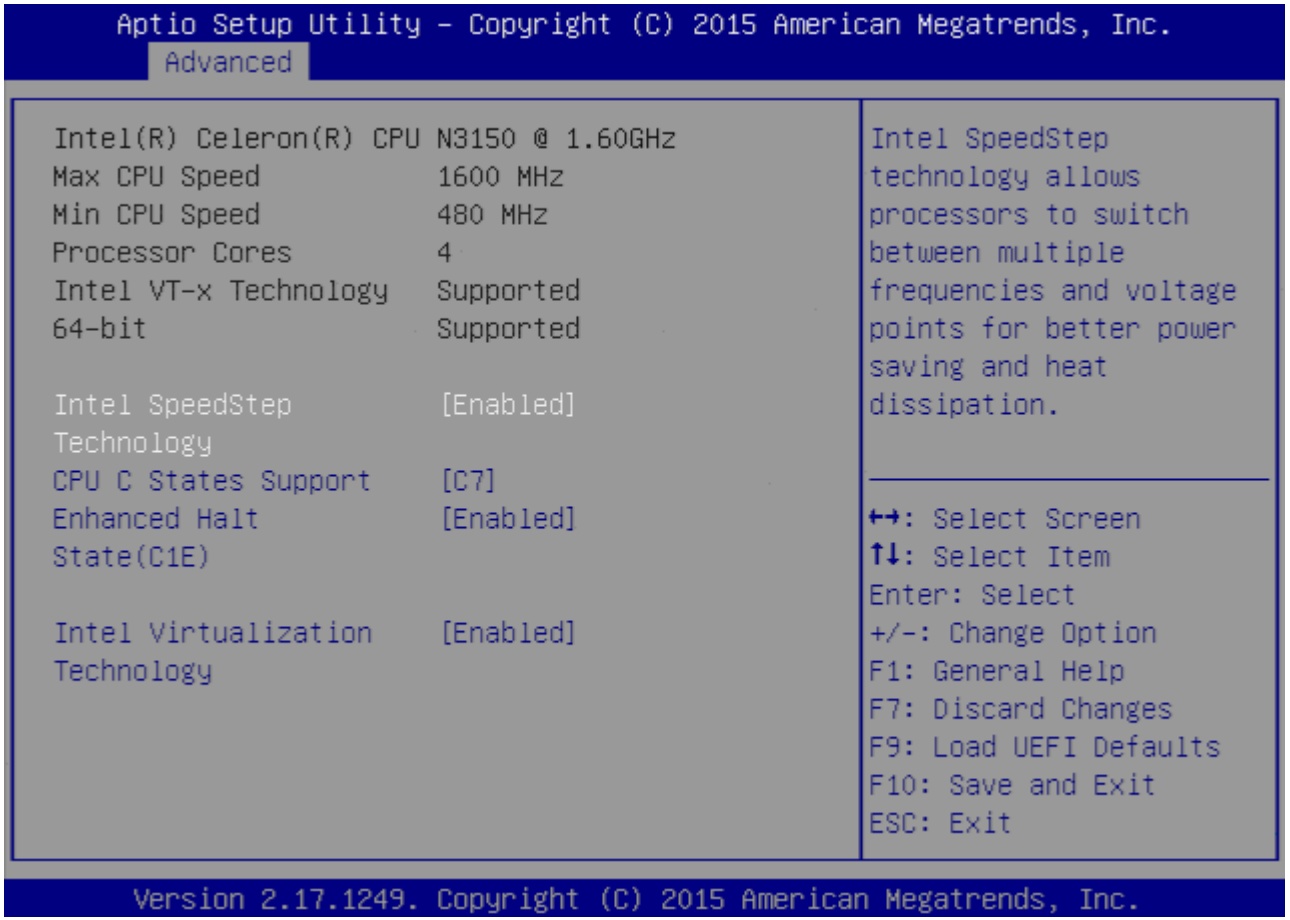
To set up the advanced UEFI features.



7.2.2 Configuration

CPU Configuration

CPU Configuration Parameters.



Feature	Description	Options
Intel SpeedStep Technology	Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation.	Disabled, ★Enabled
CPU C States Support	Enable CPU C State Support for power saving. It is recommended to keep C1, C6 ad C7 all enabled for better power saving.	★C7, C6, C1, Disabled
Enhanced Halt State(C1E)	Enable Enhanced Halt State (C1E) for lower power consumption.	Disabled, ★Enabled
Intel Virtualization Technology	Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.	Disabled, ★Enabled

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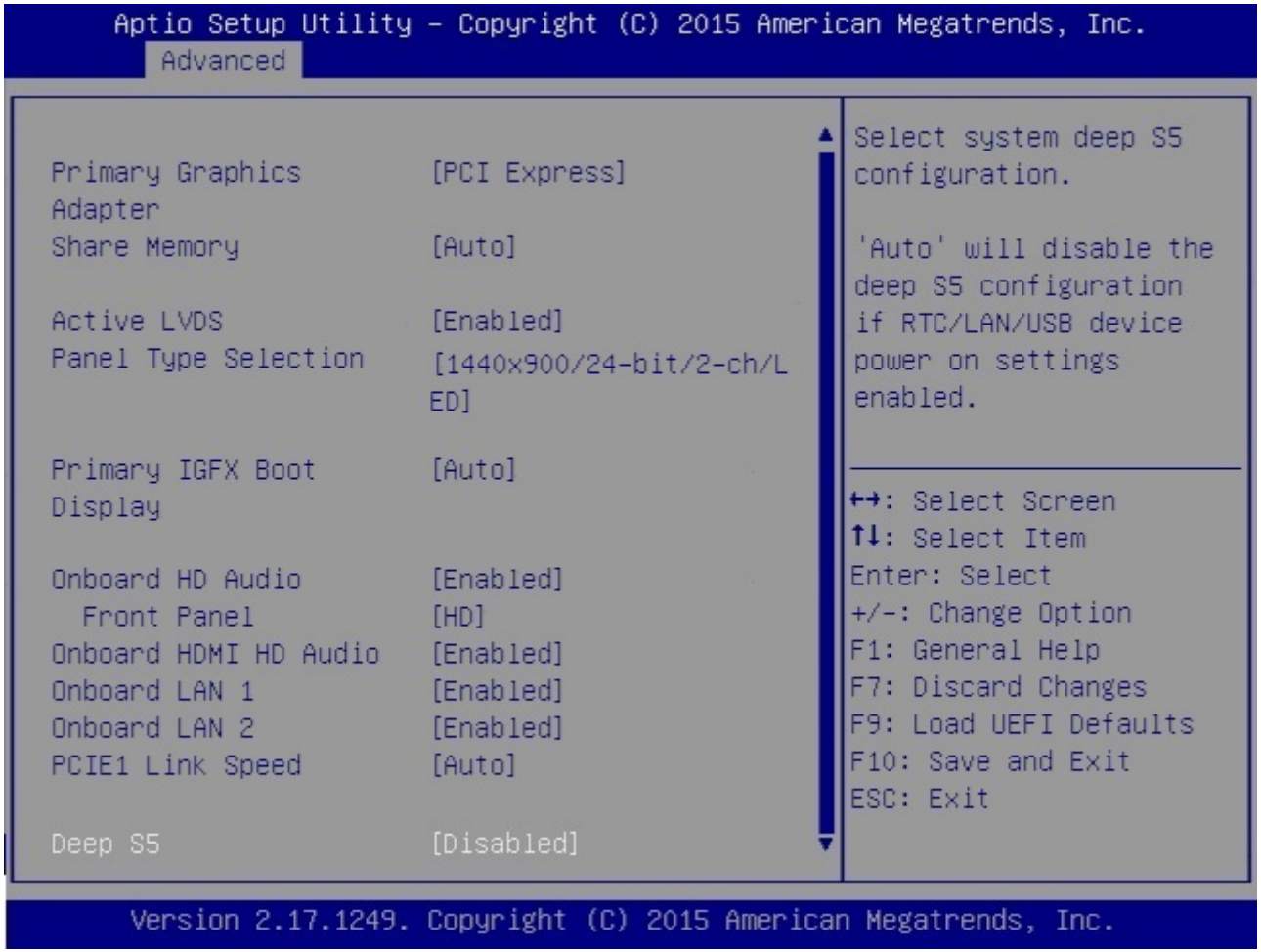
Chipset Configuration

Configure Chipset Settings.

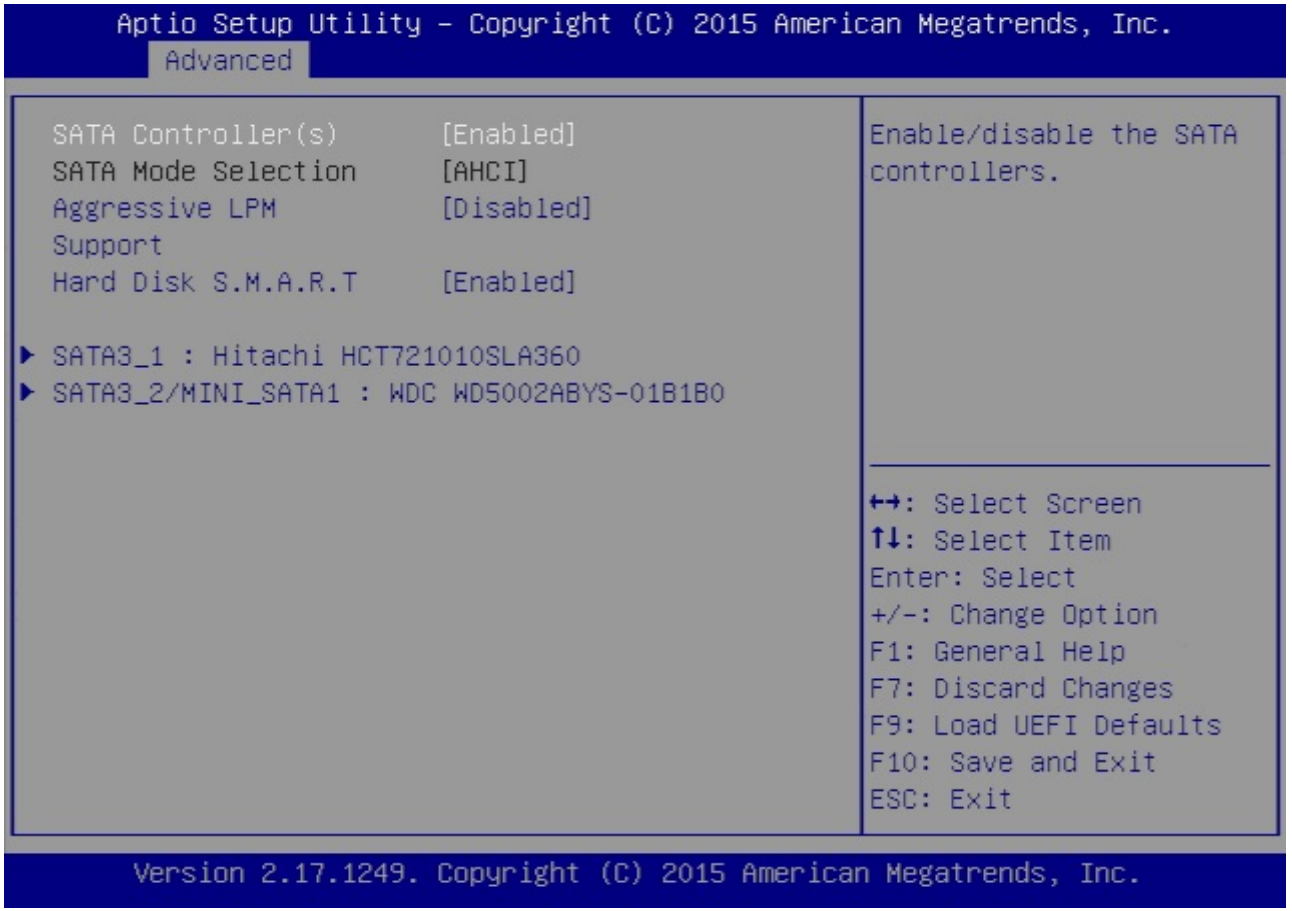


Feature	Description	Options
Primary Graphics Adapter	Select a primary VGA.	Onboard, ★PCI Express
Share Memory	Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.	★Auto, 64MB, 128MB, 256MB, 512MB
Active LVDS	The enable or disable the LVDS.	★Enabled, Disabled
Panel Type Selection	Select Panel Type	1366x768/18-bit/1-ch/LED,800x600/ 18-bit/1-ch/CCFL, 1024x768/24-bit/1-ch/CCFL, 1280x1024/24-bit/2-ch/CCFL, 1366x768/24-bit/1-ch/CCFL, ★1440x900/24-bit/2-ch/LED, 1024x600/18-bit/1-ch/LED, 1440x900/24-bit/2-ch/LED, 1280x1024/24-bit/2-ch/LED, 1024x768/24-bit/1-ch/LED, 1600x900/18-bit/2-ch/LED,1366x768 /24-bit/1-ch/LED, 1920x1080/24-bit/2-ch/LED, 800x600/24-bit/1-ch/LED, 640x480/24-bit/1-ch/LED,

		1024x768/18-bit/1-ch/LED
Primary IGFX Boot Display	Select the Video Device Which will be activated during POST. This has no effect is external graphics present. Secondary boot display selection will appear based on your selection. VGA mode will supported only on primary display.	★Auto, HDMI, LVDS,CRT
Secondary IGFX Boot Display (Primary choose: HDMI or LVDS or CRT)	Select Secondary Display Device	★Disabled, HDMI, LVDS, CRT
Onboard HD Audio	Enable/disable onboard HD audio.	Disabled,★Enabled
Front Panel	AC 97/HD/Disable front panel HD audio	AC 97,★HD, Disabled
Onboard HDMI HD Audio	Enable audio for the onboard digital outputs.	Disabled, ★Enabled
Onboard LAN 1	Enable or disable the onboard network interface controller.	★Enabled, Disabled
Onboard LAN 2	Enable or disable the onboard network interface controller.	★Enabled, Disabled
PCIE1 Link Speed	Configure PCIE1 Slot Link Speed.	★Auto, Gen2, Gen1
Deep S5	Select system deep S5 configuration. 'Auto' will disable the deep S5 configuration if RTC/LAN/USB device power on settings enabled.	★Auto, Disabled

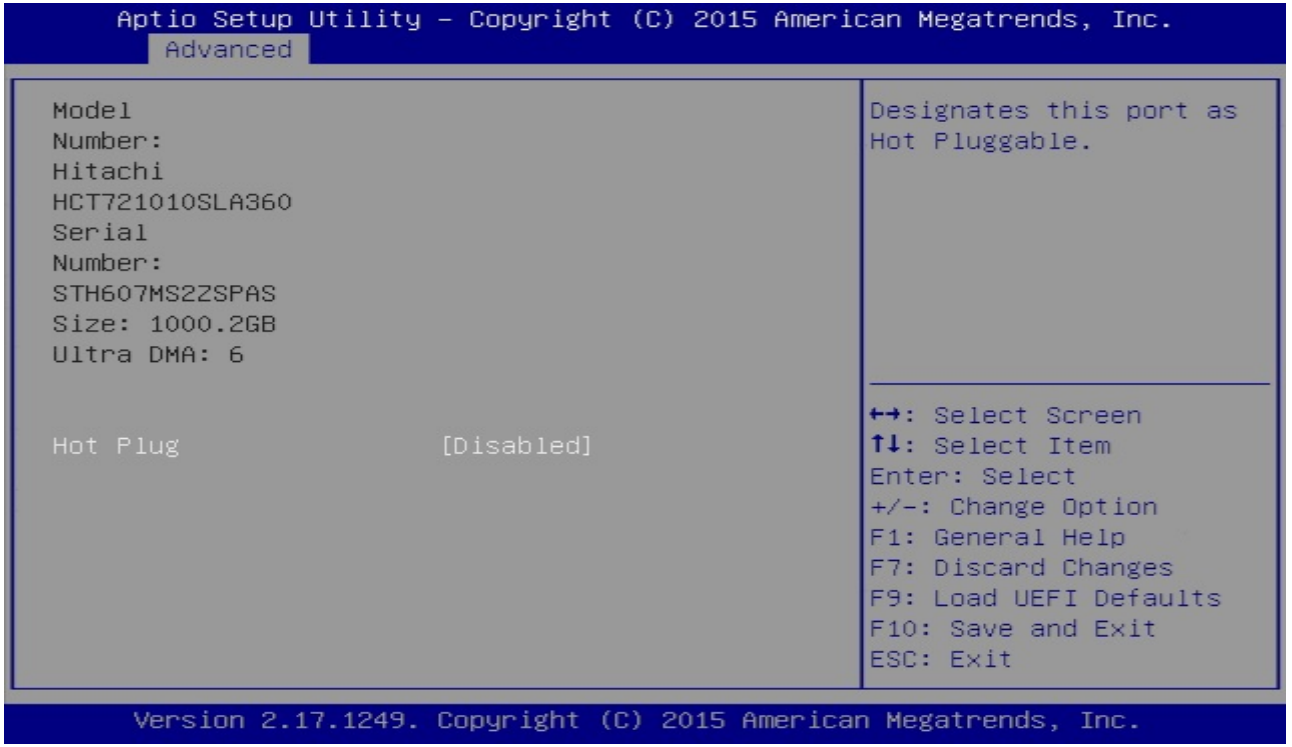
Storage Configuration

Configure storage devices.



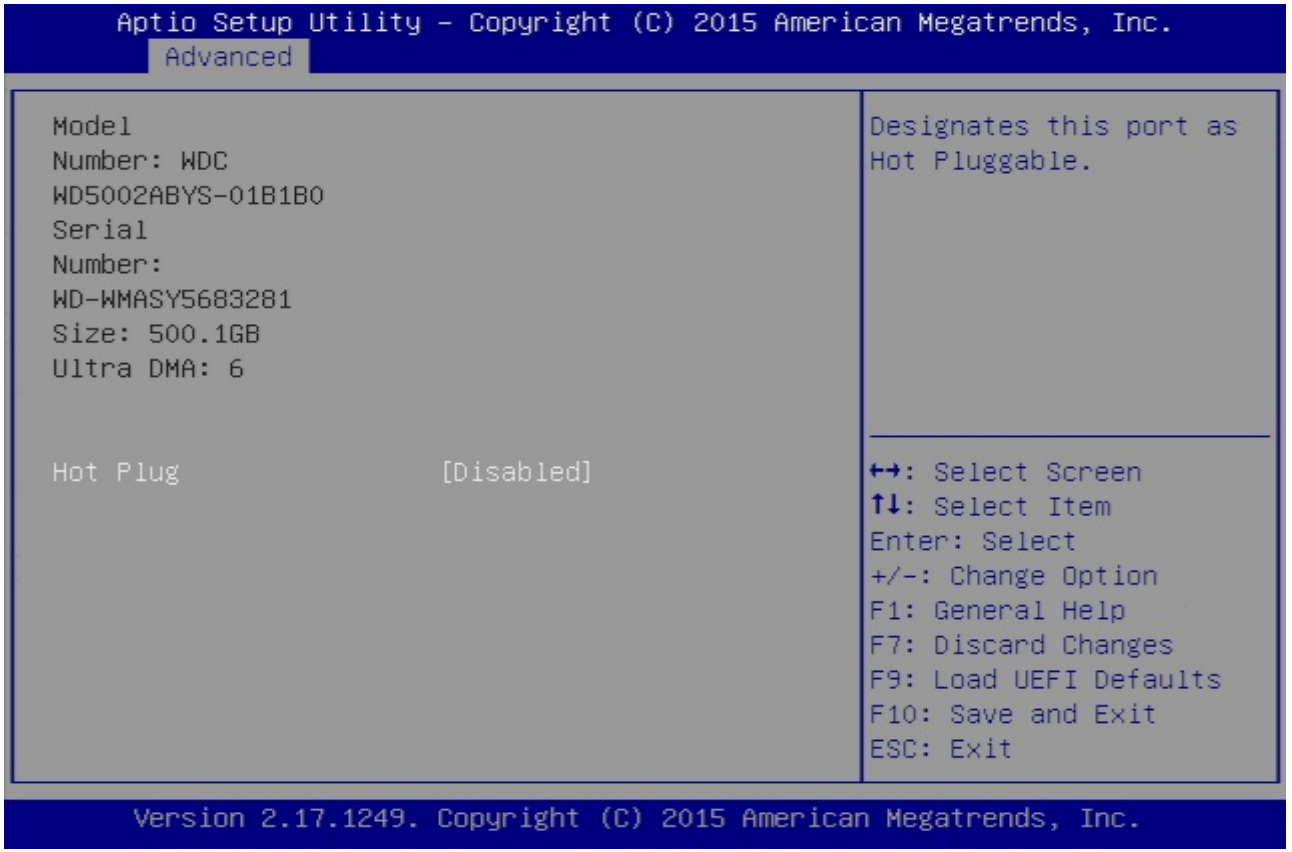
Feature	Description	Options
SATA Controller(s)	Enable/disable the SATA controllers.	★Enabled, Disabled
Aggressive LPM Support	Enable PCH to aggressively enter link power state.	Enabled, ★Disabled
Hard Disk S.M.A.R.T	S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drivers to detect and report on various indicators of reliability.	Disabled, ★Enabled

SATA3_1: Hitachi HCT721010SLA360



Feature	Description	Options
Hot Plug	Designates this port as Hot Pluggable.	Enabled, ★Disabled

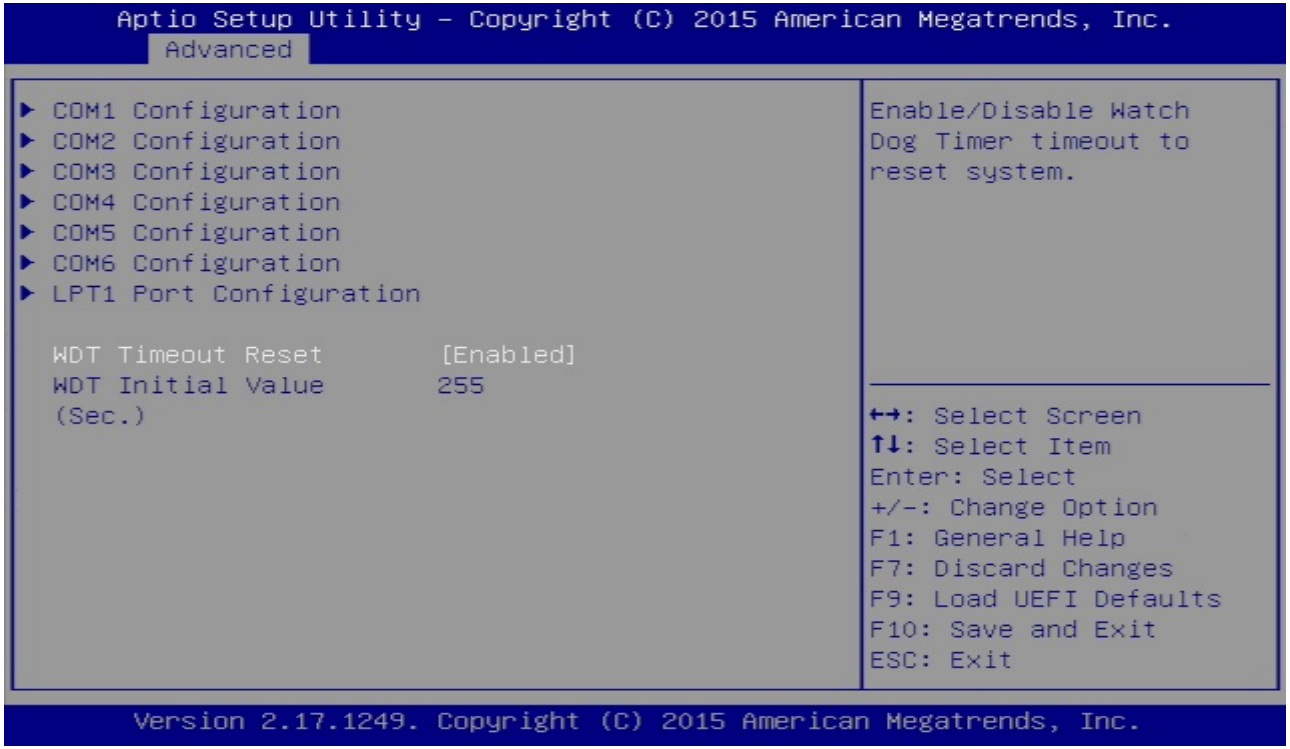
SATA3_2/MINI_SATA1: WDC WD5002ABYS-01B1B0



Feature	Description	Options
Hot Plug	Designates this port as Hot Pluggable.	Enabled, ★Disabled

Super IO Configuration

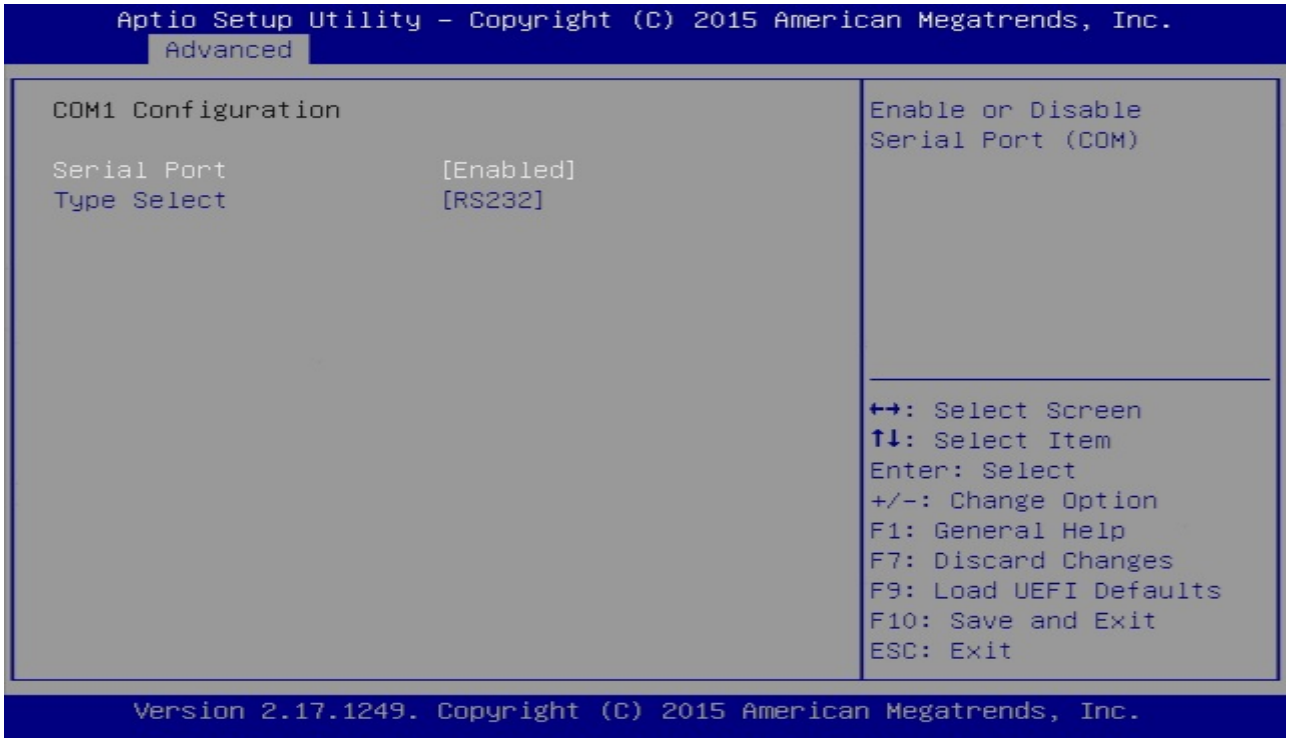
Configure Super IO Settings.



Feature	Description	Options
WDT Timeout Reset	Enable/Disable Watch Dog Timer timeout to reset system.	★Disabled, Enabled
WDT Initial Value (Sec.)	Watch Dog Timer Initial Value to count down.	Range: 1-255

COM1 Configuration

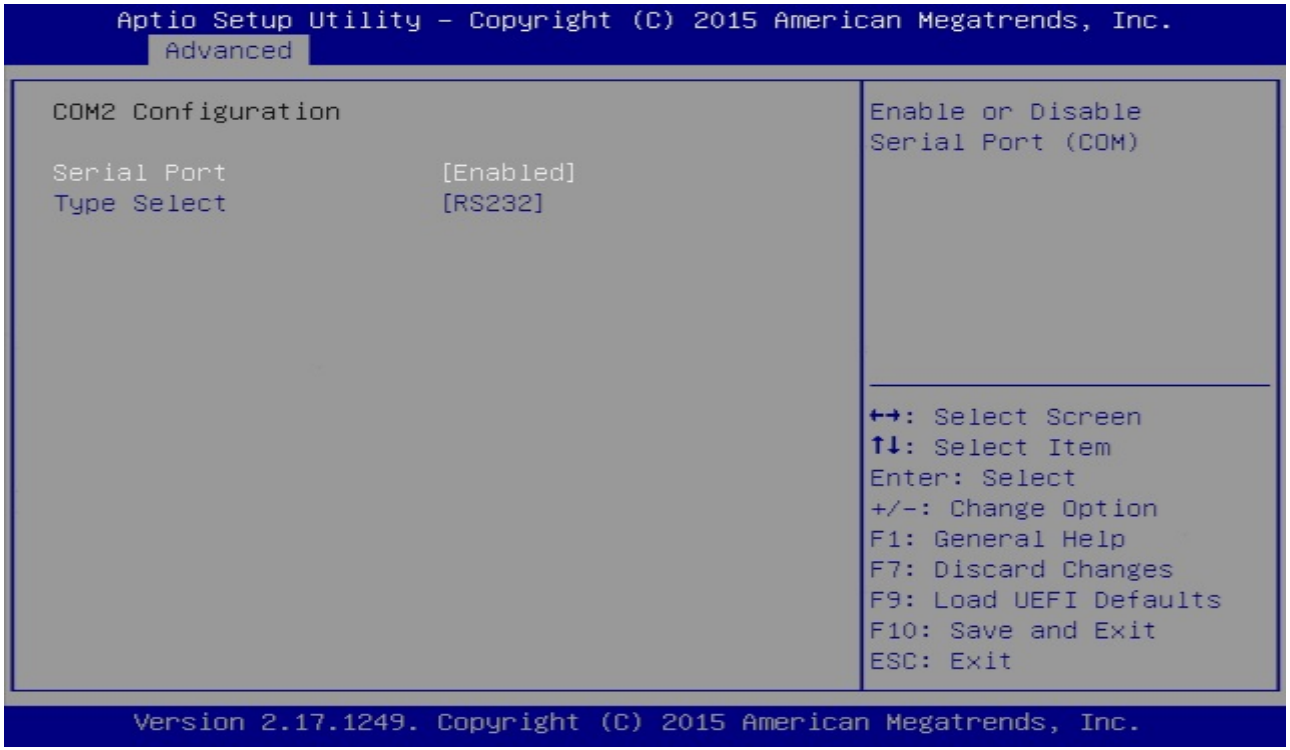
Set Parameter of COM1



Feature	Description	Options
Serial Port	Enable or Disable Serial Port(COM)	Disabled,★Enabled
Type Select	Set COM Type.	★RS-232, RS422, RS485

COM2 Configuration

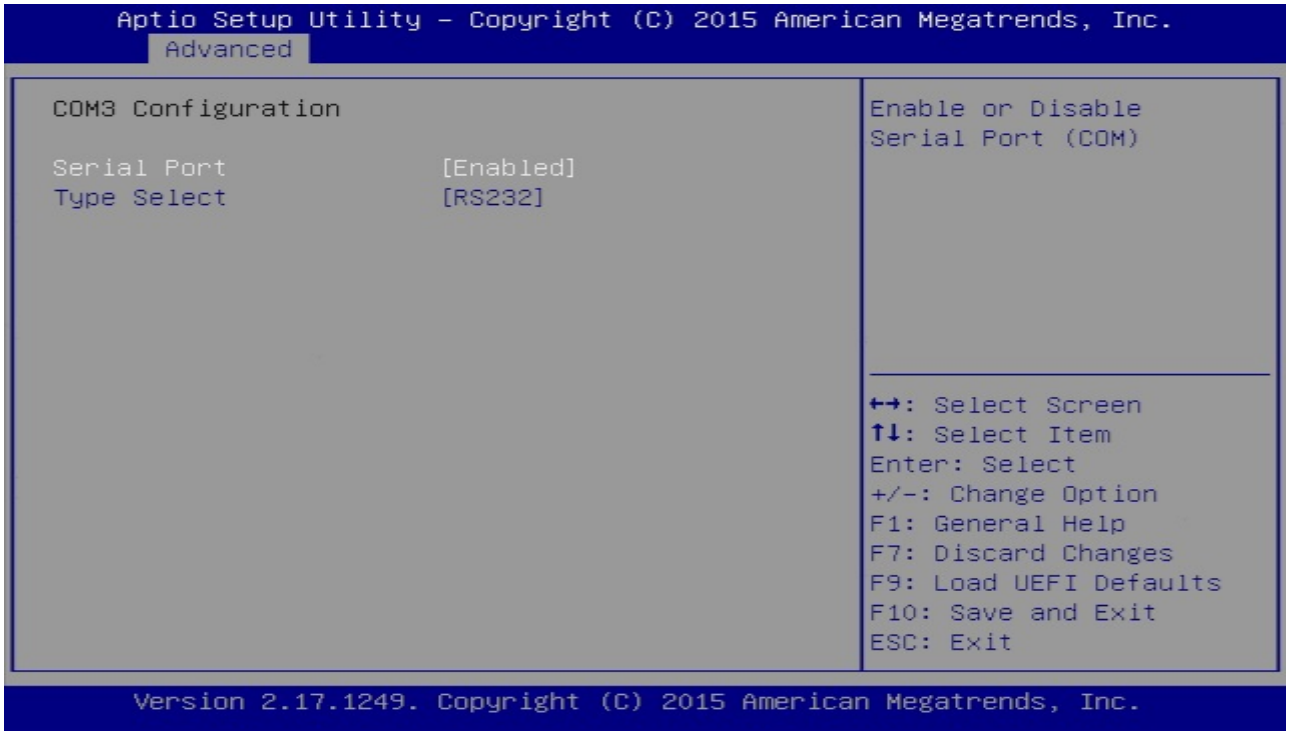
Set Parameter of COM2



Feature	Description	Options
Serial Port	Enable or Disable Serial Port(COM)	Disabled,★Enabled
Type Select	Set COM Type.	★RS-232, RS422, RS485

COM3 Configuration

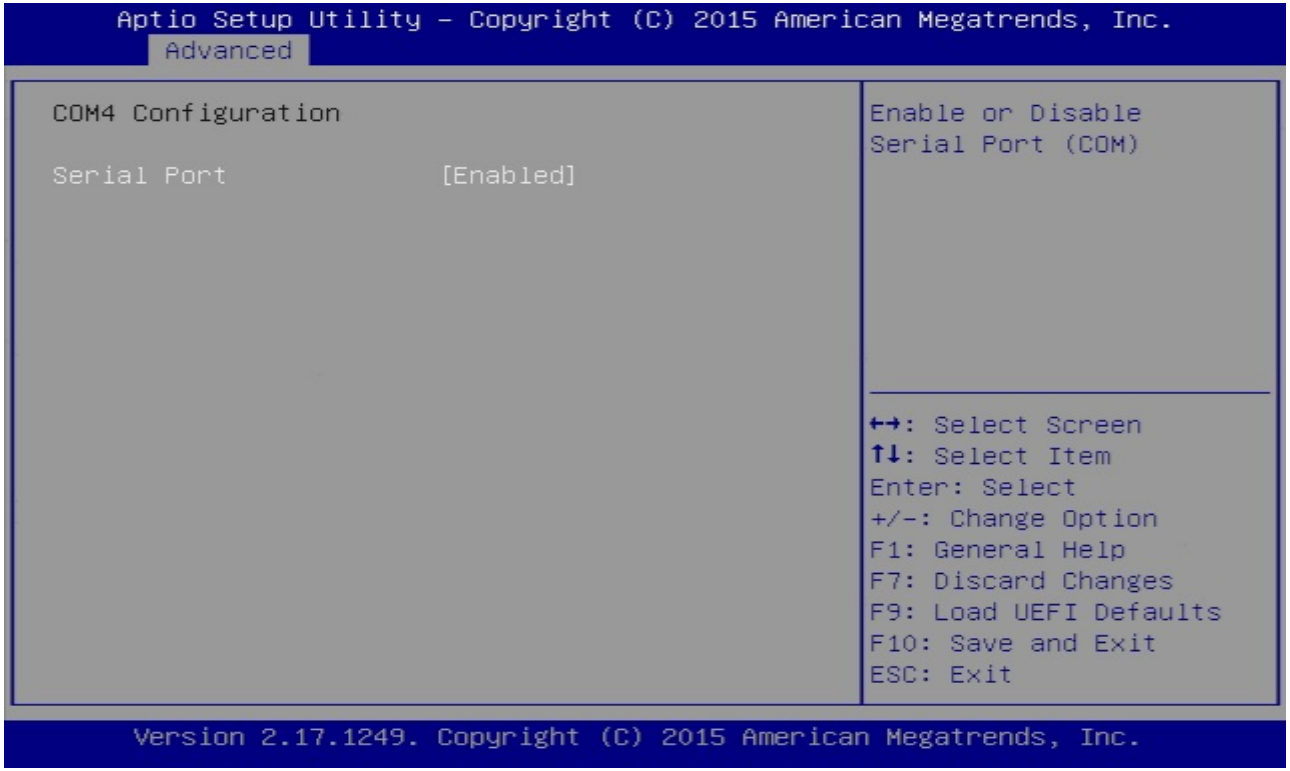
Set Parameter of COM3



Feature	Description	Options
Serial Port	Enable or Disable Serial Port(COM)	Disabled,★Enabled
Type Select	Set COM Type.	★RS-232, RS422, RS485

COM4 Configuration

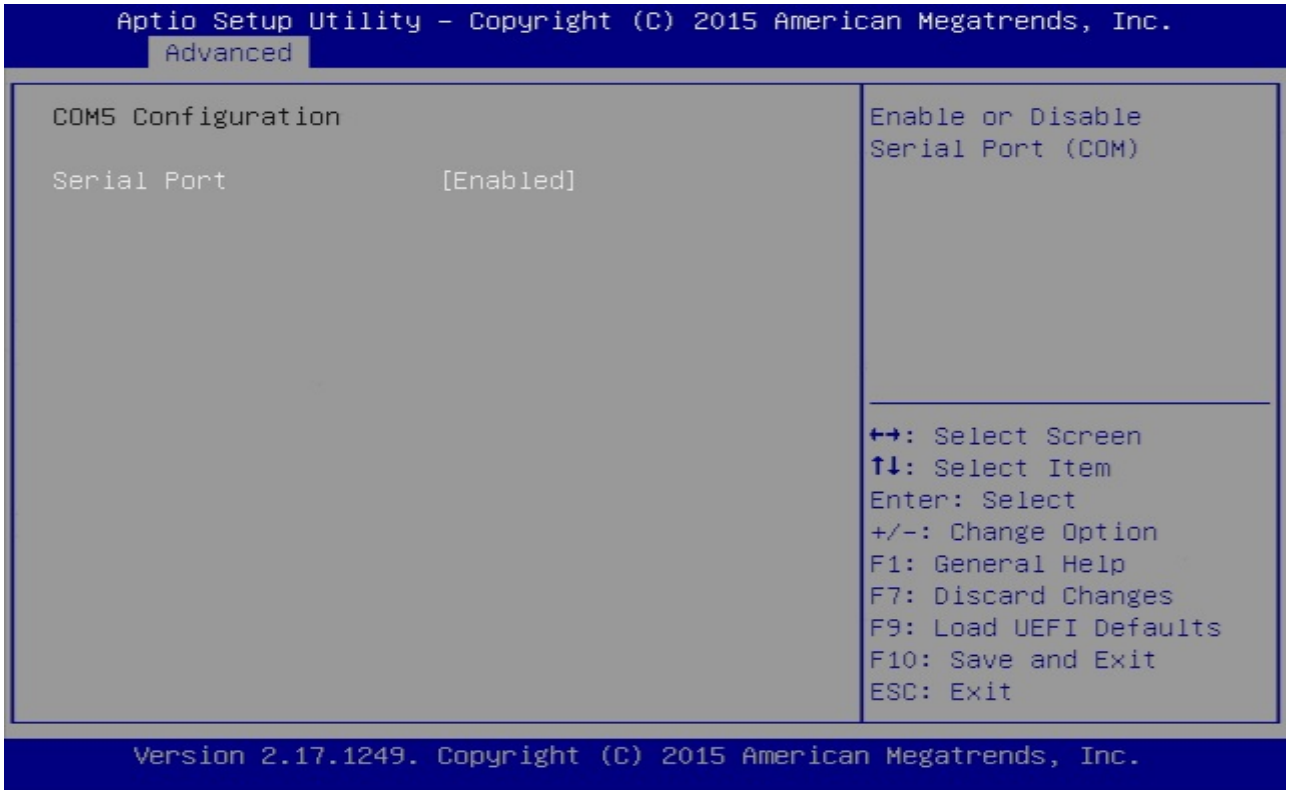
Set Parameter of COM4



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

COM5 Configuration

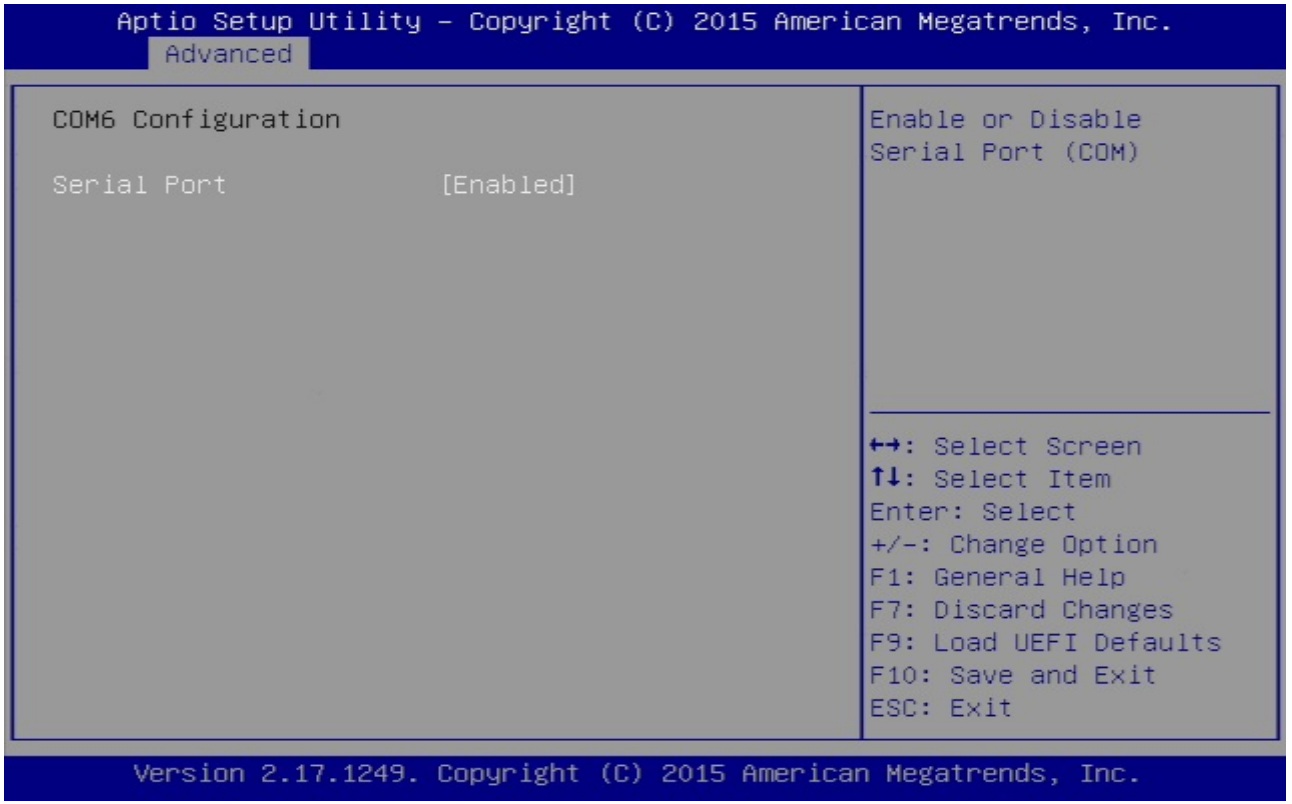
Set Parameter of COM5



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

COM6 Configuration

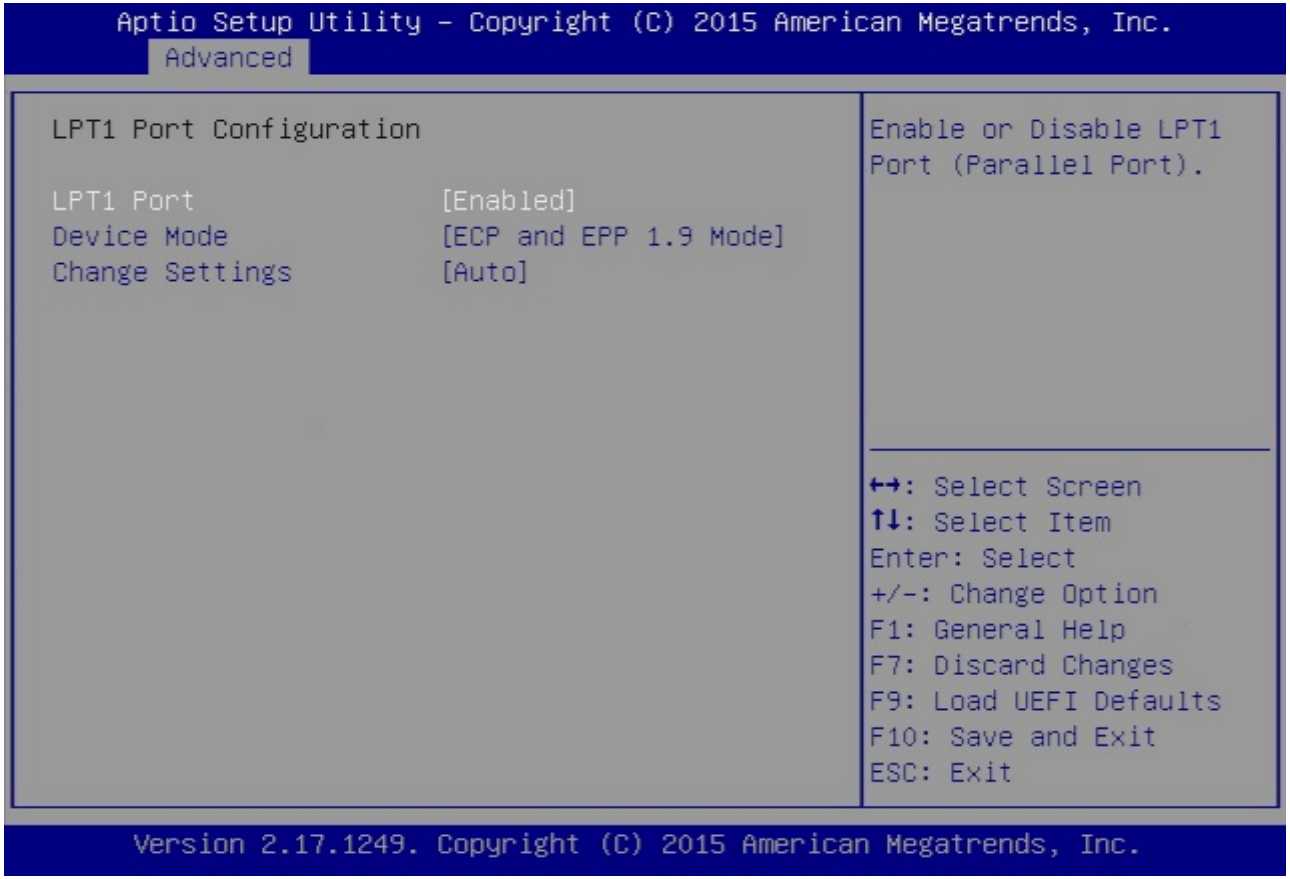
Set Parameter of COM6



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

LPT1 Port Configuration

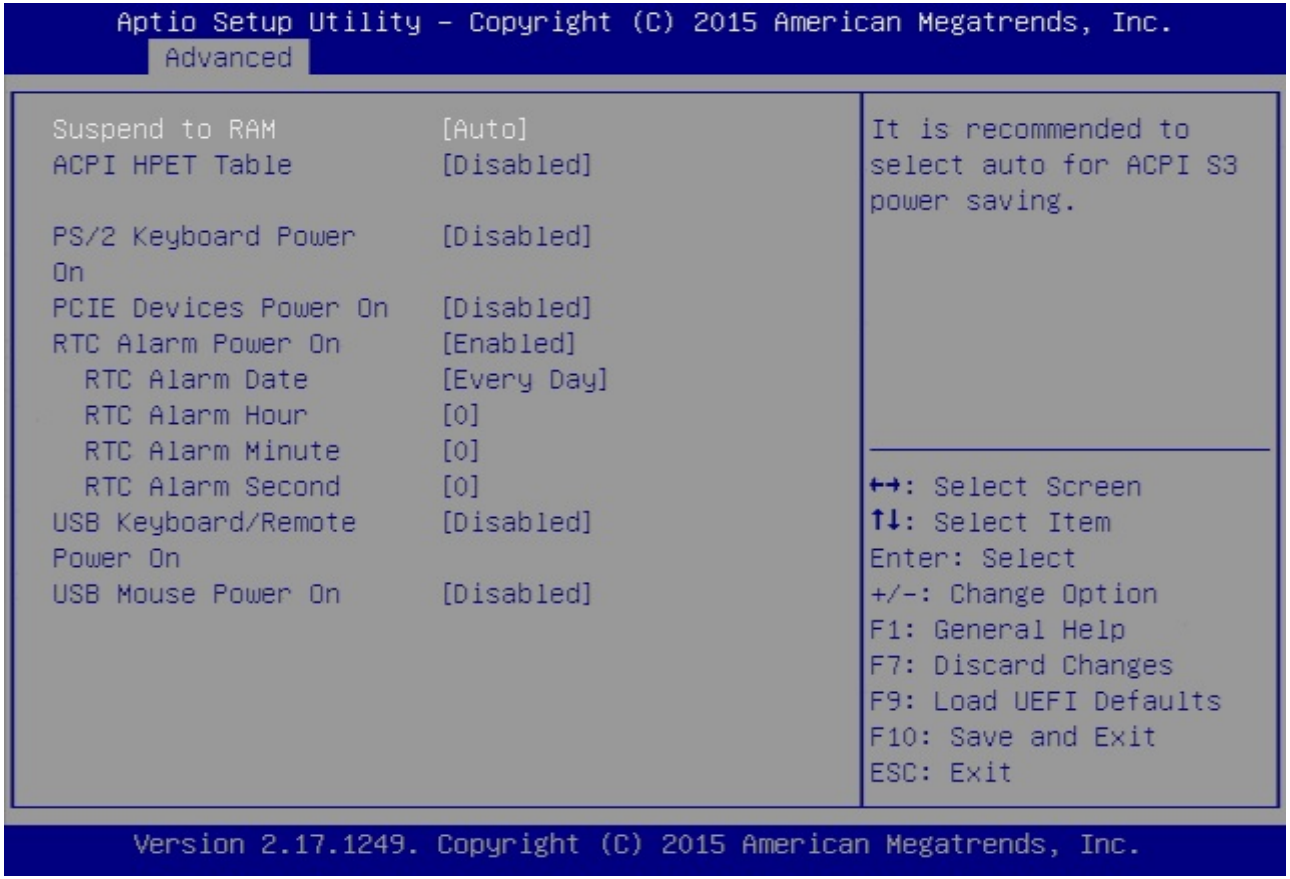
Set Parameter of COM1



Feature	Description	Options
LPT1 Port	Enable or Disable LPT1 Port (Parallel Port).	Disabled, ★Enabled
Device Mode	Change the Printer mode.	Normal, Bi-Directional, ★ECP and EPP 1.9 Mode, ECP and EPP 1.7 Mode
Change Settings	Select an optimal settings for Super IO Device	★Auto IO=378h; IRQ=5, DMA=3 IO=378h; IRQ=5,6,7,9,10,11,12; DMA=1,3 IO=278h; IRQ=5,6,7,9,10,11,12; DMA=1,3

ACPI Configuration

Configure ACPI Settings



Feature	Description	Options
Suspend to RAM	It is recommended to select auto for ACPI S3 power saving.	Disabled, ★Enabled
ACPI HPET Table	Enable the High Precision Event Timer for better performance.	Enabled, ★Disabled
PS/2 Keyboard Power On	Allow the system to be waked up by a PS/2 Keyboard.	★Disabled, Any Key
PCIE Devices Power On	Allow the system to be waked up by a PCIE device and enable wake up on LAN.	★Disabled, Enabled
RTC Alarm Power On (Enabled)	Allow the system to be waked up by the real time clock alarm. Set it to by OS to let it be handled by your operating system.	Disabled, Enabled,★By OS
RTC Alarm Date	Set Date of RTC power on feature.	Every Day 1~31
RTC Alarm Hour	Set Hour of RTC power on feature.	0~23
RTC Alarm Minute	Set Minute of RTC power on feature.	0~59
RTC Alarm Second	Set Second of RTC power on feature.	0~59
USB Keyboard/Remote Power On	Enable system to wake up from S5 using USB Keyboard/Remote.	★Disabled, Enabled
USB Mouse Power On	Enable system to wake up from S5 using USB Mouse	★Disabled, Enabled

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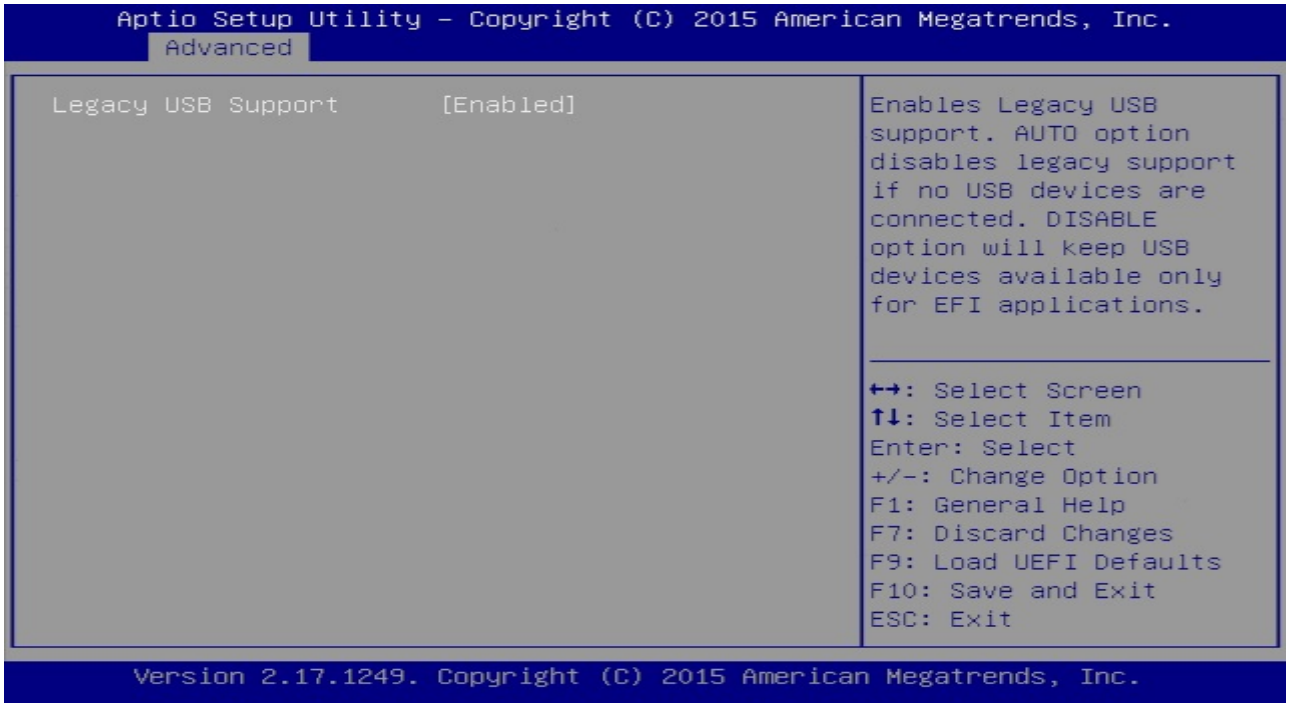
USB Configuration

Configure the USB support.



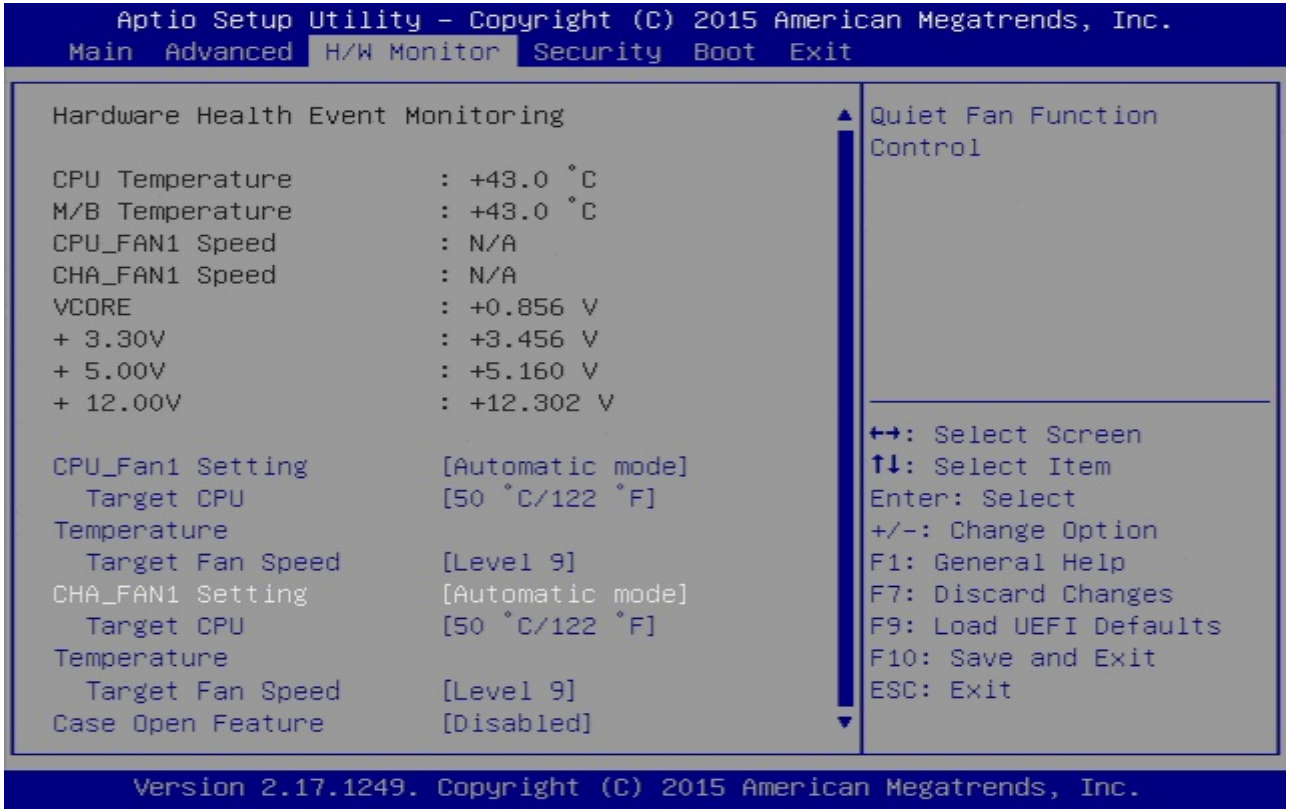
Feature	Description	Options
Legacy USB Support	Enables Legacy USB support. Auto option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.	★Enabled, Disabled, Auto

Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI. Please note that your USB storage device must be FAT32/16/12 file system.

H/W Monitor

To display current hardware status



Feature	Description	Options
CPU_Fan1 Setting (Automatic mode)	Quiet Fan Function Control	★Full On, Automatic mode
Target CPU Temperature	Target CPU Temperature Value.	45℃/ 113℉, 46℃/114℉, 47℃/116℉,48℃/118℉, 49℃/120℉,★50℃/ 122℉, 51℃/123℉, 52℃/125℉, 53℃/127℉, 54℃/129℉, 55℃/131℉, 56℃/132℉, 57℃/134℉, 58℃/136℉, 59℃/138℉, 60℃/140℉, 61℃/141℉, 62℃/143℉ 63℃/145℉,64℃/147℉ 65℃/149℉
Target Fan Speed	The higher the level, the higher the fan speed.	Level 1, Level 2, Level 3, Level 4, Level 5, Level 6 Level 7, Level 8, ★Level9
CHA_FAN1 Setting (Automatic mode)	Quiet Fan Function Control	★Full On, Automatic mode
Target CPU Temperature	Target CPU Temperature Value.	45℃/ 113℉, 46℃/114℉,

		47℃/116°F,48℃/118°F, 49℃/120°F,★50℃/ 122°F, 51℃/123°F, 52℃/125°F, 53℃/127°F, 54℃/129°F, 55℃/131°F, 56℃/132°F, 57℃/134°F, 58℃/136°F, 59℃/138°F, 60℃/140°F, 61℃/141°F, 62℃/143°F 63℃/145°F,64℃/147°F 65℃/149°F
Target Fan Speed	The higher the level, the higher the fan speed.	Level 1, Level 2, Level 3, Level 4, Level 5, Level 6 Level 7, Level 8, ★Level9
Case Open Feature	Enable or disable the feature of Case Open.	★Disabled, Enabled

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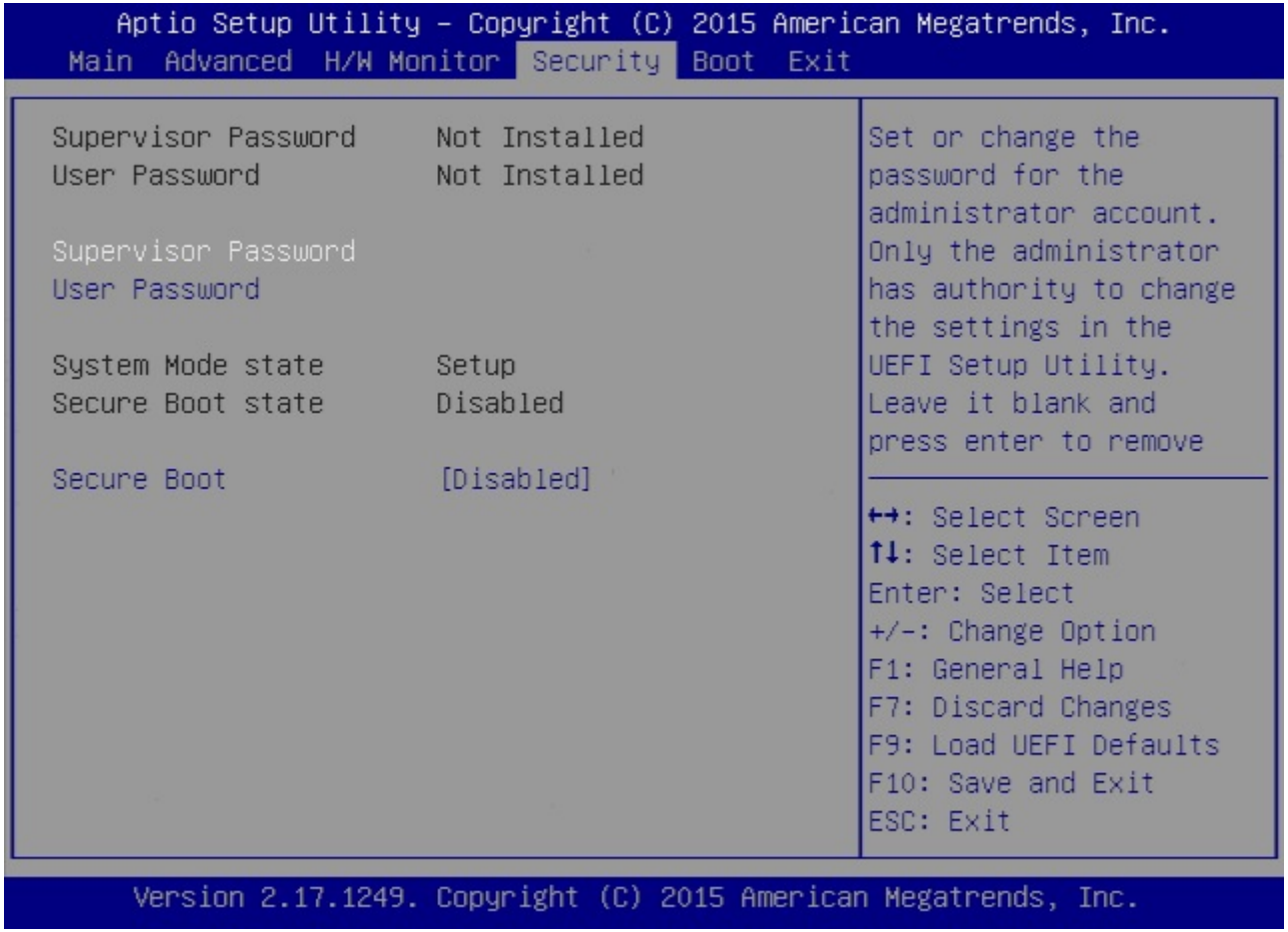
7.2.3 Security

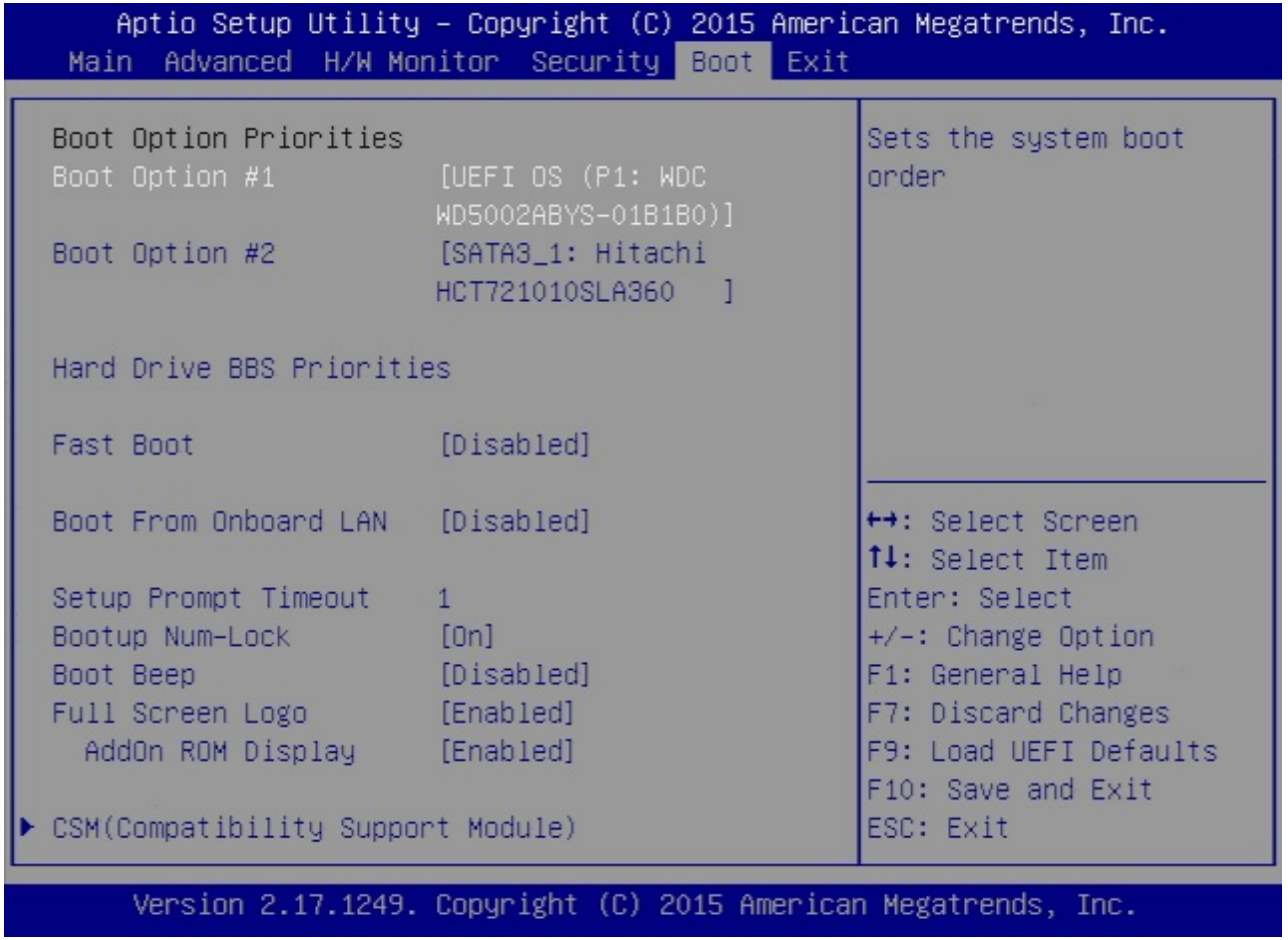
To setup the security features.



Feature	Description	Options
Supervisor Password	Set or change the password for the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.	Create New password
User Password	Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.	Create New password
Secure Boot	Enable to support Windows 8 Secure Boot.	★Disabled, Enabled

7.2.4 Boot

To setup the default system device to locate and load the Operating System.



Feature	Description	Options
Boot Option #1	Set the system boot order	★UEFI OS(P1:WDC W5002ABYS-01B1B0), SATA3_1: Hitachi HCT721010SLA360 Disabled
Boot Option #2	Set the system boot order	UEFI OS(P1:WDC W5002ABYS-01B1B0), ★SATA3_1: Hitachi HCT721010SLA360 Disabled
Fast Boot	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS options.	★Disabled, Fast, Ultra Fast
Boot From Onboard LAN	Boot From Onboard LAN.	★Disabled, Enabled
Setup Prompt Timeout	Configure the number of second to wait for the setup hot key.	
BootupNum-Lock	Select whether Num Lock should be turned o or off when the system boots up.	★On, Off
Boot Beep	Select whether the Boot Beep Should be turned on or off when the system boots up. Please note that a buzzer is needed.	★Disabled, Enabled
Full Screen Logo	Enable to display the boot logo or disable to show normal POST messages.	Disabled, ★Enabled
AddOn ROM Display	Set display mode for Option Rom	★Enabled, Disabled

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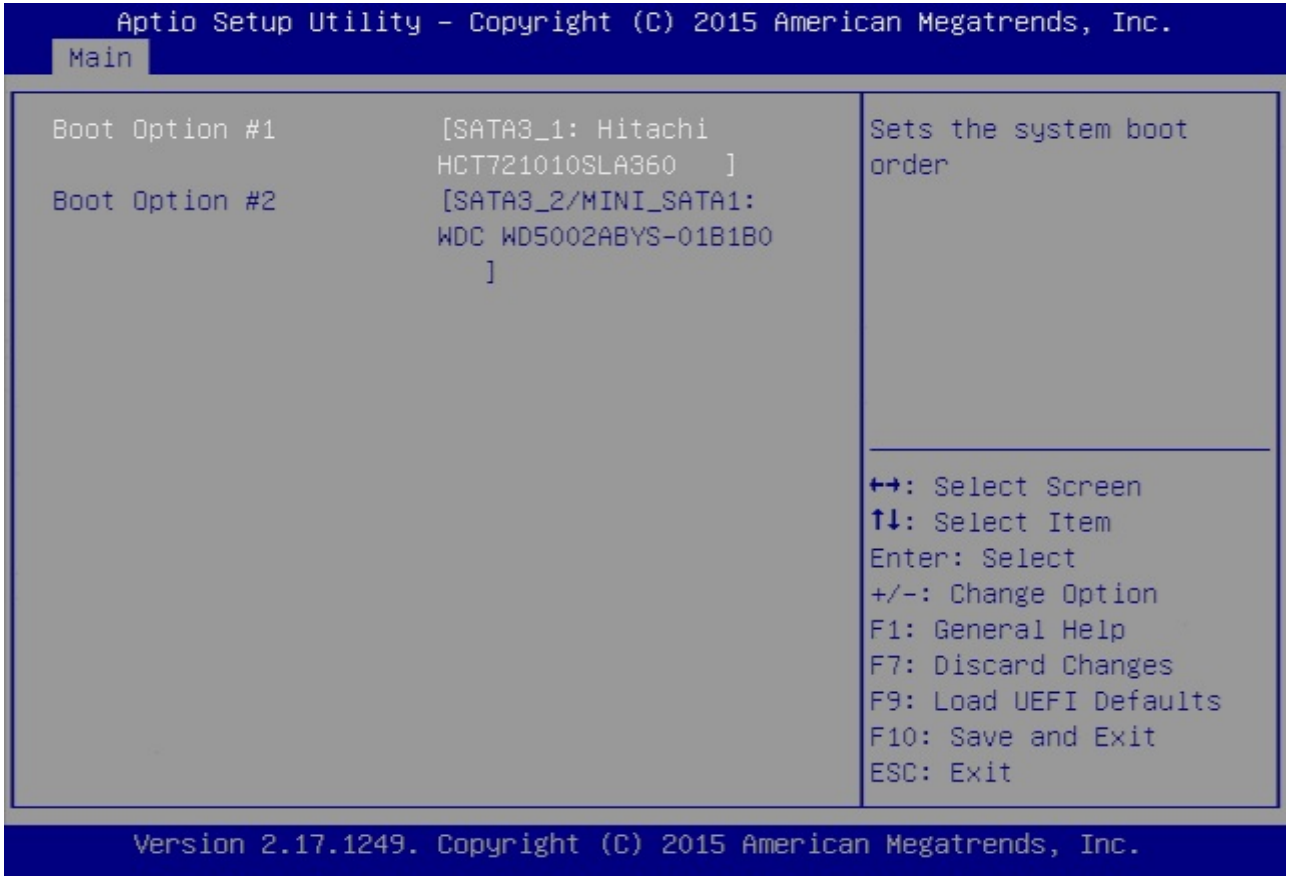
Hard Drive BBS Priorities

Set the order of the legacy devices in this group



Feature	Description	Options
Boot Option #1	Sets the system boot order	★SATA3_1: Hitachi HCT721010SLA360, SATA3_2/MINI_SATA: WDC WD5002ABYS-01B10, Disabled
Boot Option #2	Sets the system boot order	SATA3_1: Hitachi HCT721010SLA360, ★SATA3_2/MINI_SATA: WDC WD5002ABYS-01B10, Disabled

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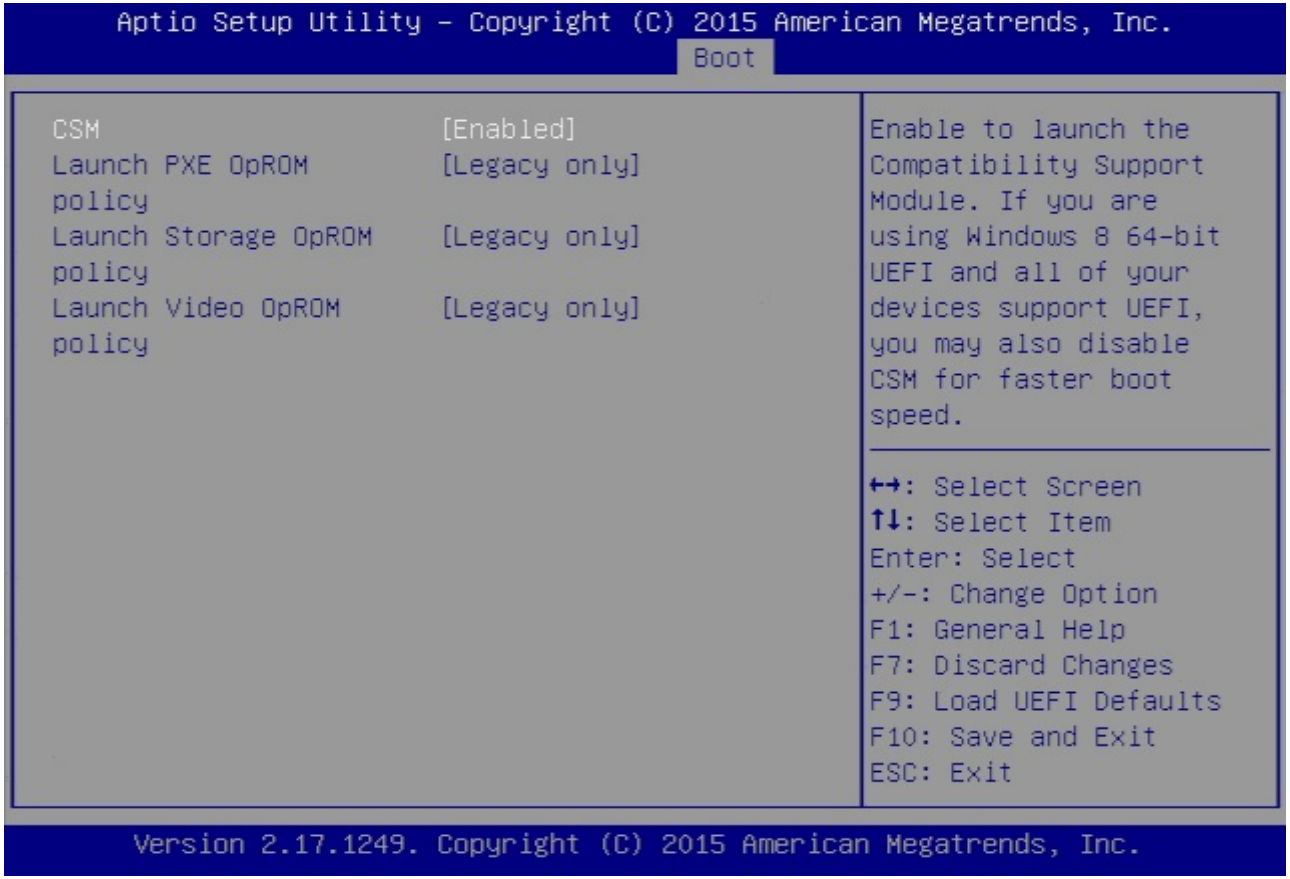
CSM(Compatibility Support Module)

OpROM execution, boot options filter, etc.



Feature	Description	Options
CSM	Enable to launch the Compatibility Support Module. If you are using Windows 8 64 bit UEFI and all of your devices support UEFI, you may also disable CSM for faster boot speed.	Disabled, ★Enabled
Launch PXE OpROM policy	Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.	Do not launch, UEFI only, ★Legacy only
Launch Storage OpROM policy	Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM	Do not launch, UEFI only, ★Legacy only
Launch Video OpROM policy	Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.	Do not launch, UEFI only, ★Legacy only

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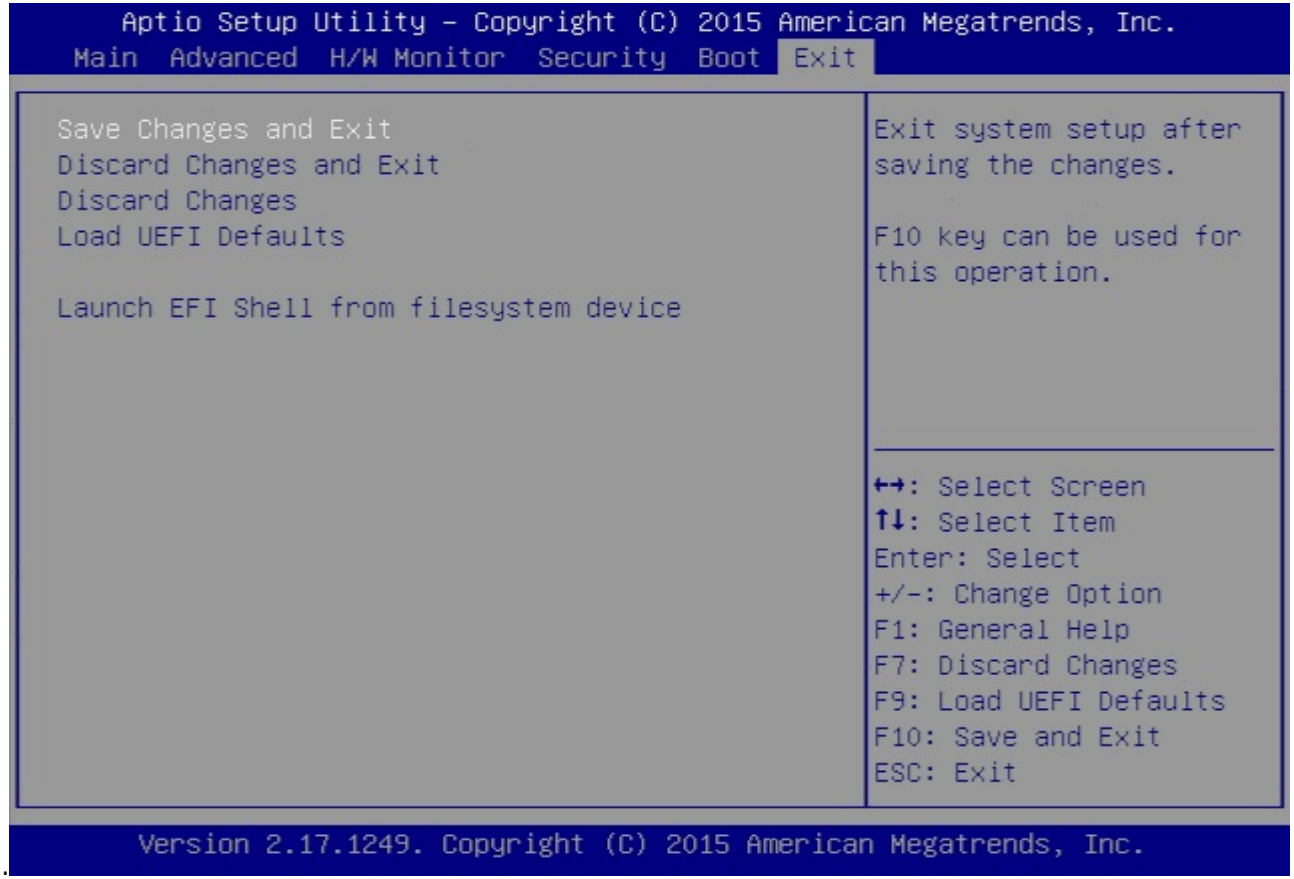
7.2.5 Exit

To exit the current screen or the UEFI SETUP UTILITY'



Feature	Description	Options
Save Changes and Exit	Exit system setup after saving the changes. F10 key can be used for this operation.	
Discard Changes and Exit	Exit system setup without saving any changes. Esc key can be used for this operation.	
Discard Changes	Discard Changes done so far to any of this operation.	
Load UEFI Defaults	Load UEFI Default values for all the setup questions. F9 key can be used for this operation.	
Launch EFI Shell from filesystem device	Attempts to Launch FEI Shell application (Shell.efi) from one of the available filesystem devices	

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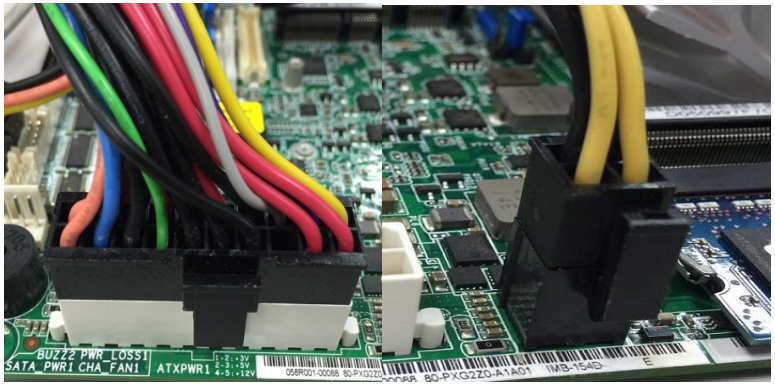
8 Troubleshooting

This section provides a few useful tips to quickly get WADE-8171 running with success. This section will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

8.1 Hardware Quick Installation

ATX Power Setting

Unlike other Single board computer, WADE-8171 supports AT/ATX only. Therefore, there is no other setting that needs to be set up. You must to connect to connector 11(20 pin ATX Power Input connector) or connector 6 (4 pin ATX Power Input connector) to let WADE-8170 power on.

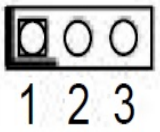


ATX Power emulation AT mode

You can adjust the 22(3-pin PWR_JP1) to 1-2 short to emulation the AT mode.

JP22: ATX/AT Mode Select

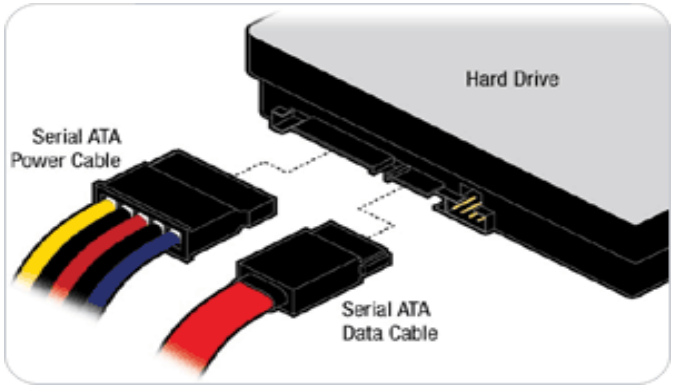
ATX/AT Mode Select
1-2: AT Mode
2-3: ATX Mode



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.



WADE-8171 can support two SATA interface and one mini SATA slot (SATAIII, 6.0Gb/s). This mini-SATA slot is shared with the SATA3_2 connector. When you choose SATA3_2 to use, then you need to adjust 39 (mSATA select) to open, if you want to use mSATA, then you need to adjust 39(mSATA select) to short.

mSATA Select
Open: For SATA3_2
Short: For mSATA

8.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. 204-pin DDR3L 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 WADE-8171, it is recommended, when going with the boot-up sequence, to hit “F2 ” or ” Del” key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to **"Load UEFIDefaults"**, 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.

8.3 FAQ

Information & Support

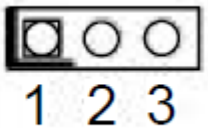
Question: I forgot my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the 27(Clear CMOS Header) 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 Setting

	Jumper Setting Describe
*1-2	Default
2-3	Clean CMOS

Clear CMOS Header
1-2: Normal
2-3: Clear CMOS



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Question: How to update the BIOS file of WADE-8171?

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

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

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

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

2. Type in your User name and password and log in the download center.
3. Select "Search download" and type the keyword "WADE-8171".
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".
   It will start to update BIOS.

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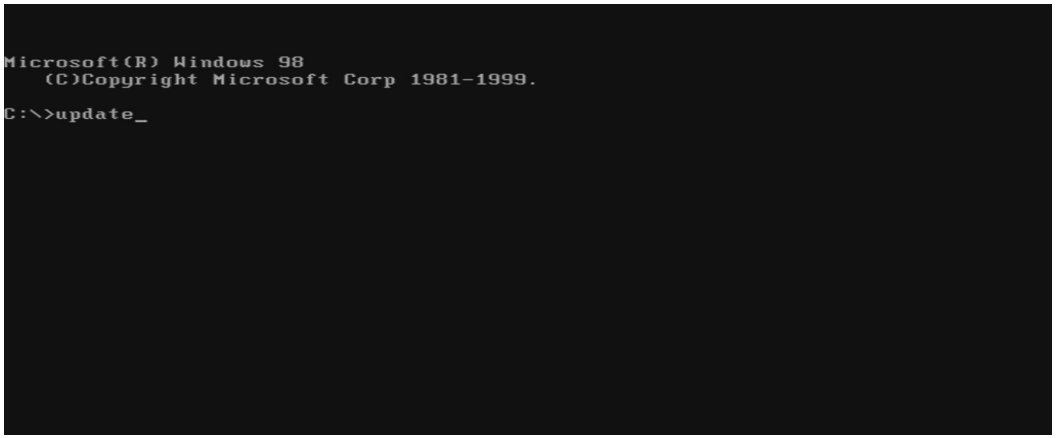
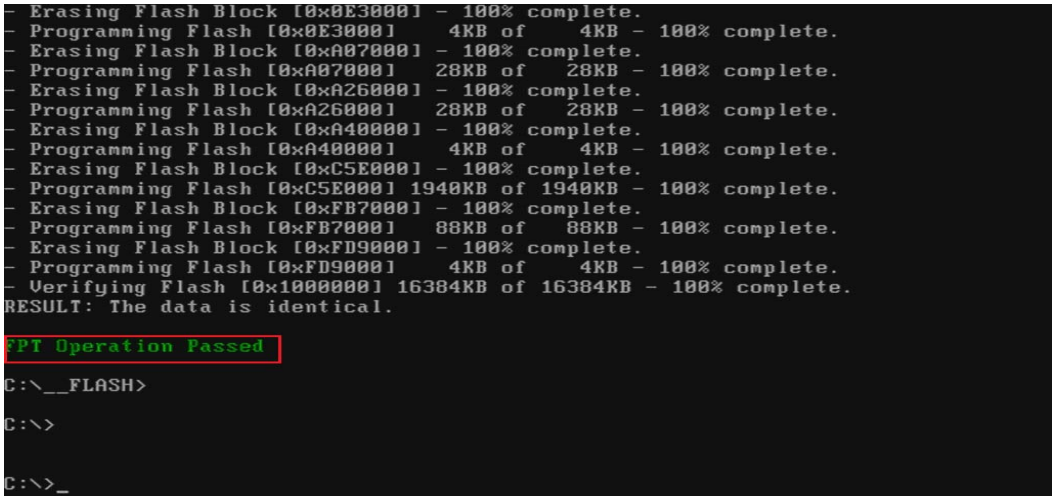
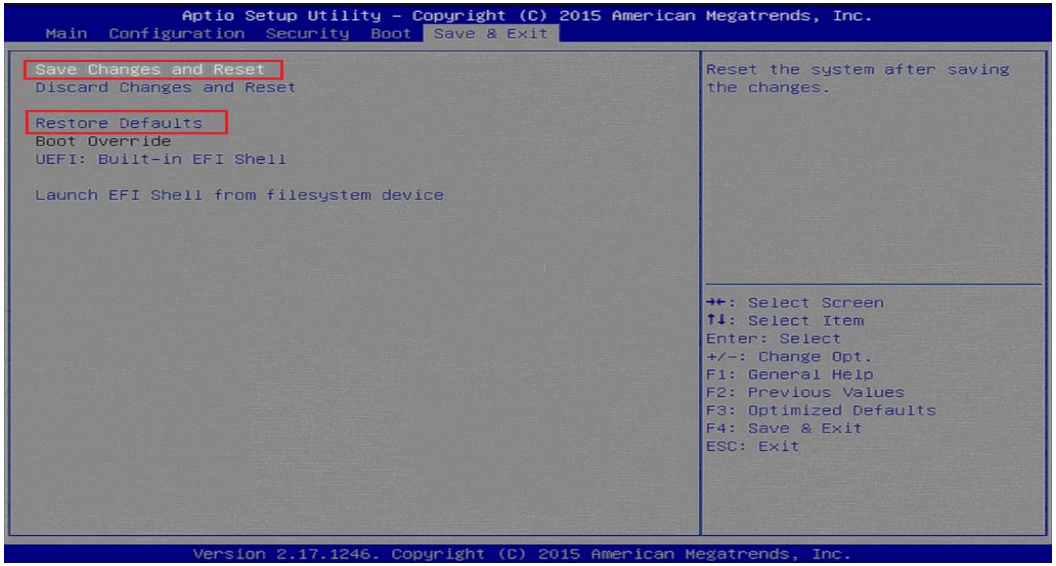


6. When you see the "FPT Operation Passed" message, which means the BIOS update processes finished. Please cut the AC power off and wait for 10 seconds before powering on.



7. Press “del” key into the BIOS setup menu and switch to “Save & Exit” page then select “Restore Defaults” option and press “Yes” then select “Save Changes and Reset” to finish all BIOS update processes.



Question: What are the display options while using WADE-8171 with PCOM-C600 carrier board?

Answer: The PCOM-C600 carrier board does not support DVI display output with WADE-8171. It supports the VGA (Using DVI to VGA adapter) and LVDS output.

Note:

Please visit our DownloadCenter to get the Catalog, User manual, BIOS, and driver files.

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

9 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

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10 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 2.0http://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

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