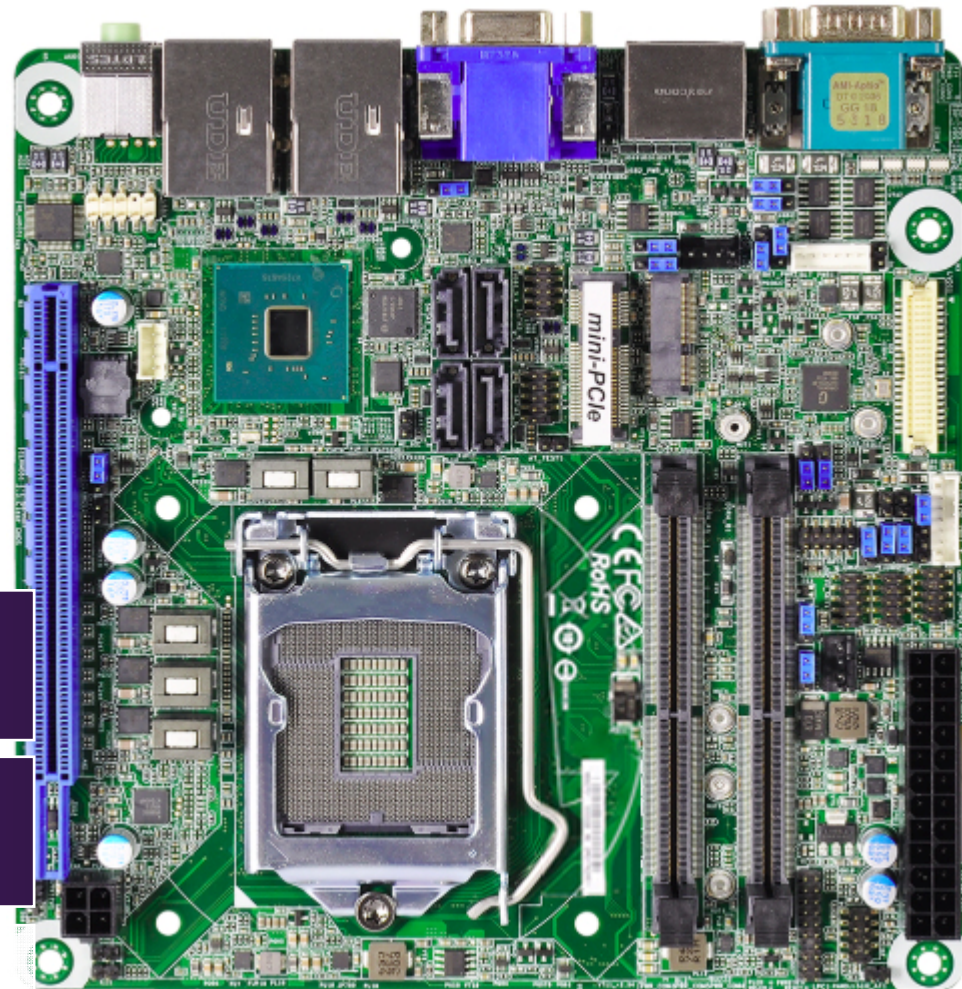


WADE-8211

WADE-8211

Industrial Mini-ITX Board

Version 1.1



Revision History

| | |
|------|---|
| R1.0 | Preliminary |
| R1.1 | Update USB power setting jumper information |
| | |
| | |
| | |
| | |
| | |

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Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the WADE-8211. This document should be referred to when designing Mini-ITX application. The other reference documents that should be used include the following:

- ✧ Intel Coffee Lake Design Guide
- ✧ Intel Coffee Lake Specification

Please contact Portwell Sales Representative for above documents.

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1 Introduction

WADE-8211-Q370 based on the Intel® Core™ Processor which offers 14nm Hi-K process technology with energy efficient architecture. WADE-8211 support dual channels DDR4 So - DIMM up to 32GB.

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, WADE-8211 is our first generation Coffee -S chip architecture on Mini-ITX line.

2 Specifications

| | |
|----------------------------|--|
| Main Processor | ◆ Intel® Coffee -S Core™ i Processors |
| System Chipset | ◆ Intel®Q370 Express chipset |
| System BIOS | ◆ AMI UEFI BIOS |
| Main Memory | ◆ Up to 32 GB in 2 slots DDR4 So-DIMM sockets. Supports dual channel DDR4 2400/2666 MHz SDRAM |
| Graphics | <ul style="list-style-type: none"> ◆ Controller: Intel® Gfx Gen 9, UHD 630 graphics ◆ VGA: Supports VGA up to resolution 1920 x 1200 ◆ DP: Supports DP up to resolution 4096 x 2304 ◆ LVDS: Supports LVDS up to resolution 1920 x 1200 |
| Expansion Interface | <ul style="list-style-type: none"> ◆ One mini-PCIe socket ◆ One M.2 (Key E, 2230) with PCIe x1, CNVI and USB2.0 for Wireless ◆ One M.2 (Key M, 2242/2260/2280) with PCIe x4 and SATA3 for SSD |
| SATA Interface | ◆ Four SATA ports(SATA 6Gb/s) |
| Input/Output | <ul style="list-style-type: none"> ◆ Five Ports: 2x RS-232/422/485 on REAR I/O & 3x RS-232 on board header ◆ USB Port: 4x USB 3.0 on REAR I/O, 4x USB 2.0 on board header ◆ GPIO connector: 4GPI + 4GPO ◆ Audio Interface: Mic-In / 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 |
| High Drive GPIO | ◆ One pin-header for GPIO(4bit in & 4bit out) |

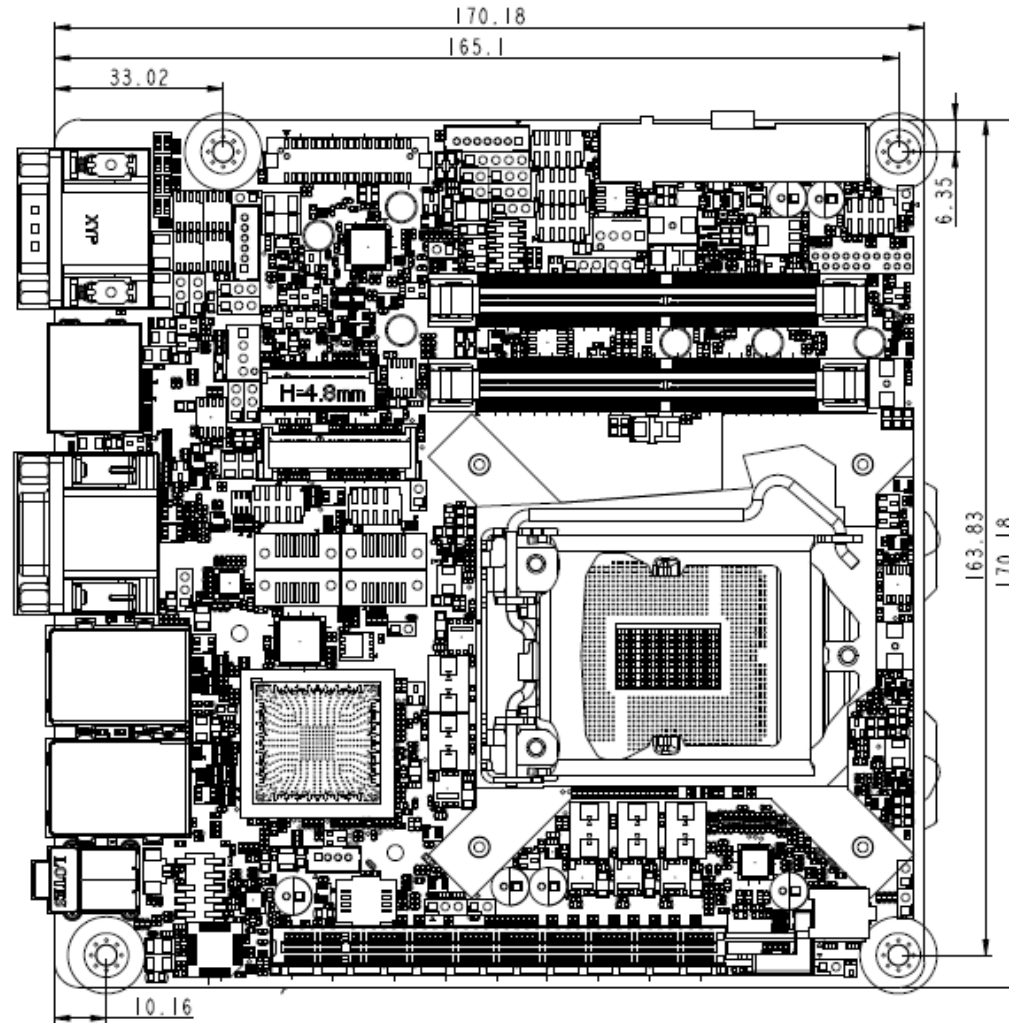
| | |
|--|--|
| Mechanical and environmental specifications | <ul style="list-style-type: none">◆ Operating temperature: 0 ~ 60° C◆ Storage temperature:-20 ~ 80° C◆ Humidity: 5 ~ 90% non-condensing◆ Power supply voltage: ATX◆ Board size: 170mm x 170 mm |
|--|--|

2.1 Supported Operating Systems

The WADE-8211 supports the following operating systems.

- ✧ Windows 10 Enterprise & IOT Enterprise (64b) RS3
- ✧ Ubuntu, SuSe, Redhat Enterprise 1,2 (Kernel 4.14)
- ✧ Yocto 2.4 Tool-based Embedded Linux Distribution
- ✧ Wind River VxWorks 7

2.2 Mechanical Dimensions



2.3 Power Consumption

| Test Configuration | |
|--------------------|---|
| CPU Type | Intel® Core™ i7-8700TE CPU @ 3.2GHz |
| SBC BIOS | Portwell, Inc. WADE-8211 TEST BIOS (51104T00) |
| Memory | WARIS UB-DIMM DDR4 2133 16GB |
| VGA Card | Onboard Intel® UHD Graphics 630 |
| VGA Driver | Intel® UHD Graphics 630 Version: 24.20.100.6286 |
| LAN Card | Onboard Intel® Ethernet Connection(2) I219-LM |
| LAN Driver | Intel® Ethernet Connection(2) I219-LM Version: 12.13.17.7 |
| LAN Card #2 | Onboard Intel® I210AT Gigabit Network Connection |
| LAN Driver #2 | Intel® I210AT Gigabit Network Connection Version: 12.14.7.0 |
| Audio Card | Onboard Realtek ALC887 High Definition Audio |
| Audio Driver | Realtek ALC887 High Definition Audio Version: 6.0.1.8186 |
| Chipset Driver | Intel® Coffee lake-S Chipset Device Software Version: 10.1.17541 |
| USB 3.0 Driver | Intel® USB 3.0 eXtensible Host Controller Adaptation Driver Version: 6.3.9600.17393 |
| SATA HDD | Intel SSD 256G |
| Power Supply | FSP460-60PFB 460W / GADIWA 5V/12V DC POWER |

| Power consumption | | | |
|---------------------|----------------|--------------------|--------------------|
| ATX: | | | |
| Item | Power ON | Full Loading 10Min | Full Loading 30Min |
| CPU +12V | 0.98A | 2.05A | 1.98A |
| System +12V | 0.83A | 1.48A | 1.26A |
| System +3.3V | 0.55A | 0.65A | 0.69A |
| System +5V | 1.11A | 1.37A | 1.34A |
| System+ Device +12V | 0.97A | 1.81A | 1.56A |
| System+ Device +5V | 1.87A | | |
| USB2.0 Loading Test | 4.98 V/ 570 mA | | |

2.4 Environmental Specifications

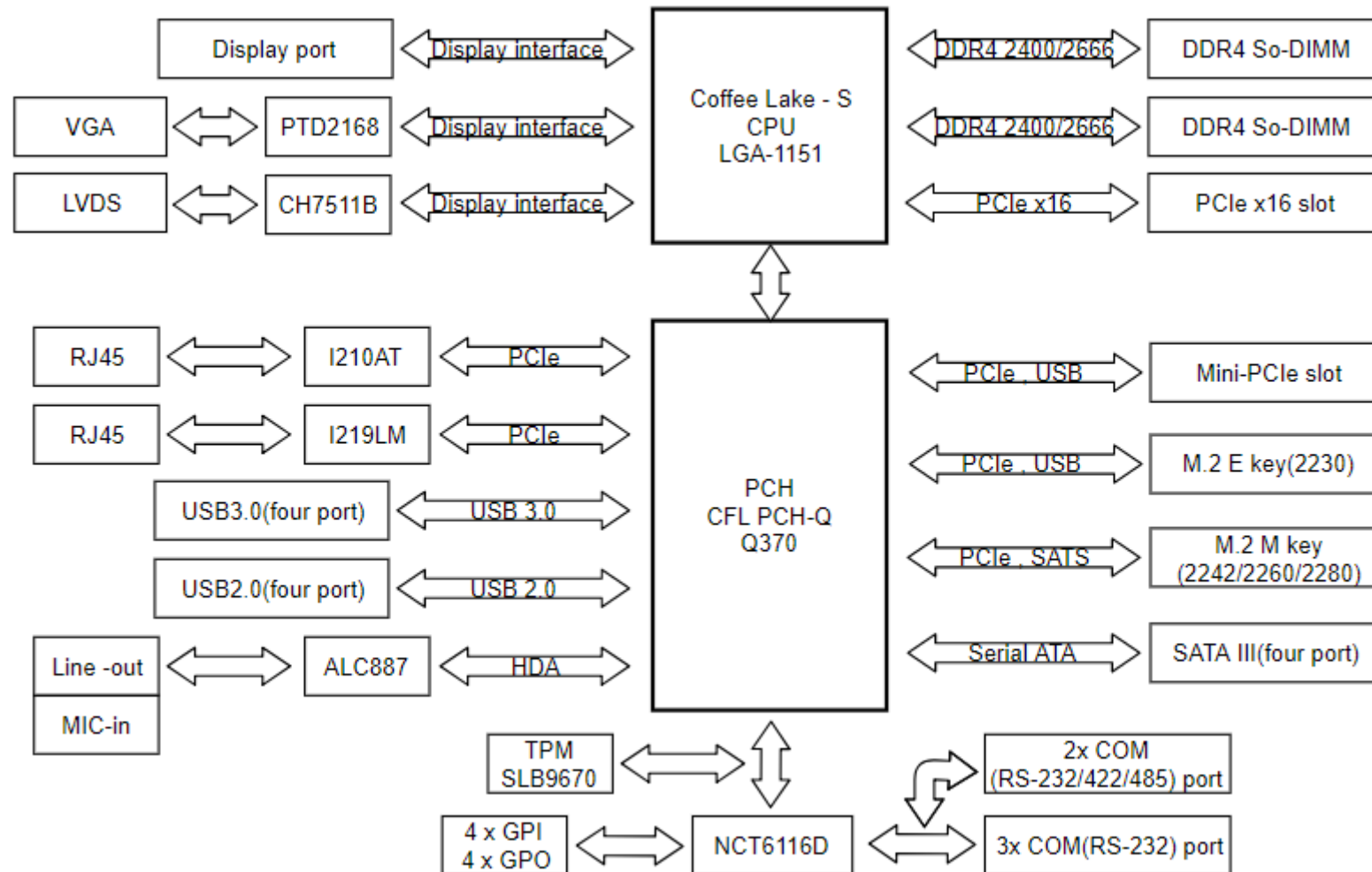
Storage Temperature : -20~80°C

Operation Temperature : 0~60°C

Storage Humidity : 5~90%

Operation Humidity: 10~90%

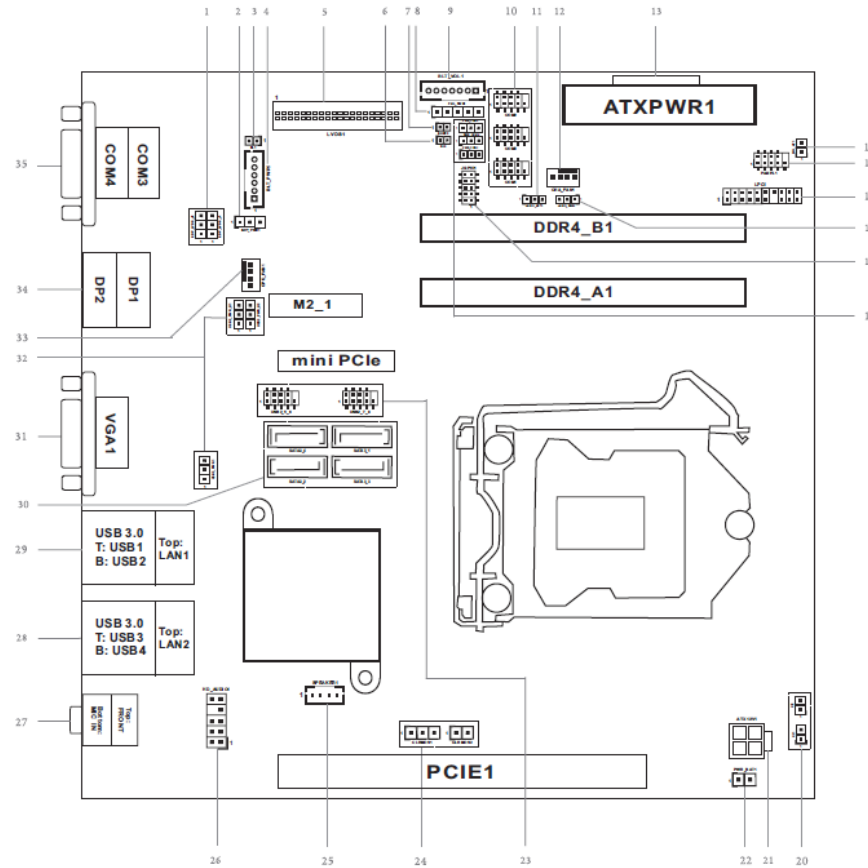
3 Block Diagram



4 Hardware Configuration

4.1 Jumpers and Connectors

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



4.2 Jumpers Settings

For users to customize WADE-8211'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:

| Jumper Function List | |
|----------------------|--|
| 1 | EDP_LVDS_J1, EDP_LVDS_J2 |
| 2 | Backlight Power Select |
| 3 | BL1 |
| 4 | Inverter Power Control Wafer |
| 5 | LVDS Panel Connector |
| 6 | BL2 |
| 7 | Buzzer |
| 8 | Panel Power Select(LCD_VCC) |
| 9 | Backlight Volume Control(BLT_Vol1) |
| 10 | COM Port Headers(COM 1,2,5) |
| 11 | Digital Input / Output Default Value Setting(JGPIO_SET1) |
| 12 | 4-Pin Chassis FAN Connector(+12V) |
| 13 | 24-Pin ATX Power Input Connector |

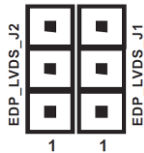
| | |
|----|--|
| 14 | SIO_AT1 |
| 15 | System Panel Header |
| 16 | LPC Header |
| 17 | Digital Input / Output Power Select(JGPIO_PWR)(JGPIO_PWR1) |
| 18 | Digital Input / Output Pin Header(JGPIO1) |
| 19 | COM Port PWR Setting Jumpers(PWR_COM5 is Optional) |
| 20 | Chassis Intrusion Headers(CI1,CI2) |
| 21 | 4-Pin ATX Power Input/Output |
| 22 | PWR_BAT1 |
| 23 | USB2.0 Headers |
| 24 | Clear CMOS Headers |
| 25 | 3W Audio AMP Output Wafer |
| 26 | Front Panel Audio Header |
| 27 | Audio Output |
| 28 | Top:RJ45 LAN port(LAN2) Bottom:USB 3.0 Ports(USB3_3_4) |
| 29 | Top:RJ45 LAN port(LAN1) Bottom:USB 3.0 Ports(USB3_1_2) |
| 30 | SATA3 Connectors(SATA3_1~4) |
| 31 | D-Sub Port(VGA1) |
| 32 | USB Power Setting Jumper |
| 33 | 4-Pin CPU FAN connector(+12V) |

| | |
|----|---|
| 34 | Top: Display Port(DP1) Bottom: Display Port(DP2) |
| 35 | Top: COM Port 3(RS232/422/485)* Bottom: COM Port 4(RS232/422/485)* |

1: EDP_LVDS_J1, EDP_LVDS_J2

1-2 : LVDS

2-3 : eDP(WADE-8211-Q370 not support eDP)

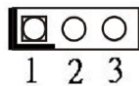


2: Backlight Power Select

(LCD_BLT_VCC)(BKT_PWR1)

1-2 : LCD_BLT-VCC : +5V

2-3 : LCD_BLT-VCC : +12V



3: BL1

Open : Protect LCD_BLT_VCC

Short : No Protect LCD_BLT_VCC

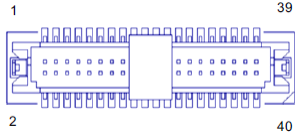


4: Inverter Power Control Wafer(BLT_PWR1)



| PIN | Signal Name |
|-----|---------------|
| 6 | LCD_BLT_VCC |
| 5 | LCD_BLT_VCC |
| 4 | CON_LBKLT_EN |
| 3 | CON_LBKLT_CTL |
| 2 | GND |
| 1 | GND |

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: BL2

Open : Protect LCD_VCC

Short : No Protect LCD_VCC



7: Buzzer



8: Panel Power Select(LCD_VCC)

(PNL_PWR1)

1-2 : LCD_VCC : +3V

2-3 : LCD_VCC : +5V

4-5 : LCD_VCC : +12V



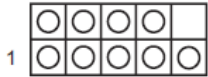
9: Backlight Volume Control(BLT_Vol1)



| PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| 7 | GND | 6 | GND | 5 | BLT_DW | 4 | BLT_UP | 3 | PWRDN | 2 | GPIO_VOL_DW | 1 | GPIO_VOL_UP |

10: COM Port Headers(COM 1,2,5)

COM 1,2,5 only support RS-232

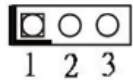


| PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| 2 | RX+ | 4 | RX- | 6 | N/A | 8 | N/A | 10 | N/A |
| 1 | TX- | 3 | TX+ | 5 | GND | 7 | N/A | 9 | N/A |

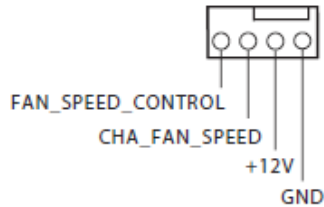
11: Digital Input / Output Default Value Setting(JGPIO_SET1)

1-2 : Pull-High

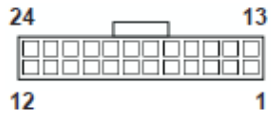
2-3 : Pull-Low



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



13: 24-Pin ATX Power Input Connector

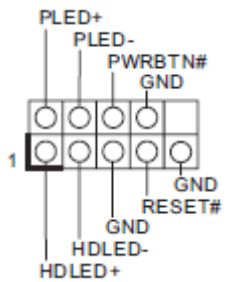


14: SIO_AT1

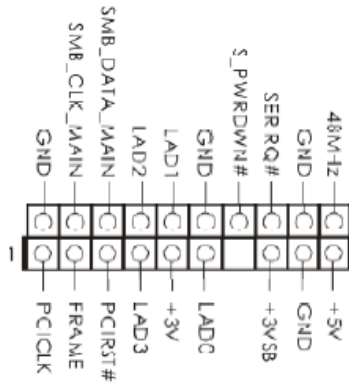
Open : ATX Mode
Short : AT Mode



15: System Panel Header



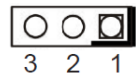
16: LPC Header



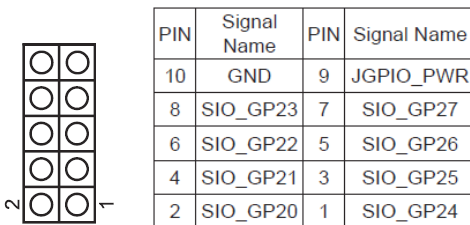
17: Digital Input / Output Power Select(JGPIO_PWR)(JGPIO_PWR1)

1-2 : +12V

2-3 : 5V



18: Digital Input / Output Pin Header(JGPIO1)



19: COM Port PWR Setting Jumpers(PWR_COM5 is optional)

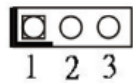
PWR_COM1(For COM port1)

PWR_COM2(For COM port2)

PWR_COM5(For COM port5)

1-2 : +12V

2-3 : 5V



20: Chassis Intrusion Headers(CI1,CI2)

CI1 :

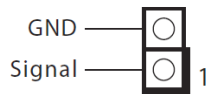
Close : Active Case Open

Open : Normal

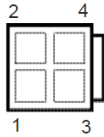
CI2 :

Close : Normal

Open : Active Case Open



21: 4-Pin ATX Power Input / Output



22: PWR_BAT1

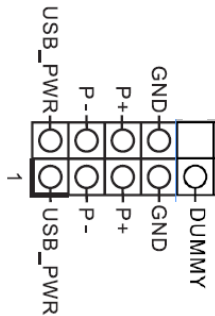
Open : Normal

Short : Charge Battery



23: USB2.0 Headers

(USB2_5_6,USB2_7_8)



24: Clear CMOS Headers

CLRMOS1 :

1-2 : Normal

2-3 : Clear CMOS



1 2 3

CLRMOS2 :

1-2 : Normal

2-3 : Auto Clear CMOS(Power off)

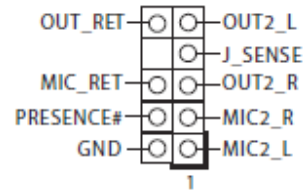


25: 3W Audio AMP Output Wafer



| PIN | Signal Name | PIN | Signal Name | PIN | Signal Name | PIN | Signal Name |
|-----|-------------|-----|-------------|-----|-------------|-----|-------------|
| 1 | OUTLN | 2 | OUTLP | 3 | OUTRP | 4 | OUTRN |

26: Front Panel Audio Header



27: Audio Output

Green : Line Out

Pink : Mic In

28: Top:RJ45 LAN port(LAN2)

Bottom:USB 3.0 Ports(USB3_3_4)

29: Top:RJ45 LAN port(LAN1)

Bottom:USB 3.0 Ports(USB3_1_2)

30: SATA3 Connectors(SATA3_1~4)

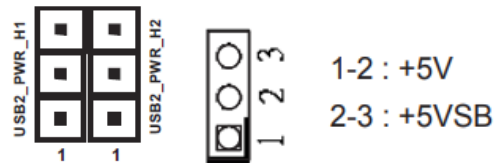


31: D-Sub Port(VGA1)

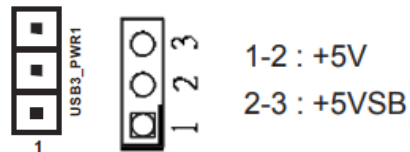
32: USB Power Setting Jumper

USB2_PWR_H1 for USB2_5_6

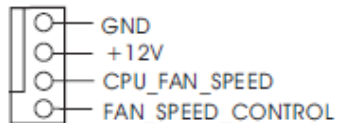
USB2_PWR_H2 for USB2_7_8



USB3_PWR1 for USB3_1_2, USB3_3_4



33: 4-Pin CPU FAN connector(+12V)



34: Top: Display Port(DP1)

Bottom: Display Port(DP2)

35: Top: COM Port 3(RS232/422/485)*

Bottom: COM Port 4(RS232/422/485)*

| 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 | +5V / +12V | N/A | N/A |

* Please refer to below table for the pin definition. In addition, they can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to our user manual for details.

M.2 Socket

(Key-E)(M2_1)_ Top Side

| Pin | Signal | Signal | Pin |
|-----|--------------|----------------|-----|
| 1 | GND | +3.3V | 2 |
| 3 | USB D+ | +3.3V | 4 |
| 5 | USB D- | NA | 6 |
| 7 | GND | NA | 8 |
| 9 | CNV_WGR_D1- | CNV_RF_RESET | 10 |
| 11 | CNV_WGR_D1+ | NA | 12 |
| 13 | GND | MODEM_CLKREQ | 14 |
| 15 | CNV_WGR_D0- | NA | 16 |
| 17 | CNV_WGR_D0+ | GND | 18 |
| 19 | GND | NA | 20 |
| 21 | CNV_WGR_CLK- | CNV_BRI_RSP | 22 |
| 23 | CNV_WGR_CLK+ | | |
| 33 | GND | CNV_BGI_DT | 32 |
| 35 | PETp | CNV_RGI_RSP | 34 |
| 37 | PETn | CNV_BRI_DT | 36 |
| 39 | GND | NA | 38 |
| 41 | PERp | NA | 40 |
| 43 | PERn | NA | 42 |
| 45 | GND | NA | 44 |
| 47 | PEFCLKp | NA | 46 |
| 49 | PEFCLKn | NA | 48 |
| 51 | GND | SUSCLK | 50 |
| 53 | CLKREQ# | PERSTO# | 52 |
| 55 | WAKE# | W_DISABLE1# | 54 |
| 57 | GND | W_DISABLE2# | 56 |
| 59 | CNV_WT_D1- | SMB_DATA | 58 |
| 61 | CNV_WT_D1+ | SMB_CLK | 60 |
| 63 | GND | NA | 62 |
| 65 | CNV_WT_D0- | CLKIN_XTAL_LCP | 64 |
| 67 | CNV_WT_D0+ | NA | 66 |
| 69 | GND | NA | 68 |
| 71 | CNV_WT_CLK- | NA | 70 |
| 73 | CNV_WT_CLK+ | +3.3V | 72 |
| 75 | GND | +3.3V | 74 |

(Key-M)(M2_2)_ Back Side

SATA mode

| Pin | Signal | Signal | Pin |
|-----|---------|----------|-----|
| 1 | GND | +3.3V | 2 |
| 3 | GND | +3.3V | 4 |
| 5 | NA | NA | 6 |
| 7 | NA | NA | 8 |
| 9 | GND | SATA_LED | 10 |
| 11 | NA | +3.3V | 12 |
| 13 | NA | +3.3V | 14 |
| 15 | GND | +3.3V | 16 |
| 17 | NA | +3.3V | 18 |
| 19 | NA | NA | 20 |
| 21 | GND | NA | 22 |
| 23 | NA | NA | 24 |
| 25 | NA | NA | 26 |
| 27 | GND | NA | 28 |
| 29 | NA | NA | 30 |
| 31 | NA | NA | 32 |
| 33 | GND | NA | 34 |
| 35 | NA | NA | 36 |
| 37 | NA | DEVSLP | 38 |
| 39 | GND | SMB_CLK | 40 |
| 41 | SATA-B+ | SMB_DATA | 42 |
| 43 | SATA-B- | NA | 44 |
| 45 | GND | NA | 46 |
| 47 | SATA-A- | NA | 48 |
| 49 | SATA-A+ | PERST# | 50 |
| 51 | GND | CLKREQ# | 52 |
| 53 | PEFCLKn | WAKE# | 54 |
| 55 | PEFCLKp | NA | 56 |
| 57 | GND | NA | 58 |
| 67 | NA | NA | 68 |
| 69 | PEDET | +3.3V | 70 |
| 71 | GND | +3.3V | 72 |
| 73 | GND | +3.3V | 74 |
| 75 | GND | | |

PCIe mode

| Pin | Signal | Signal | Pin |
|-----|---------------|----------|-----|
| 1 | GND | +3.3V | 2 |
| 3 | GND | +3.3V | 4 |
| 5 | PERn3 | NA | 6 |
| 7 | PERp3 | NA | 8 |
| 9 | GND | SATA_LED | 10 |
| 11 | PETn3 | +3.3V | 12 |
| 13 | PETp3 | +3.3V | 14 |
| 15 | GND | +3.3V | 16 |
| 17 | PERn2 | +3.3V | 18 |
| 19 | PERp2 | NA | 20 |
| 21 | GND | NA | 22 |
| 23 | PETn2 | NA | 24 |
| 25 | PETp2 | NA | 26 |
| 27 | GND | NA | 28 |
| 29 | PERn1 | NA | 30 |
| 31 | PERp1 | NA | 32 |
| 33 | GND | NA | 34 |
| 35 | PETn1 | NA | 36 |
| 37 | PETp1 | DEVSLP | 38 |
| 39 | GND | SMB_CLK | 40 |
| 41 | PERn0/SATA-B+ | SMB_DATA | 42 |
| 43 | PERp0/SATA-B- | NA | 44 |
| 45 | GND | NA | 46 |
| 47 | PETn0/SATA-A- | NA | 48 |
| 49 | PETp0/SATA-A+ | PERST# | 50 |
| 51 | GND | CLKREQ# | 52 |
| 53 | PEFCLKn | WAKE# | 54 |
| 55 | PEFCLKp | NA | 56 |
| 57 | GND | NA | 58 |
| 67 | NA | NA | 68 |
| 69 | PEDET | +3.3V | 70 |
| 71 | GND | +3.3V | 72 |
| 73 | GND | +3.3V | 74 |
| 75 | GND | | |

5 Signal Descriptions

5.1 Watch Dog Signal

```
void WatchDogTest()
{
    bool bSuccess = false;
    int WDTimer = 30;
    printf("Please input WatchDog timer:");
    scanf("%d", &WDTimer);
    ShowError(bSuccess = AsrLibWDSetConfig(WDTimer));
    ShowError(bSuccess = AsrLibWDTrigger());
    char Key = 0;
    int CurrentTime = 0;
    int WaitSeconds = WDTimer;
    while (WaitSeconds) {
        ShowError(CurrentTime = AsrLibWDCounter());
        WaitSeconds--;
        while (1)
        {
            while (kbhit())
            {
```

```
Key = _getch();
if (Key == 'r')
{
    AsrLibWDDisable();
    ShowError(bSuccess = AsrLibWDSetConfig(WDTimer));
    ShowError(bSuccess = AsrLibWDTrigger());
    WaitSeconds = WDTimer;
    ShowError(CurrentTime = AsrLibWDCounter());
    break;
}
else if (Key == 'c') {
    AsrLibWDDisable();
    WaitSeconds = 0;
    _tprintf(_T("\nWatchDog Disable"));
    break;
}
}

if (WaitSeconds == 0)
    break;

if (CurrentTime != AsrLibWDCounter()) {
    WaitSeconds--;
```



```
printf("\rWatchDog timer %d, press 'r' to reset timer, 'c' to disable WatchDog.", WaitSeconds);  
CurrentTime = AsrLibWDCounter();  
}  
}  
printf("\n");  
}  
}
```

5.2 GPIO Signal

```
void GpioTest()
{
    bool bSuccess = false;
    _tprintf(_T("\n"));
    _tprintf(_T("Current state\n"));
    _tprintf(_T("-----\n"));
    // Check AsrLibGetSioGpioGroup & AsrLibSetSioGpioGroup
    int GP2x = 2;
    int PinCount = 8;
    int n = 0;
    SSCORE_GPIO_VALUE Values[8];

    ::AsrLibGetSioGpioGroup(GP2x, Values, &PinCount);
    for (n = 0; n < PinCount; n++) {
        DisplayGpioString(&Values[n]);
    }

    _tprintf(_T("\n"));
    int GPIOType = 0;
    printf("Input GPIOType:(1:GPIO_INPUT 2:GPIO_OUTPUT_LOW 3:GPIO_OUTPUT_HIGH)");
    scanf("%d", &GPIOType);
}
```

```
if (GPIONType == 1) {
    for (int i = 0; i < PinCount; i++) {
        Values[i].Value = ESCORE_GPIO_INPUT_LOW;
    }
    ShowError(bSuccess = AsrLibSetSioGpioGroup(GP2x, Values, PinCount));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 0, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 1, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 2, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 3, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 4, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 5, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 6, ESCORE_GPIO_INPUT_LOW));
    //ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 7, ESCORE_GPIO_INPUT_LOW));
} else if (GPIONType == 2) {
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 0, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 1, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 2, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 3, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 4, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 5, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 6, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 7, ESCORE_GPIO_OUTPUT_LOW));
}
```

```

} else if (GPIOType == 3) {
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 0, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 1, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 2, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 3, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 4, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 5, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 6, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 7, ESCORE_GPIO_OUTPUT_HIGH));
} else {
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 0, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 1, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 2, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 3, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 4, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 5, ESCORE_GPIO_OUTPUT_LOW));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 6, ESCORE_GPIO_OUTPUT_HIGH));
    ShowError(bSuccess = AsrLibSetSioGpioValue((GP2x * 10) + 7, ESCORE_GPIO_OUTPUT_LOW));
}

_tprintf(_T("New state\n"));
_tprintf(_T("-----\n"));

```

```
::AsrLibGetSioGpioGroup(GP2x, Values, &PinCount);  
for (n = 0; n < PinCount; n++) {  
    DisplayGpioString(&Values[n]);  
}  
}
```

6 System Resources

6.1 Intel® Coffee Lake -S PCH

Intel® Q370 Chipset (Intel® GL82Q370 PCH)

6.2 Main Memory

WADE-8211 provides 2x260 pin So-DIMM sockets. The maximum memory can be up to 32GB. Memory clock and related settings can be detected by BIOS via SPD interface.

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

6.3 Installing the Single Board Computer

To install your WADE-8211 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 WADE-8211 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

6.3.1 Chipset Component Driver

WADE-8211 is based on Intel® Q370 chipset and desktop processors including Core™ i7 / i5 / i3 sku . It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 8, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-8211 CD-title

6.3.2 Intel® UHD Graphics 630

WADE-8211 has integrated Intel® UHD Graphics 630 which supports DirectX 12 - OpenGL 4.4. It is the most advanced design to gain an outstanding graphic performance. WADE-8211 supports VGA, DP,LVDS display output. This combination makes WADE-8211 an excellent performance hardware.

Drivers Support

Please find the Graphic driver in the WADE-8211 CD-title. The driver supports Windows 10.

6.3.3 Intel LAN I210AT/I219LM Gigabit Ethernet Controller

- Intel I210AT Gigabit Ethernet controller and 1x RJ45 connectors on rear I/O
- Intel I219LM Gigabit Ethernet controller and 1x RJ45 connectors on rear I/O

Drivers Support

Please find Intel I210AT/I219LM LAN driver in /Ethernet directory of WADE-8211 CD-title. The driver supports Windows 8.

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

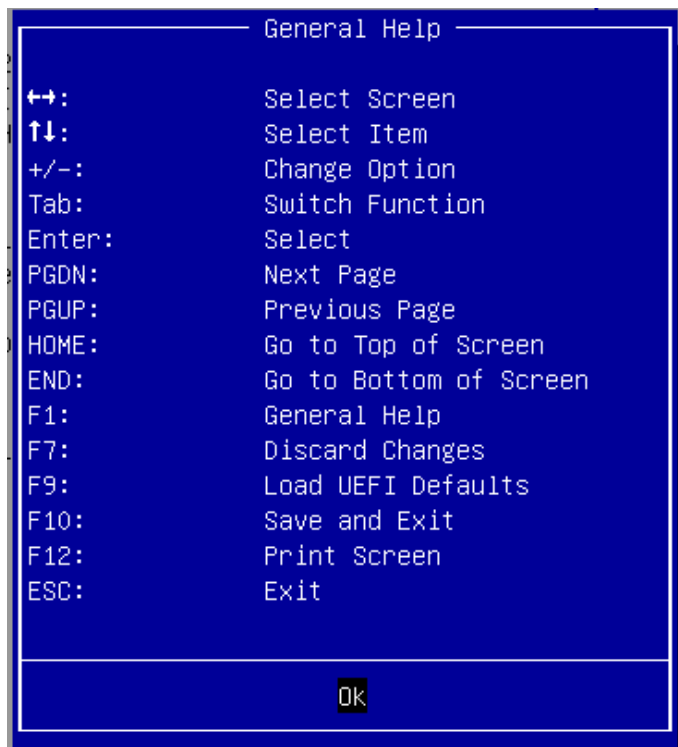
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

Press<Delete> or <ESC> to enter SETUP

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

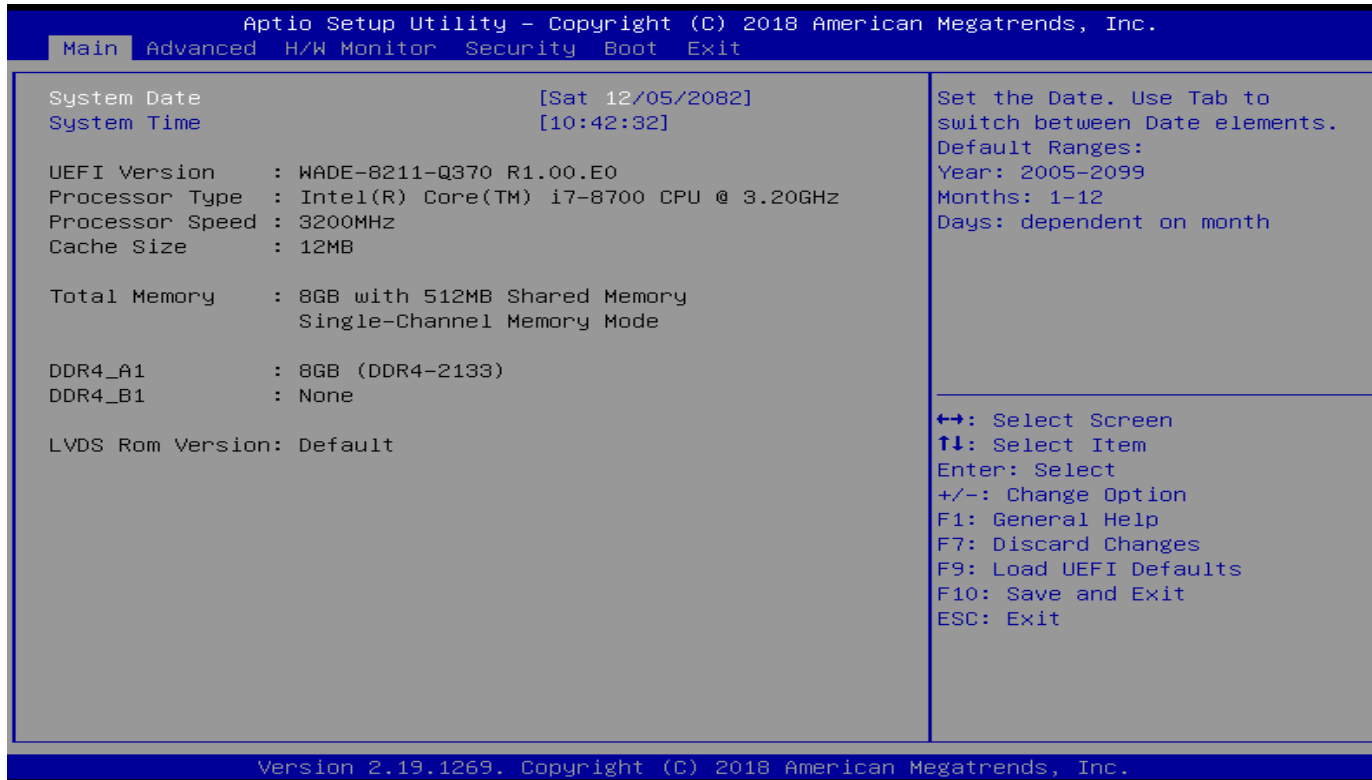
Press <F1> to Run General Help or Resume

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



7.2.1 Main

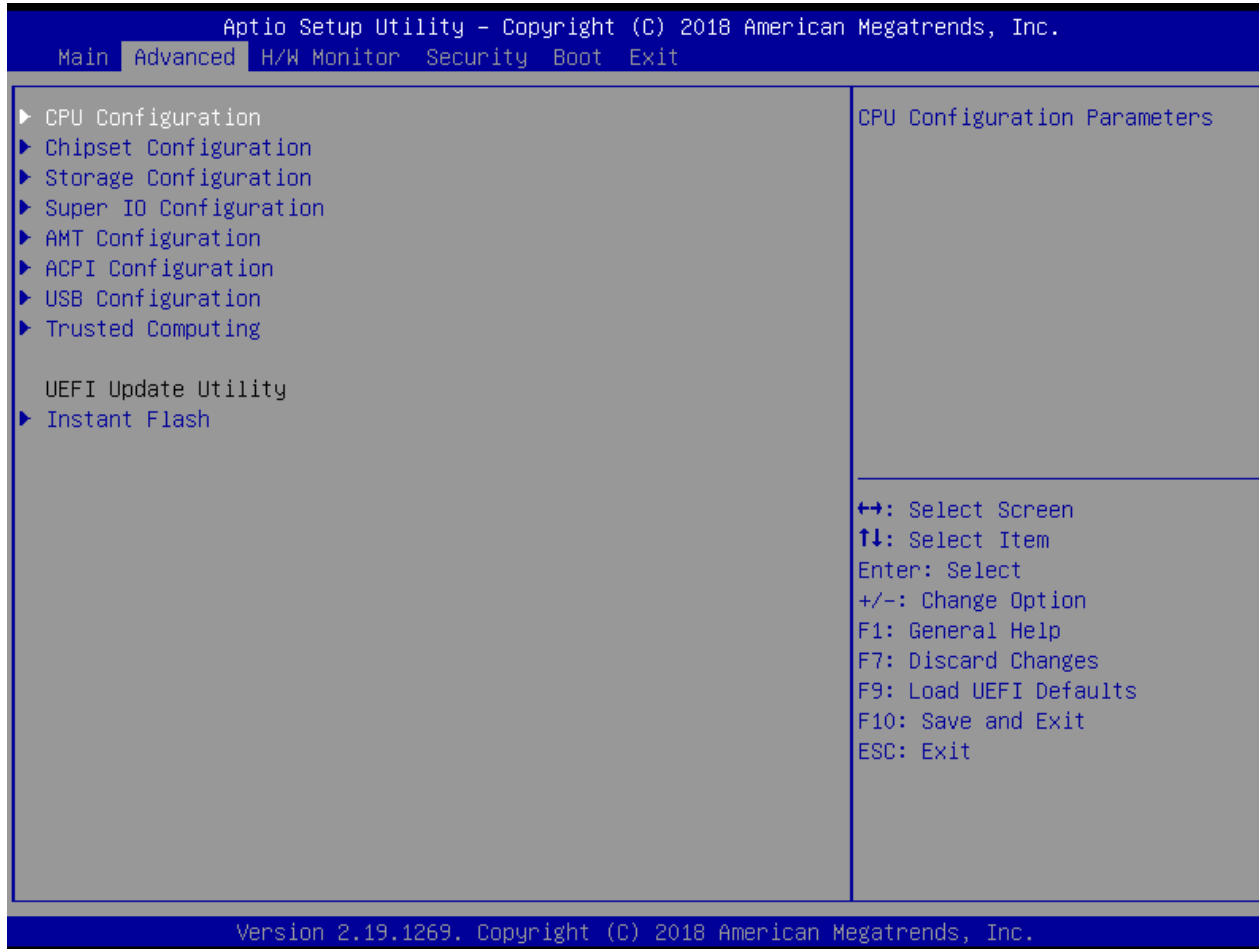
Use this menu for basic system configurations, such as time, date etc.



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

7.2.2 Advanced

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



CPU Configuration

CPU Configuration Parameters

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced
-----
Intel(R) Core(TM) i7-8700 CPU @ 3.20GHz
Microcode Revision          906EA 96
Max CPU Speed                3200 MHz
Min CPU Speed                800 MHz
Processor Cores              6

Intel Hyper Threading Technology [Enabled]
Active Processor Cores         [All]
CPU C States Support          [Enabled]
Enhanced Halt State(C1E)      [Auto]
Package C State Support       [Disabled]
CFG Lock                      [Disabled]

Intel Virtualization Technology [Enabled]
Intel SpeedStep Technology     [Enabled]
Intel Turbo Boost Technology   [Enabled]

CPU Thermal Throttling        [Enabled]

Intel Hyper Threading
Technology allows multiple
threads to run on each core,
so that the overall
performance on threaded
software is improved.

←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

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```

| Feature | Description | Options |
|---|--|--------------------------|
| Intel Hyper Threading Technology | Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved. | Disabled, ★Enabled |
| Active Processor Cores | Select the number of cores to enable in each processor package. | ★ All, 1, 2, 3,4,5 |
| CPU C states Support | Enable CPU C states Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving. | ★Disabled, Enabled |
| Enhanced Halt State(C1E) | Enable Enhanced Halt State (C1E) for lower power consumption. | ★Auto ,Disabled, Enabled |
| Package C State Support | Maximum Package C State Limit Setting. CPU Default:Leaves to Factory default value. Auto: Initializes to deepest available Package C State Limit. | Auto, ★Disabled, Enabled |
| CFG Lock | This item allows you to disable or enable the CFG Lock. | ★Disabled, Enabled |
| Intel Virtualization Technology | Intel Virtualization Technology allows a platform to run multiple operating systems and application in independent partitions, so that one computer system can function as multiple virtual systems. | Disabled, ★Enabled |
| Intel Speed Step Technology | Allows more than two frequency ranges to be supported. | Disabled, ★Enabled |
| Intel Turbo Boost Technology | Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state. | Disabled, ★Enabled |
| CPU Thermal Throttling | Enable CPU internal thermal control mechanisms to keep the CPU from overheating. | Disabled, ★Enabled |

Chipset Configuration
 Configuration Chipset feature

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Advanced

| | | |
|--------------------------|--------------------------|--|
| ME Firmware Version | 12.0.6.1120 | Select a primary VGA. |
| VT-d Capability | Supported | |
| Primary Graphics Adapter | [PCI Express] | ↔: Select Screen ↑↓: Select Item Enter: Select +/-: Change Option F1: General Help F7: Discard Changes F9: Load UEFI Defaults F10: Save and Exit ESC: Exit |
| Above 4G Decoding | [Disabled] | |
| VT-d | [Enabled] | |
| PCIe1 Link Speed | [Auto] | |
| PCIe1 Bandwidth Mode | [x16 Mode] | |
| Share Memory | [Auto] | |
| IGPU Multi-Monitor | [Disabled] | |
| Active LVDS | [Enabled] | |
| Panel Type Selection | [1440x900/24bit/2ch/LED] | |
| Onboard LAN1 | [Enabled] | |
| Onboard LAN2 | [Enabled] | |
| Onboard HD Audio | [Enabled] | |
| Deep Sleep | [Disabled] | |
| Restore on AC/Power Loss | [Power Off] | |

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| Feature | Description | Options |
|---------------------------------|---|---|
| Primary Graphics Adapter | Select a primary VGA. | Onboard, ★PCI Express |
| Above 4GB Decoding | Enable/Disable above 4G Memory Mapped IO decoding .This is disabled automatically when Aperture Size is set to 2048MB. | Enabled , ★Disabled |
| VT-d | VT-d Capability | Disabled, ★ Enabled |
| PCIE1 Link Speed | Configure PCIE1 Slot Link Speed. Auto mode is optimizing for over clocking. | ★Auto,Gen1, Gen2, Gen3 |
| PCIE1 Bandwidth Mode | Select PCIE1 Bandwidth | ★x16 Mode,x8/x8 Mode, x8/x4/x4 Mode |
| Share Memory | Configure the size of memory that is allocated to the integrated graphics processor when the system boots up. | ★Auto,32M,64M,128M,256M, 512M,1024M |
| IGPU Multi-Monitor | Select disable to disable the integrated graphics when an external graphics card is installed. Select enable to keep the integrated graphics enable at all times. | ★Disabled, Enabled |
| Active LVDS | To enable or disable the LVDS. | Enabled , ★ Disabled |
| Panel Type Selection | Selection Panel Type | 1366x768/18bit/1ch/LED, 800 x 600/18 bit /1ch/CCFL, 1024x768/24bit/1ch/CCFL, 1280x1024/24bit/2ch/CCFL, 1366x768/24bit/1ch/CCFL, 1440x900/24bit/2ch/CCFL, 1024 x 600/18bit/1ch/LED, ★1440 x 900/24bit/2ch/LED, 1280 x 1024/24bit/2ch/LED, 1024 x 768/24bit/1ch/LED, 1600 x 900/18bit/2ch/LED, 1366 x 768/24bit/1ch/LED, 1920 x 1080/24bit/2ch/LED, 800 x 600/24bit/1ch/LED, 640 x 480/24bit/1ch/LED, |

| | | |
|---------------------------------|---|---|
| | | 1024 x 768/18bit/1ch/LED |
| Onboard LAN1 | Enable or disable the onboard LAN1 network interface controller. | Disabled, ★ Enabled |
| Onboard LAN2 | Enable or disable the onboard LAN2 network interface controller. | ★Enabled , Disabled |
| Onboard HD Audio | Enable/disable onboard HD audio. | Disabled,★Enabled |
| Deep Sleep | Configure deep sleep mode for power saving when the computer is shut down. We recommend disabling Deep Sleep for better system compatibility and stability. | ★Disabled, Enabled in S5, Enabled in S4-S5 |
| Restore on AC/Power Loss | Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers. | Power On, ★Power Off |

Storage Configuration

SATA Settings

```
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Advanced
SATA Controller(s)           [Enabled]           Enable/disable the SATA
SATA Mode Selection          [AHCI]             controllers.
SATA Aggressive Link Power   [Disabled]
Management
Hard Disk S.M.A.R.T          [Enabled]

▶ SATA3_1: Not Detected
▶ SATA3_2: Not Detected
▶ SATA3_3: Not Detected
▶ SATA3_4: Not Detected
▶ M2_2: Not Detected

↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

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```

| Feature | Description | Options |
|--|---|---------------------|
| SATA Controller(s) | Enable/disable the SATA controllers. | ★Enabled , Disabled |
| SATA Mode Selection | Determines how SATA controller(s) operate. This PCH SKU doesn't support RST feature. | ★AHCI |
| SATA Aggressive Link Power Management | SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode. | ★Disabled, Enabled |
| Hard Disk S.M.A.R.T | S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting system for computer hard disk drives to detect and report on various indicators of reliability. | Disabled, ★Enabled |

SATA3 1,2,3,4: Not Detected Configuration

SATA3_(1,2,3,4): Not Detected Configuration



| Feature | Description | Options |
|-------------------------|---|-------------------------------------|
| External SATA | Enable SATA safe removal notifications. Please note that the SATA device will be downgraded to SATA2. | ★Disabled ,Enabled |
| Hot Plug | Enable or disable Hot Plug for this port. | ★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 |

M2 2: Not Detected Configuration

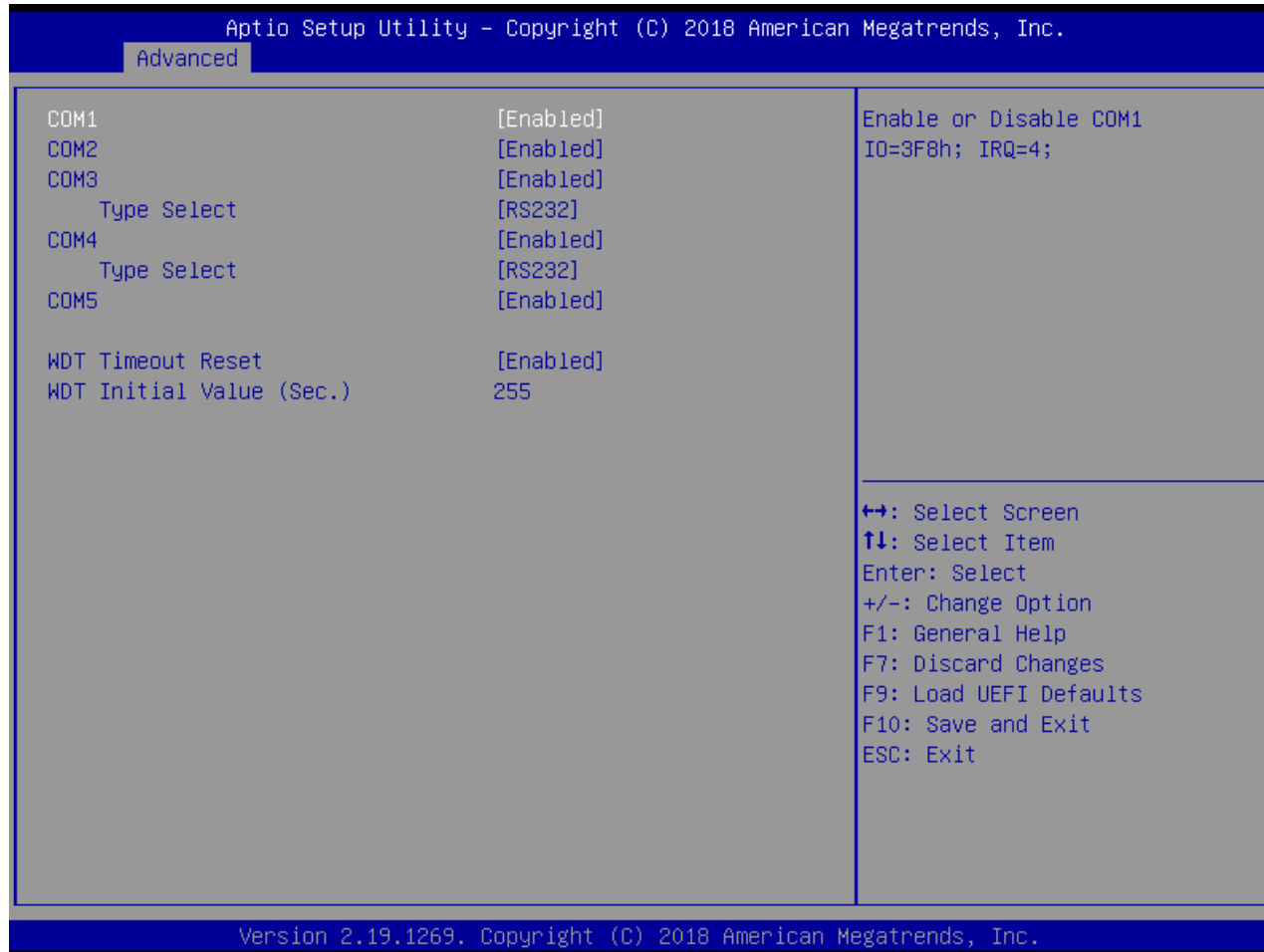
M2_2: Not Detected Configuration



| Feature | Description | Options |
|-------------------------|---|-------------------------------------|
| External SATA | Enable SATA safe removal notifications. Please note that the SATA device will be downgraded to SATA2. | ★Disabled ,Enabled |
| Hot Plug | Enable or disable Hot Plug for this port. | ★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 |

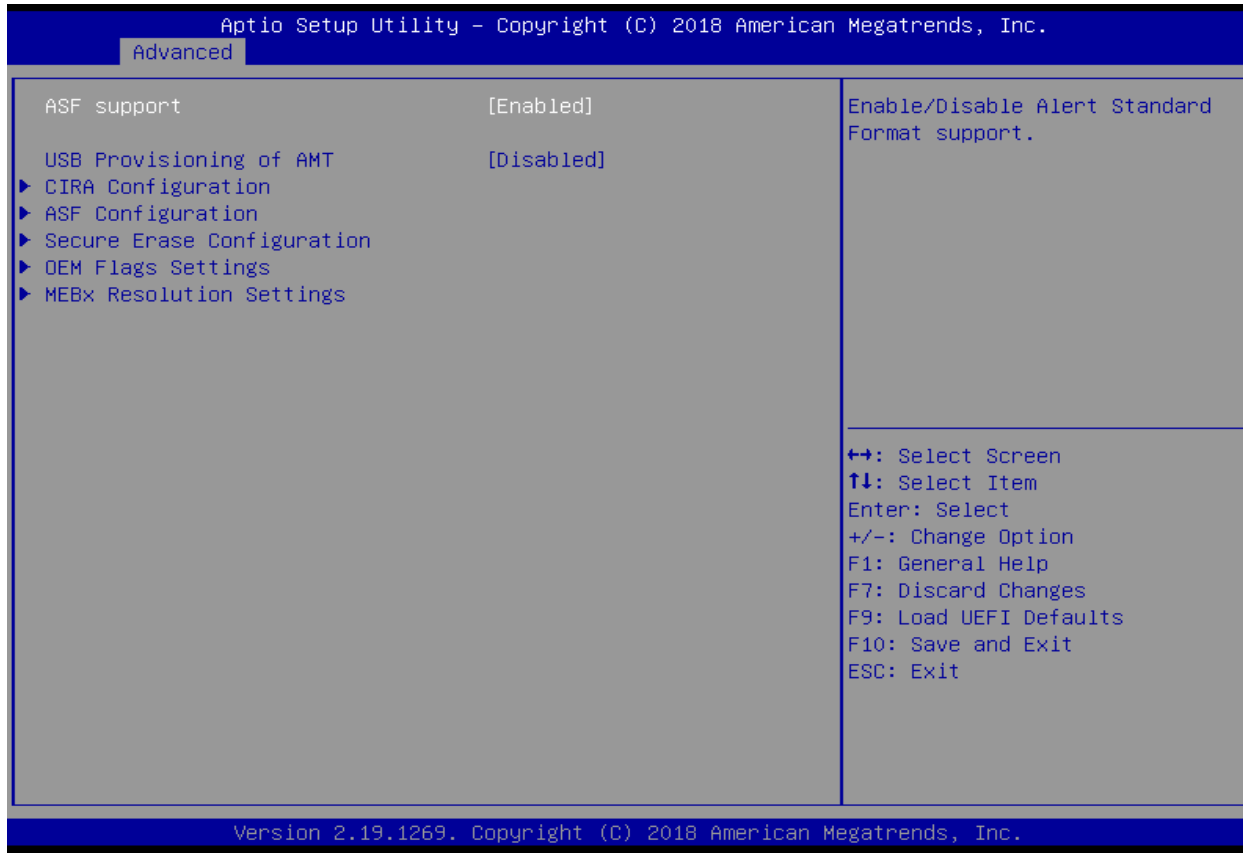
Super IO Configuration

COM Port Configuration



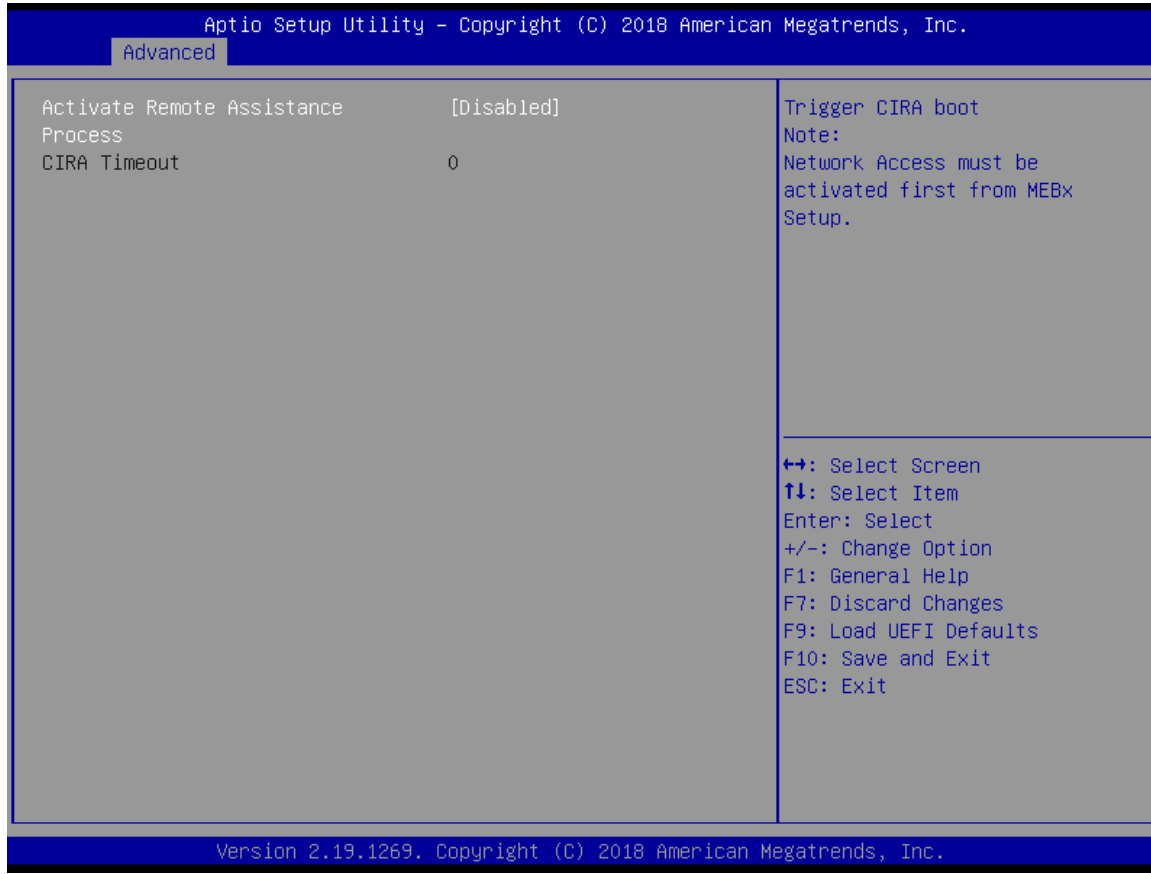
| Feature | Description | Options |
|--------------------------|---|---------------------|
| COM1 | Enable or Disable COM1 , IO=3F8h; IRQ=4; | Disabled , ★Enabled |
| COM2 | Enable or Disable COM2 , IO=2F8h; IRQ=3; | Disabled , ★Enabled |
| COM3 | Enable or Disable COM3 , IO=3E8h; IRQ=7; | Disabled , ★Enabled |
| Type Select | Set COM Type | ★RS232,RS422,RS485 |
| COM4 | Enable or Disable COM4, IO=2E8h; IRQ=7; | Disabled , ★Enabled |
| Type Select | Set COM Type | ★RS232,RS422,RS485 |
| COM5 | Enable or Disable COM5 , IO=2F0h; IRQ=10; | Disabled , ★Enabled |
| 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. | ★255 |

AMT Configuration



| Feature | Description | Options |
|-------------------------|---|-------------------|
| ASF support | Enable/Disable Alert Standard Format support. | Disabled, ★Enable |
| USB Provisioning of AMT | Enable/Disable of AMT USB Provisioning. | ★Disabled, Enable |

CIRA Configuration



| Feature | Description | Options |
|---|--|-------------------|
| Activate Remote Assistance Process | Trigger CIRA boot. Note: Network Access must be activated first from MEBx Setup. | ★Disabled, Enable |

ASF Configuration

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Advanced

| | | |
|-------------------|------------|---|
| PET Progress | [Enabled] | Enable/Disable PET Events Progress to receive PET Events. |
| WatchDog | [Disabled] | |
| OS Timer | 0 | |
| BIOS Timer | 0 | |
| ASF Sensors Table | [Disabled] | |

↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

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| Feature | Description | Options |
|--------------------------|---|-------------------|
| PET Process | Enable/Disable PET Events Progress to receive PET Events. | Disabled, ★Enable |
| WatchDog | Enable/Disable WatchDog Timer. | ★Disabled, Enable |
| ASF Sensors Table | Adds ASF Sensor Table into ASF! ACPI Table | ★Disabled, Enable |

Secure Erase Configuration

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Advanced

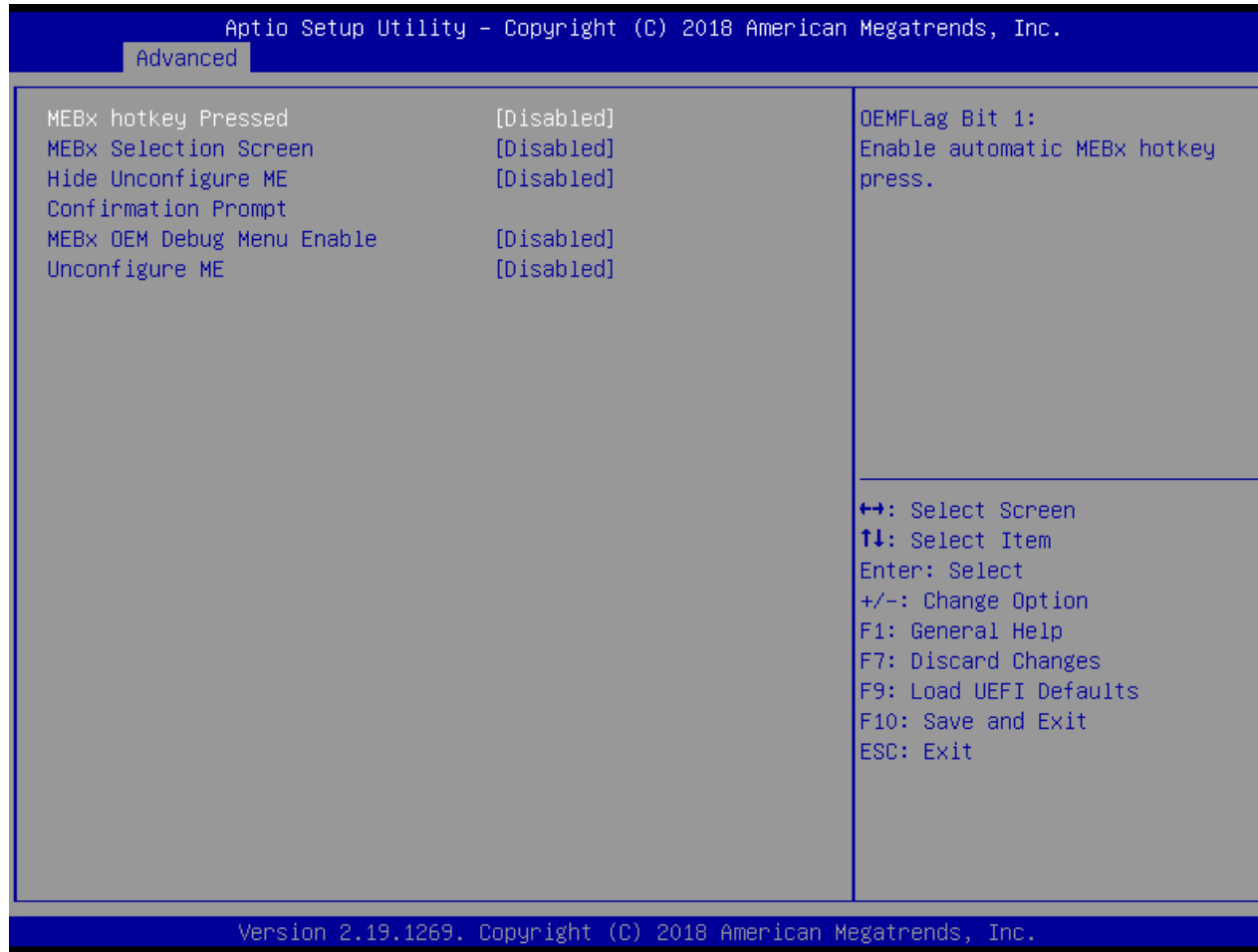
| | | |
|--------------------|-------------|---|
| Secure Erase mode | [Simulated] | Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD. |
| Force Secure Erase | [Disabled] | |

↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

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| Feature | Description | Options |
|---------------------------|---|--------------------|
| Secure Erase mode | Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD. | ★ Simulation, Real |
| Force Secure Erase | Force Secure Erase on next boot | ★ Disabled, Enable |

OEM Flags Settings



| Feature | Description | Options |
|--|---|--------------------|
| MEBx hotkey Pressed | OEMFLag Bit 1: Enable automatic MEBx hotkey press. | ★ Disabled, Enable |
| MEBx Selection Screen | OEMFLag Bit 2: Enable MEBx selection screen with 2 options: Press 1 to enter ME Configuration Screens Press 2 to initiate a remote connection Note: Network Access must be activated from MEBx Setup for this screen to be displayed. | ★ Disabled, Enable |
| Hide Unconfigure ME Confirmation Prompt | OEMFlag Bit 6: Hide Unconfigure ME confirmation prompt when attempting ME unconfiguration. | ★ Disabled, Enable |
| MEBx OEM Debug Menu Enable | OEMFlag Bit 14: Enable OEM debug menu in MEBx. | ★ Disabled, Enable |
| Unconfigure ME | OEMFlag Bit 15: Unconfigure ME with resetting MEBx password to default. | ★ Disabled, Enable |

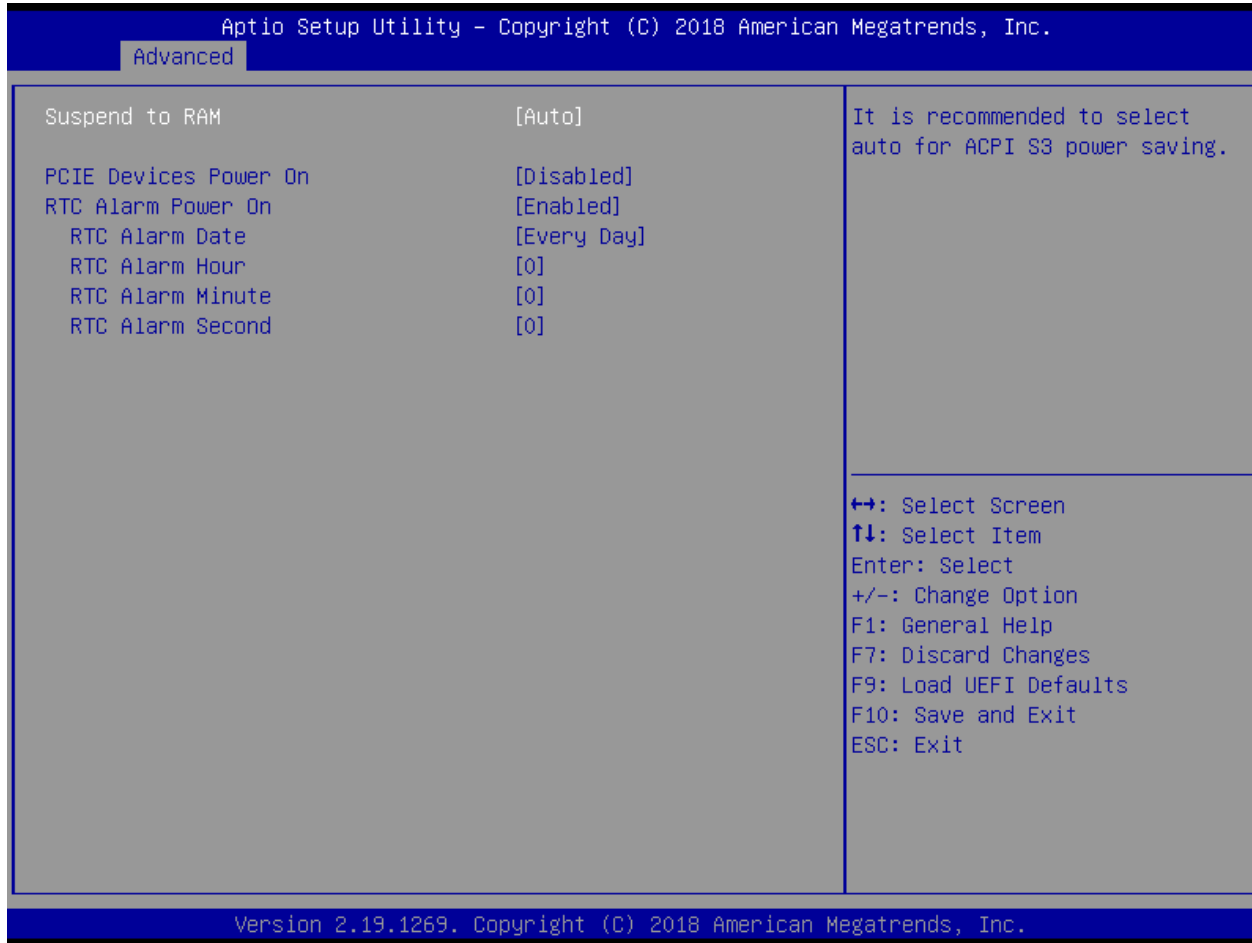
MEBx Resolution Settings



| Feature | Description | Options |
|---------------------------------|----------------------------------|-------------------------------------|
| Non-UI Mode Resolution | Resolution for non-UI text mode. | ★Auto, 80x25,100x31 |
| UI Mode Resolution | Resolution for UI text mode. | ★Auto, 80x25,100x31 |
| Graphics Mode Resolution | Resolution for graphic mode. | ★Auto, 640x480,800x600, 1024x768 |

ACPI Configuration

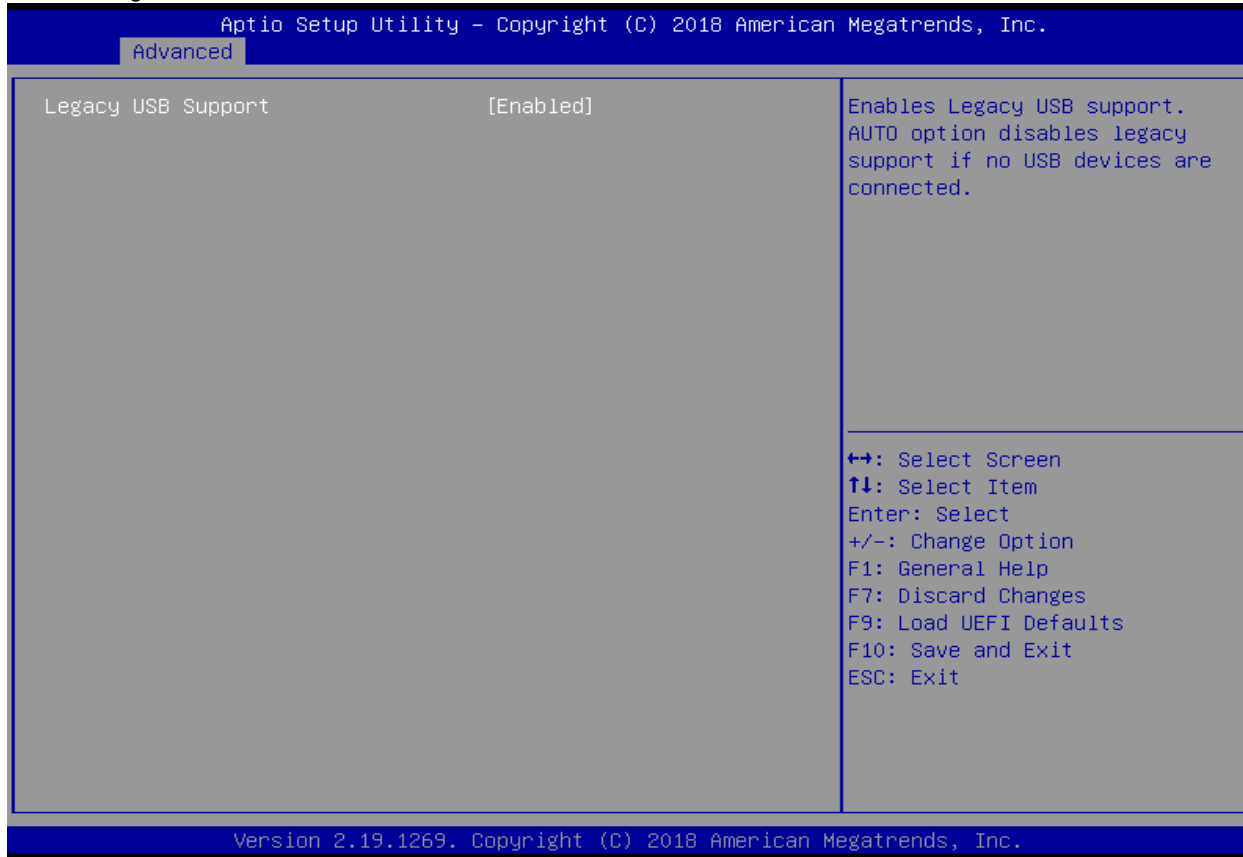
ACPI Parameters.



| Feature | Description | Options |
|------------------------------|--|--|
| Suspend to RAM | It is recommended to select auto for ACPI S3 power saving. | Disabled, ★Auto |
| PCIE Devices Power On | Allow the system to be waked up by a PCIE device and enable wake on LAN. | ★Disabled, Enable |
| RTC Alarm Power On | 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, Enable, ★By OS |
| RTC Alarm Date | Set Date of RTC power on feature. | ★EveryDay, 1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15,16,17,18, 19,20,21,22,23,24,25,26,27, 28,29,30,31 |
| RTC Alarm Hour | Set Hour of RTC power on feature. | ★0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20, 21,22,23, |
| RTC Alarm Minute | Set Minute of RTC power on feature. | ★0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20, 21,22,23,24,25,26,27,28,20, 30,31,32,33,34,35,36,37,38, 39,40,41,42,43,44,45,46,47, 48,49,50,51,52,53,54,55,56, 57,58,59 |
| RTC Alarm Second | Set Second of RTC power on feature. | ★0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20, 21,22,23,24,25,26,27,28,20, 30,31,32,33,34,35,36,37,38, 39,40,41,42,43,44,45,46,47, 48,49,50,51,52,53,54,55,56, 57,58,59 |

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. | ★ Enabled, UEFI Setup only |

Trusted Computing

Trusted Computing settings

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Advanced
  TPM20 Device Found
  Firmware Version:      7.62
  Vendor:                IFX
  Security Device Support [Enable]
  Active PCR banks       SHA-1,SHA256
  Available PCR banks    SHA-1,SHA256
  Pending operation      [None]
  Platform Hierarchy     [Enabled]
  Storage Hierarchy      [Enabled]
  Endorsement Hierarchy  [Enabled]
  TPM2.0 UEFI Spec Version [TCG_2]
  Physical Presence Spec Version [1.3]
  TPM 20 InterfaceType   [TIS]
  Device Select          [Auto]
  Onboard TPM            [Enabled]
  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.
  ←→: Select Screen
  ↑↓: Select Item
  Enter: Select
  +/-: Change Option
  F1: General Help
  F7: Discard Changes
  F9: Load UEFI Defaults
  F10: Save and Exit
  ESC: Exit
  Version 2.19.1269. Copyright (C) 2018 American Megatrends, Inc.
    
```

| 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. | Disable, ★Enable |
| Pending operation | Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device. | ★None, TPM Clear |
| Platform Hierarchy | Enable or Disable Platform Hierarchy | Disable, ★Enable |
| Storage Hierarchy | Enable or Disable Storage Hierarchy | Disable, ★Enable |
| Endorsement Hierarchy | Enable or Disable Endorsement Hierarchy | Disable, ★Enable |
| TPM2.0 UEFI Spec Version | Select the TCG2 Spec Version Support, TCG_1_2: the Compatible mode for Win8/Win10, TCG_2: Support new TCG2 protocol and event format for Win10 or later | TCG_1_2, ★TCG_2 |
| Physical Presence Spec Version | Select to Tell O.S.to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3. | 1.2, ★1.3 |
| Device Select | TPM1.2 will restrict support to TPM1.2 devices, TPM2.0 will restrict support to TPM2.0 devices, Auto will support both with the default set to TPM2.0 devices if not found, TPM1.2 devices will be enumerated | TPM1.2, TPM2.0, ★Auto |
| Onboard TPM | Enable or disable the onboard TPM interface controller. | Disable, ★Enable |

7.2.3 H/W Monitor

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Main  Advanced  H/W Monitor  Security  Boot  Exit

Hardware Health Event Monitoring

CPU Temperature           : +83.5 °C
M/B Temperature          : +35.5 °C

CPU_FAN1 Speed           : N/A
CHA_FAN1 Speed           : 4576 RPM

+ 3.30V                   : +3.408 V
+ 3.30VSB                 : +3.168 V
+ VBAT                    : +3.008 V
+ 5.00V                   : +4.968 V
VDCORE                    : +1.008 V
+ VCCM                    : +1.200 V
+ 12V                     : +12.008 V

CPU_FAN1 Setting         [Automatic Mode]
  Target CPU Temperature [50 °C/122 °F]
  Target Fan Speed       [Level 9]
CHA_FAN1 Setting         [Automatic Mode]
  Target CPU Temperature [50 °C/122 °F]
  Target Fan Speed       [Level 9]
Case Open Feature        [Disabled]

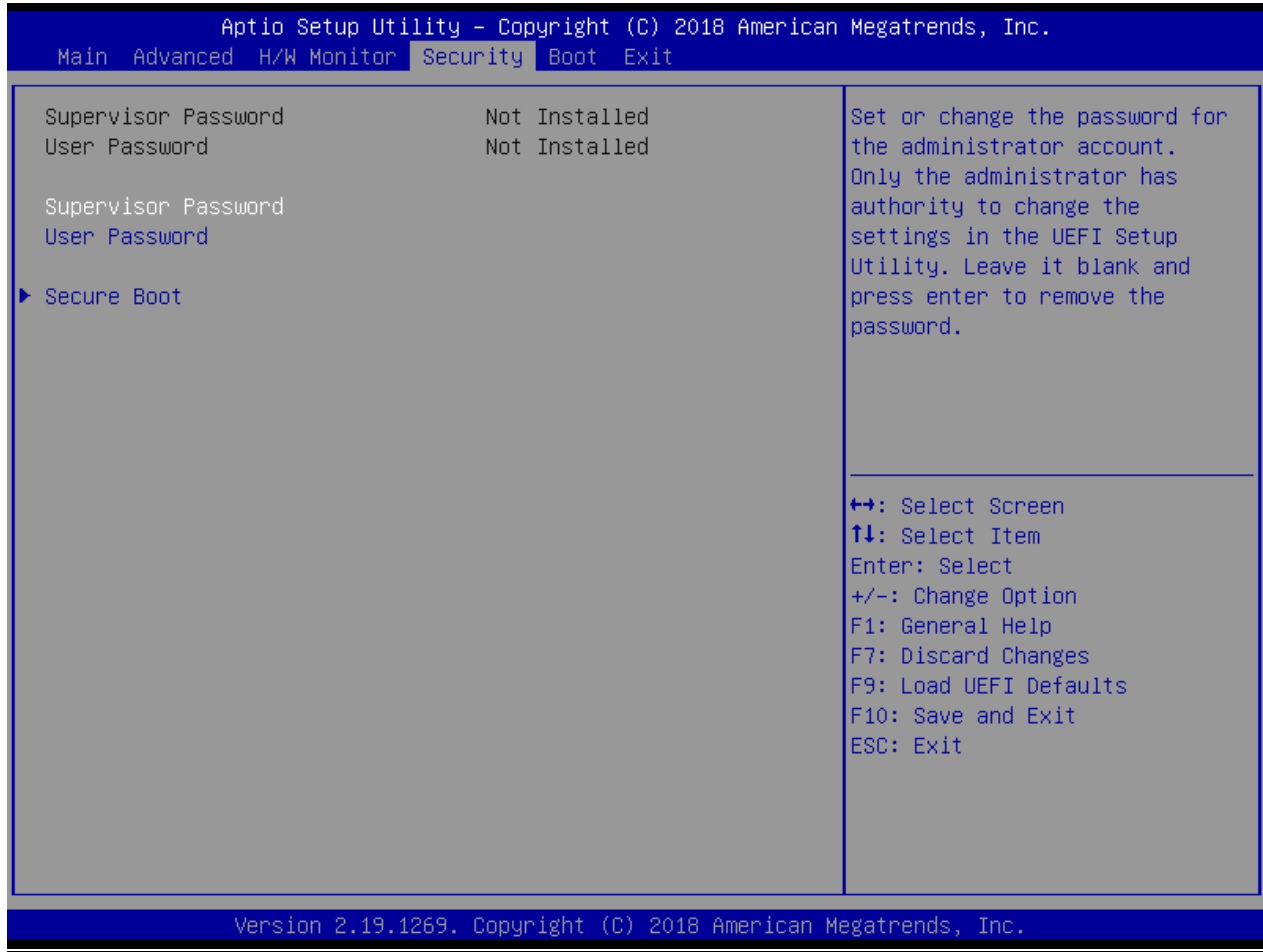
Quiet Fan Function Control

↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

Version 2.19.1269. Copyright (C) 2018 American Megatrends, Inc.
    
```

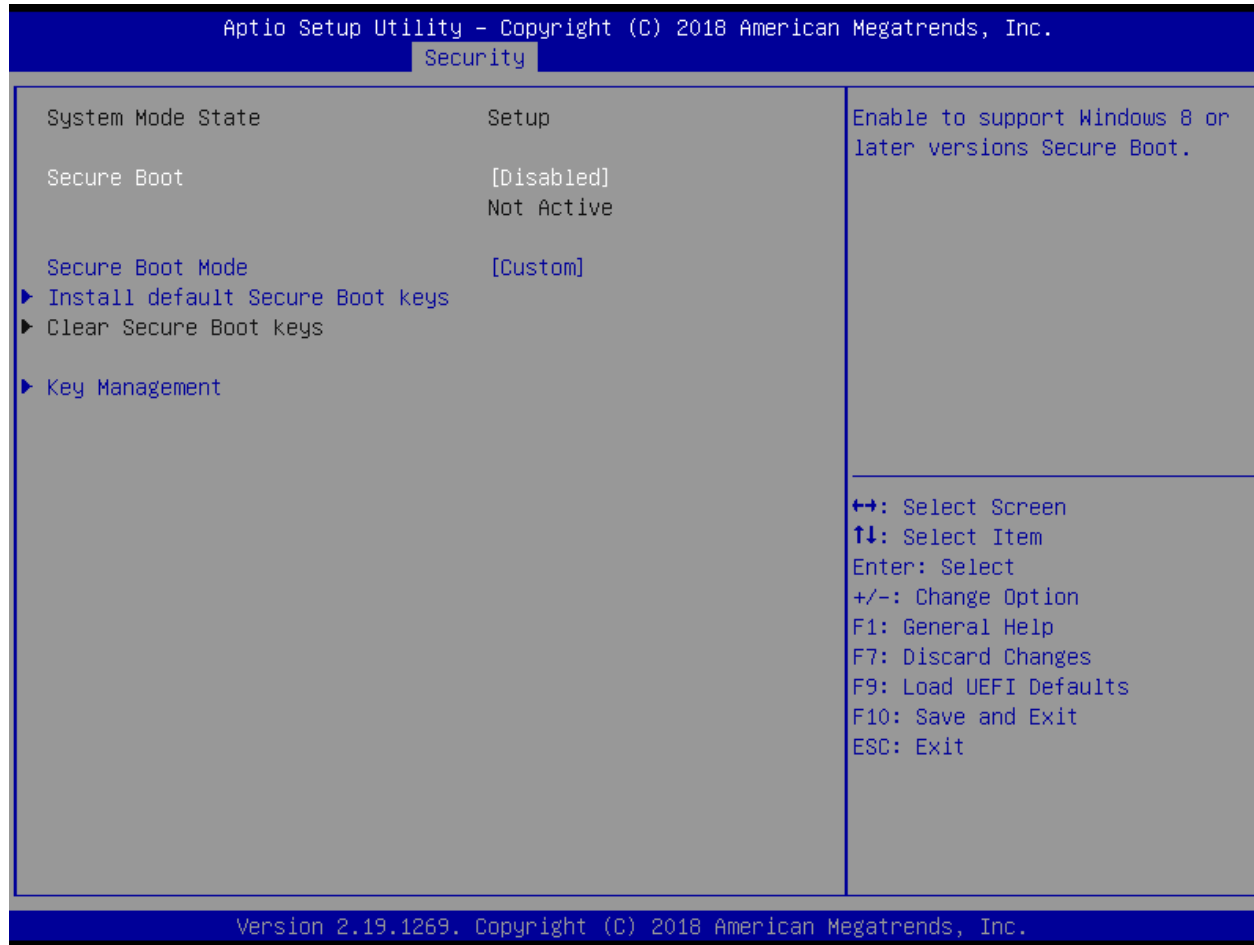
| Feature | Description | Options |
|-------------------------------|---|---|
| CPU_FAN1 Setting | Quiet Fan Function Control | ★Full On, Automatic Mode |
| Target CPU Temperature | Target CPU Temperature Value. | 45°C/113°F, 46°C/114°F, 47°C/116°F, 48°C/118°F, 49°C/120°F, ★50°C/122°F, 51°C/123°F, 52°C/125°F, 53°C/127°F, 54°C/129°F, 55°C/131°F, 56°C/132°F, 57°C/134°F, 58°C/136°F, 59°C/138°F, 60°C/140°F, 61°C/141°F, 62°C/143°F, 63°C/145°F, 64°C/147°F, 65°C/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, ★Level 9 |
| CHA_FAN1 Setting | Quiet Fan Function Control | ★Full On, Automatic Mode |
| Target CPU Temperature | Target CPU Temperature Value. | 45°C/113°F, 46°C/114°F, 47°C/116°F, 48°C/118°F, 49°C/120°F, ★50°C/122°F, 51°C/123°F, 52°C/125°F, 53°C/127°F, 54°C/129°F, 55°C/131°F, 56°C/132°F, 57°C/134°F, 58°C/136°F, 59°C/138°F, 60°C/140°F, 61°C/141°F, 62°C/143°F, 63°C/145°F, 64°C/147°F, 65°C/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, ★Level 9 |
| Case Open Feature | Enable or disable the feature of Case Open. | ★Disabled, Enabled |

7.2.4 Security



| Feature | Description | Options |
|----------------------------|---|---------|
| Supervisor Password | Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the 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. | |

Secure Boot



| Feature | Description | Options |
|---|---|--------------------|
| Secure Boot | Enable to support Windows 8 or later versions Secure Boot. | ★Disabled, Enabled |
| Secure Boot Mode | Secure Boot Mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication | Standard, ★Custom |
| Install default Secure Boot keys | Please install default secure boot keys if it's the first time you use secure boot. | |

Key Management

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Security
Vendor Keys                Valid
Factory Key Provision      [Disabled]
▶ Install default Secure Boot keys
▶ Clear Secure Boot keys
▶ Export Secure Boot variables
▶ Enroll Efi Image

Device Guard Ready
▶ Remove 'UEFI CA' from DB
▶ Restore DB defaults

Secure Boot variable | Size | Keys | Key Source
▶ Platform Key(PK)   | 0 | 0 | No Keys
▶ Key Exchange Keys  | 0 | 0 | No Keys
▶ Authorized Signatures | 0 | 0 | No Keys
▶ Forbidden Signatures | 0 | 0 | No Keys
▶ Authorized TimeStamps | 0 | 0 | No Keys
▶ OsRecovery Signatures | 0 | 0 | No Keys

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode

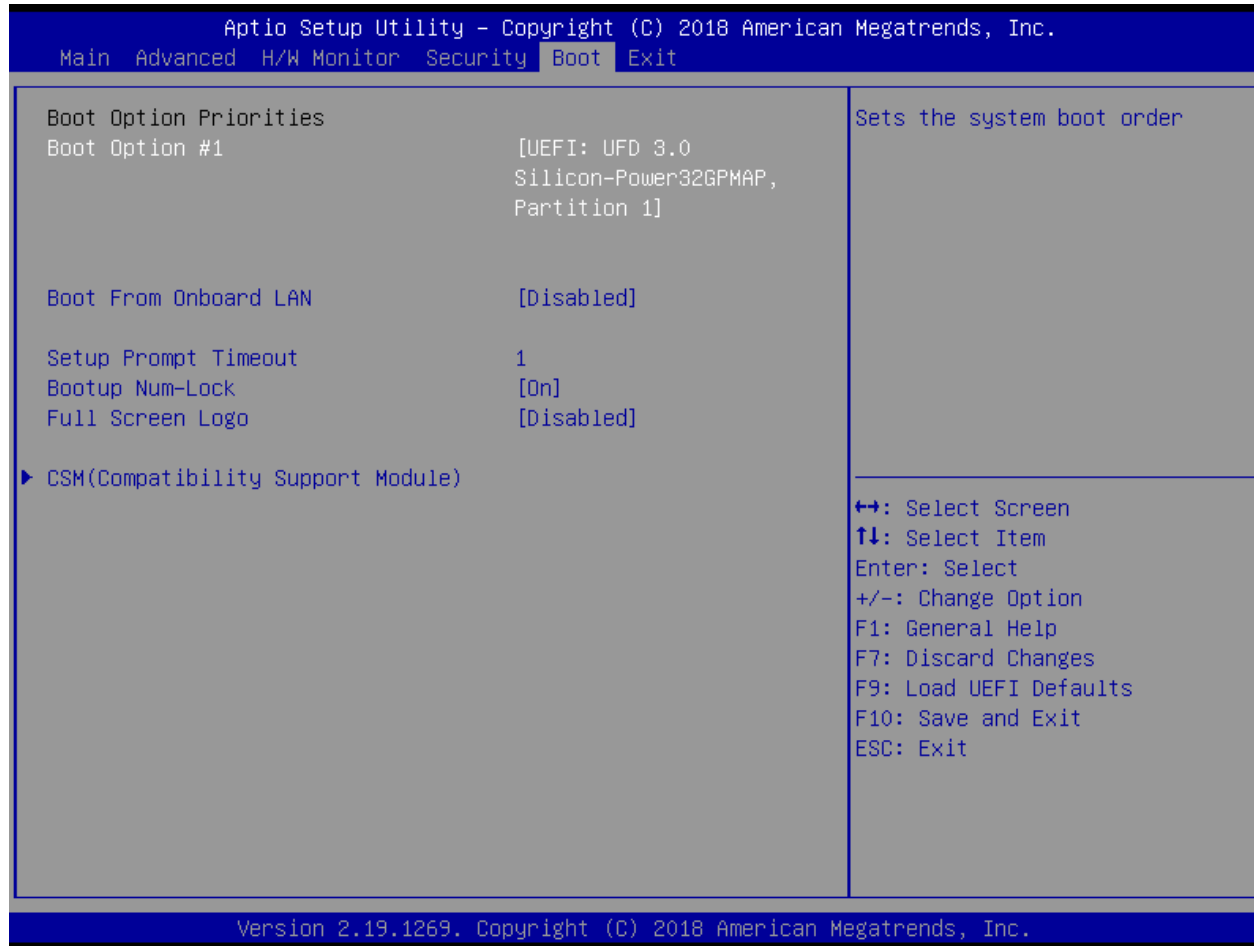
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

Version 2.19.1269. Copyright (C) 2018 American Megatrends, Inc.
    
```

| Feature | Description | Options |
|---|--|--------------------|
| Factory Key Provision | Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode. | ★Disabled, Enabled |
| Install default Secure Boot keys | Please install default secure boot keys if it's the first time you use secure boot. | |
| Enroll Efi Image | Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db) | |
| Restore DB defaults | Restore DB variable to factory defaults | |
| Platform Key(PK) | Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory, External, Mixed | |
| Key Exchange Keys | | |
| Authorized Signatures | | |
| Forbidden Signatures | | |
| Authorized TimeStamps | | |
| OsRecovery Signatures | | |
| | | |

7.2.5 Boot

Use this menu to specify the priority of boot devices.



| Feature | Description | Options |
|------------------------------|--|--------------------|
| Boot Option #1 | Sets the system boot order | ★Disable, Enabled |
| Boot From Onboard LAN | Boot From Onboard LAN | ★Disabled, Enabled |
| Setup Prompt Timeout | Configure the number of seconds to wait for the UEFI setup utility. | ★1 |
| Bootup Num-Lock | Select whether Num Lock should be turned on or off when the system boots up. | ★On, Off |
| Full Screen Logo | Enable to display the boot logo or disable to show normal POST messages. | ★Disabled, Enabled |

CSM(Compatibility Support Module)

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
  Boot
-----
CSM                               [Enabled]
Launch PXE OpROM Policy           [Legacy only]
Launch Storage OpROM Policy       [Legacy only]

Enable to launch the
Compatibility Support Module.
If you are using Windows 8 or
later versions 64-bit UEFI and
all of your devices support
UEFI, you may also disable CSM
for faster boot speed.

-----
←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

Version 2.19.1269. Copyright (C) 2018 American Megatrends, Inc.
    
```

| Feature | Description | Options |
|------------------------------------|--|---|
| CSM | Enable to launch the Compatibility Support Module. If you are using Windows 8 or later versions 64-bit UEFI and all of your devices support UEFI, you may also disable CSM for faster boot speed. | ★Disable, 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 |

7.2.6 Exit

```
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Main Advanced H/W Monitor Security Boot Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load UEFI Defaults
Launch EFI Shell from filesystem device

Exit system setup after saving
the changes.

F10 key can be used for this
operation.

↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

Version 2.19.1269. Copyright (C) 2018 American Megatrends, Inc.
```

| 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 setup options. F7 key can be used for this operation. | |
| Load UEFI Defaults | Load UEFI Default values for all the setup question. F9 key can be used for this operation. | |
| Launch EFI Shell from filesystem device | Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices. | |

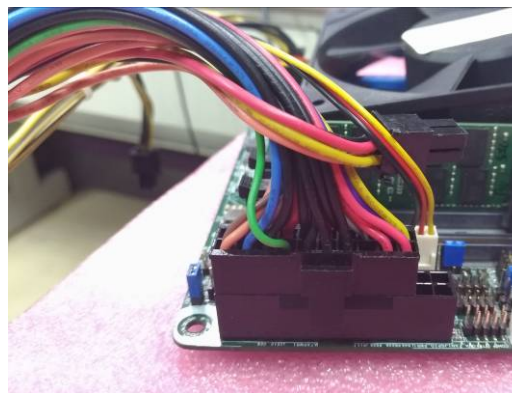
8 Troubleshooting

This section provides a few useful tips to quickly get WADE-8211-Q370 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

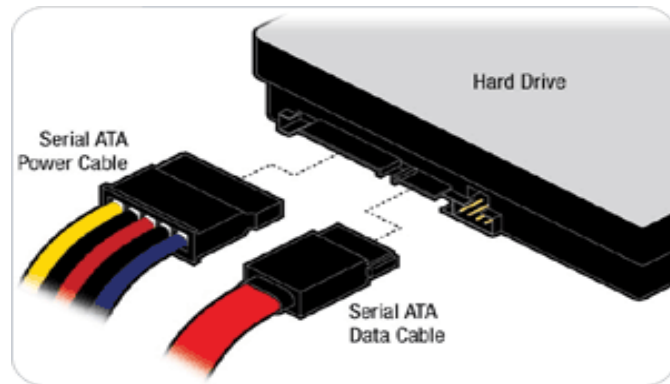
Unlike other Single board computer, WADE-8211-Q370 supports ATX only. Therefore, there is no other setting that needs to be set up. However, there are only two connectors that must be connected—J13 (4 pins ATX power connector) & J21 (20 pins ATX Power Connector) on the WADE-8211-Q370 board0.



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-8211-Q370 can support four SATA interface (SATAIII, 6.0Gb/s) on board. It has J30 SATA ports on board.

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. DDR4 So-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 WADE-8211-Q370, it is recommended, when going with the boot-up sequence, to hit "delete " or " F2 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.

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 JP24 on the WADE-8211-Q370 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.

JP24 : CMOS Setting

| | Jumper Setting Describe |
|------|-------------------------|
| *1-2 | Normal |
| 2-3 | Clean CMOS |

Question: How to update the BIOS file of WADE-8211-Q370?

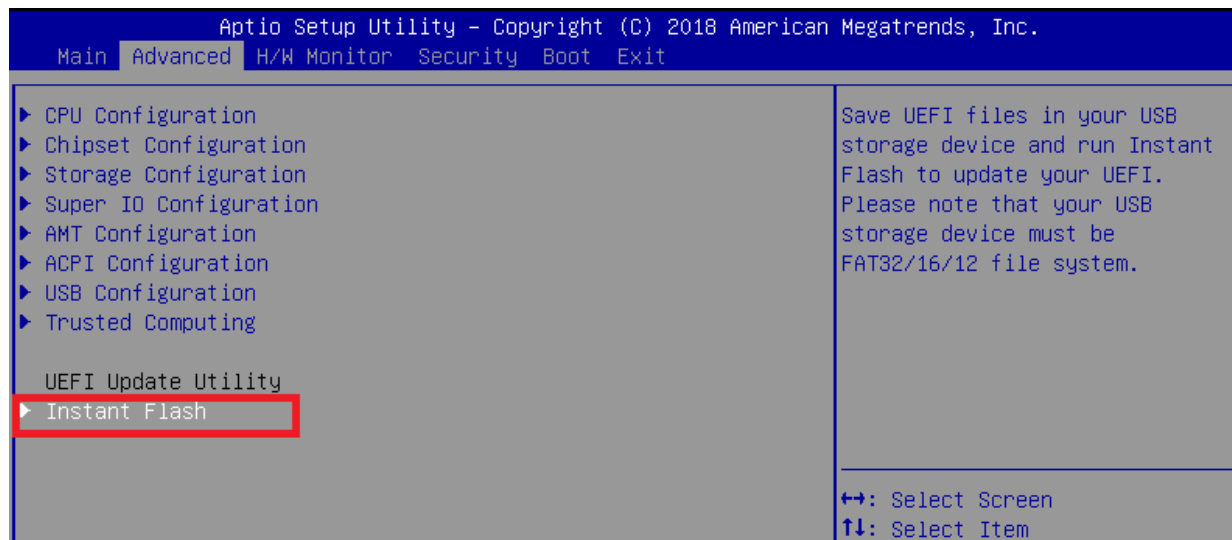
Answer: 1. Please visit web site of [Portwell download center](http://www.portwell.com.tw/support/download_center.php) as below hyperlink

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

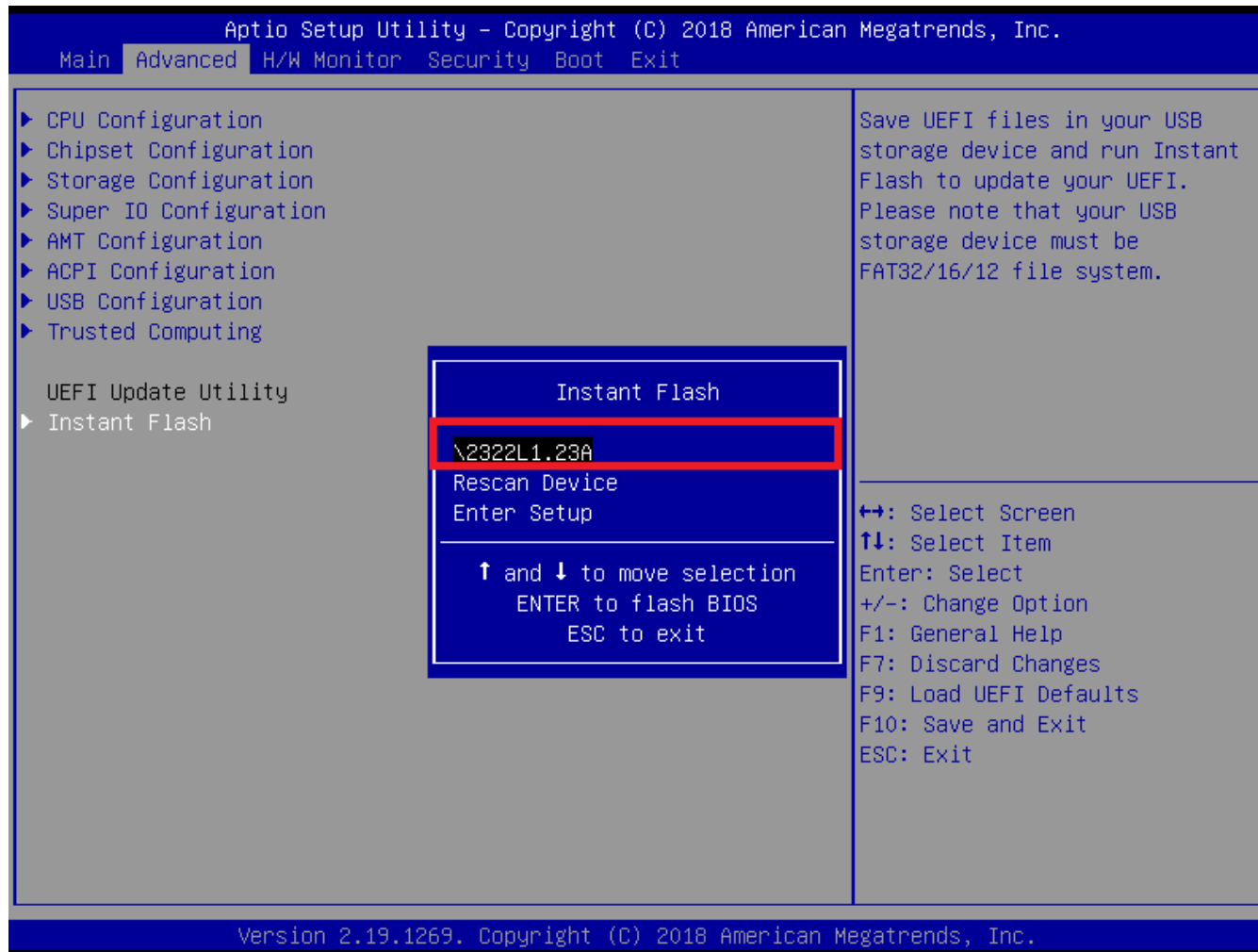
Registering an account in advance is a must. (The E-Mail box should be an existing Company email address that you check regularly.)

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

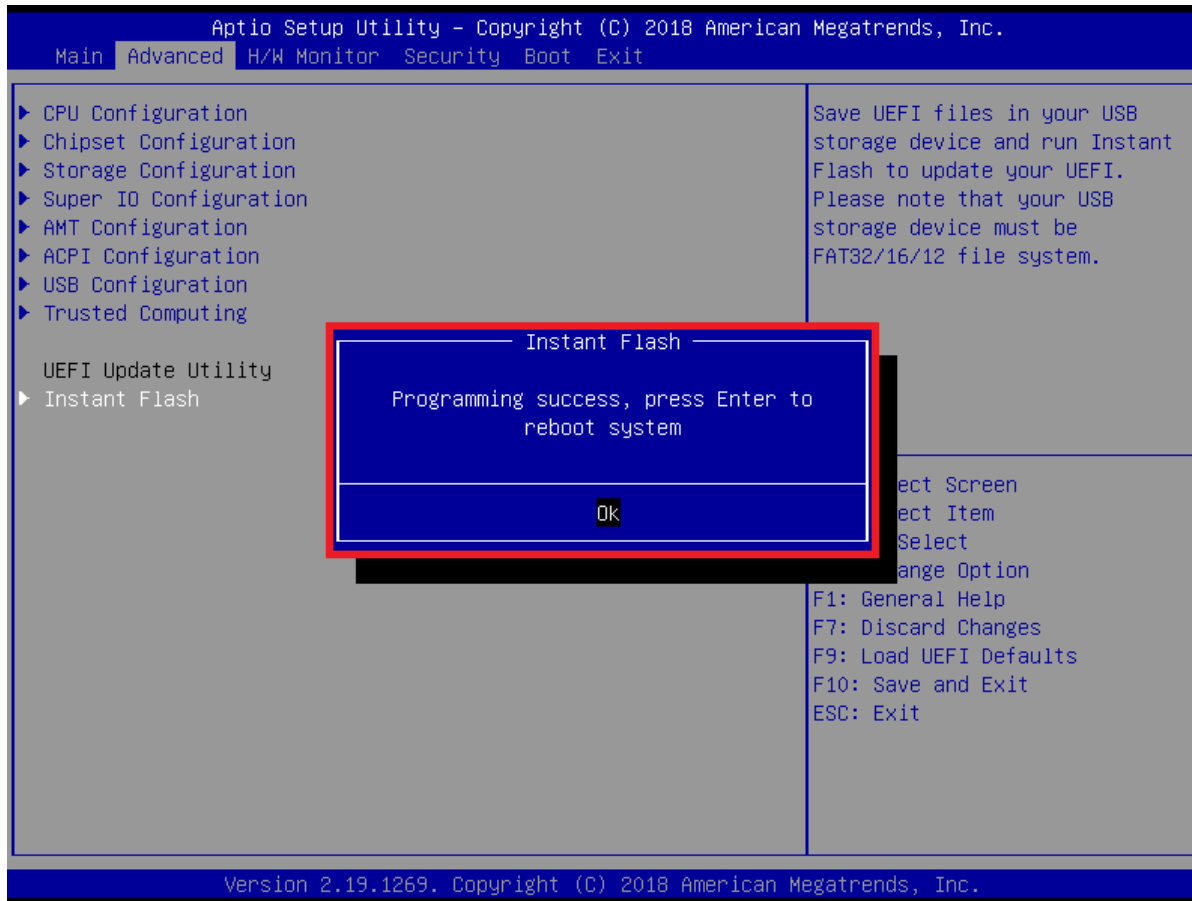
2. Type in your User name and password and log in the download center.
3. Select “[Search download](#)” and type the keyword “[WADE-8211-Q370](#)”.
4. Find the “[BIOS](#)” page and download the ROM file and unzip file to USB flash drive (FAT 32 / 16 format).
5. Boot into BIOS and switch to “[Advanced](#)” page then select” [Instant Flash](#)”.



6. Select "xxx.23A" file then start updating BIOS.



- 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 WADE-8211-Q370 board?

Answer: - The WADE-8211-Q370 supports VGA 、 LVDS and DP display output.

Note:

Please visit our Download Center 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

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 |

10 Industry Specifications

10.1 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>