



# WEBS-13D1

3.5" Embedded System

Version 1.0

**Revision History**

|      |             |
|------|-------------|
| R1.0 | Preliminary |
|      |             |
|      |             |
|      |             |
|      |             |

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## Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the WEBS-13D1. This document should be referred to when designing 3.5" Embedded System application. The other reference documents that should be used include the following:

- ✧ Intel Apollo Lake Design Guide
- ✧ Intel Apollo Lake I Specification

Please contact Portwell Sales Representative for above documents.

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## 1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and a member of the Intel® Embedded and Communications Alliance (Intel ECA), announced today the Portwell WEBS-13D1 utilizing the Intel® ECX form factor based on the Intel® Atom™ processor E3900 series and N4200 / N3350 sku, includes integrated, enhanced graphics and memory controllers on 14nm process technology, delivering significant power reduction, performance improvements and smaller platform footprint over the previous Intel® Atom™ processor E3900 series and N4200 / N3350 sku. The WEBS-13D1 can provide the low power consumption for low profile fanless applications such as POS, Print Imaging, ATM, Kiosk, Medical, Panel PC, Digital Security and Digital Signage.

## 2 Specifications

|                            |   |
|----------------------------|---|
| <b>Main Processor</b>      | ◆ Intel® Atom™ Dual/Quad Core E3900 series, Pentium N4200 , Celeron N3350 Processor   |
| <b>System BIOS</b>         | ◆ AMI UEFI BIOS   |
| <b>Main Memory</b>         | ◆ Up to 8 GB in 1 slots DDR3L SO-DIMM sockets.  |
| <b>Graphics</b>            | <ul style="list-style-type: none"> <li>◆ Controller: Intel® HD Graphics 505</li> <li>◆ DP: Supports DP up to resolution 4096 x 2304</li> <li>◆ HDMI: Supports HDMI up to resolution 3840 x 2160</li> </ul>                                    |
| <b>Expansion Interface</b> | ◆ Two mini-PCIe socket (Full size support mSATA / Half size support WiFi/BT)  |
| <b>SATA Interface</b>      | ◆ One SATA ports(SATA 6Gb/s)  |
| <b>Input/Output</b>        | <ul style="list-style-type: none"> <li>◆ Serial Ports: 3x RS-232 &amp; 1x RS-232/422/485</li> <li>◆ USB Port: 2x USB 3.0 on rear, 4x USB 3.0 on front</li> <li>◆ Audio Ports: ear I/O with Line-out ,Line-in, Line-out, and Mic-in</li> </ul> |
| <b>Ethernet</b>            | ◆ Supports two 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus which provides 500 MB/s data transmission rate   |
| <b>High Drive GPIO</b>     | ◆ One GPIO on front (8bit in / out)   |



|  |  |
|--|--|
| <b>Mechanical<br/>and<br/>environmental specifications</b> | <ul style="list-style-type: none"><li>◆ Operating temperature: -20 ~ 60° C</li><li>◆ Storage temperature:-20 ~ 80° C</li><li>◆ Humidity: 5 ~ 90% non-condensing</li><li>◆ Power supply voltage: 12~24V DC in</li><li>◆ System size: 200(W) x 150(D) x 80(H) mm</li></ul> |
|--|--|

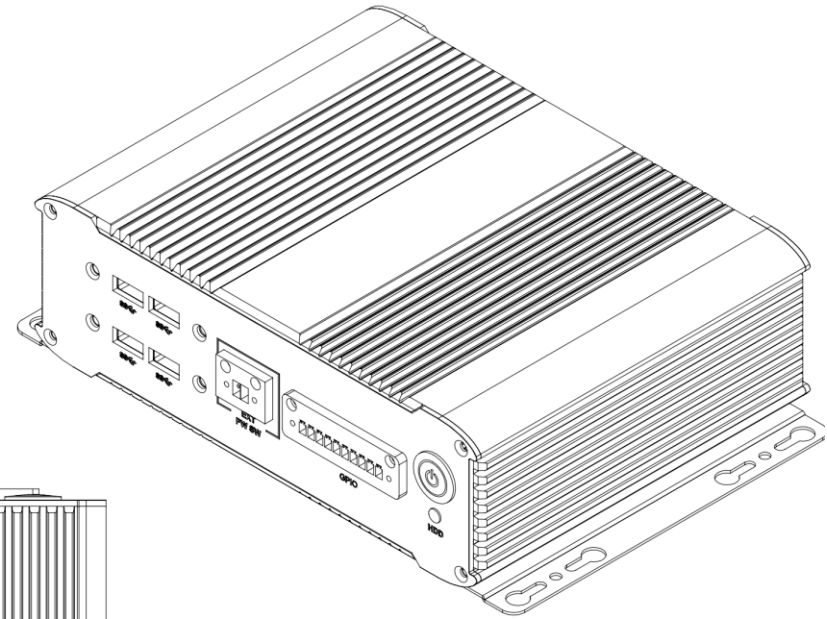
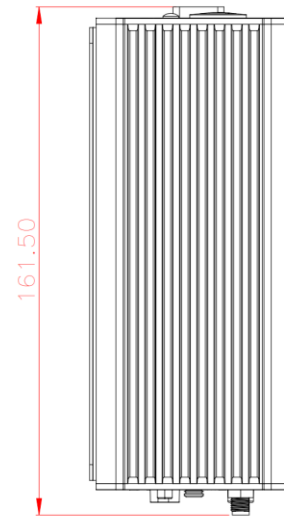
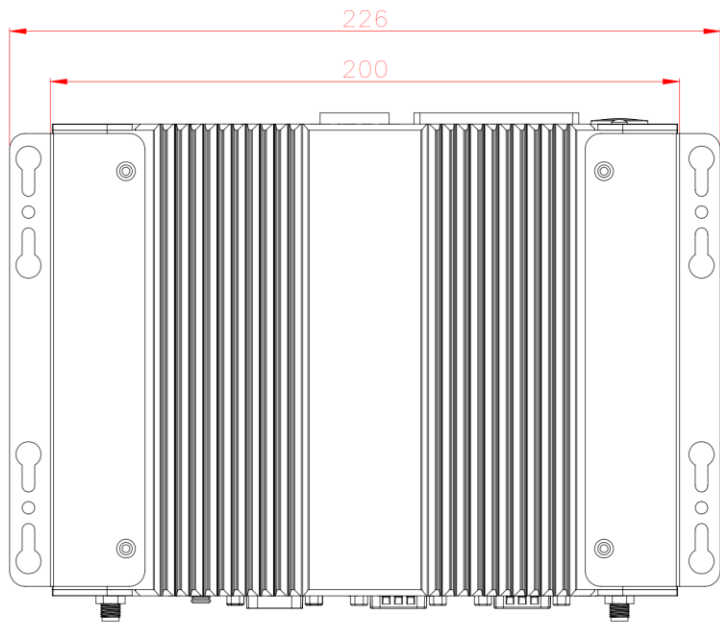
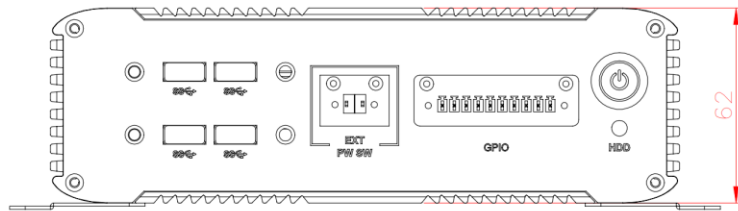
## 2.1 Supported Operating Systems

The WEBS-13D1 supports the following operating systems.

- ✧ Windows 10\* (64 bit), IoT Core(32/64bit)
- ✧ Wind River\* 8.0 Linux Distribution(64 bit)
- ✧ Yocto\* Tool-based Embedded Linux Distribution (64 bit)
- ✧ Android\* 6.0(64bit)
- ✧ VxWorks\*7.0 (RTOS) (64 bit)



## 2.2 Mechanical Dimensions



## 2.3 Power Consumption

| Test Configuration |   |
|--------------------|---|
| CPU Type           | Intel® Atom™ Processor E3940 @ 1.6GHz                                       |
| SBC BIOS           | Portwell,Inc. PEBE-2773 TEST BIOS (61111T00)                                |
| Memory             | Transcend DDR3L SO-DIMM 1866/4GB (wide temperature)                         |
| VGA Card           | Onsystem Intel® HD Graphics   |
| VGA Driver         | Intel® HD Graphics ,Version:21.20.16.4526                                   |
| LAN Card           | Onsystem Intel® I210 Gigabit Network Connector                              |
| LAN Driver         | Intel® I210 Gigabit Network Connector ,Version:12.15.184.0                  |
| LAN Card           | Onsystem Intel® I210 Gigabit Network Connector #2                           |
| LAN Driver         | Intel® I210 Gigabit Network Connector #2 ,Version:12.15.184.0               |
| Audio Card         | Onsystem Realtek High Definition Audio                                      |
| Audio Driver       | Realtek High Definition Audio ,Version:6.0.1.7541                           |
| Chip Driver        | Intel® Chipset Device software ,Version:10.1.1                              |
| USB3.0 Driver      | Intel® USB3.0 eXtensible Host Controller – 1.0(Microsoft), Ver:10.0.10586.0 |
| EC Version         | 61107T01(11/07/2016)  |
| Power Supply       | FSP GROUP INC. FSP120-AHAN1   |

| Power consumption(24V) |               |                    |                    |
|------------------------|---------------|--------------------|--------------------|
| <b>ATX:</b>            |               |                    |                    |
| Item                   | Power ON      | Full Loading 10Min | Full Loading 30Min |
| CPU +24V               | 1.5 A         | 0.8 A              | 0.8 A              |
| Device+12V             | 1.5 A         | 0.1 A              | 0.1 A              |
| Device +5V             | 0.3 A         | 0.4 A              | 0.4 A              |
| CPU+ Device +24V+12V   | 3.1 A         | 1.0 A              | 1.0 A              |
| USB3.0 Loading Test    | 4.93V/ 990 mA |                    |                    |

## 2.4 Environmental Specifications

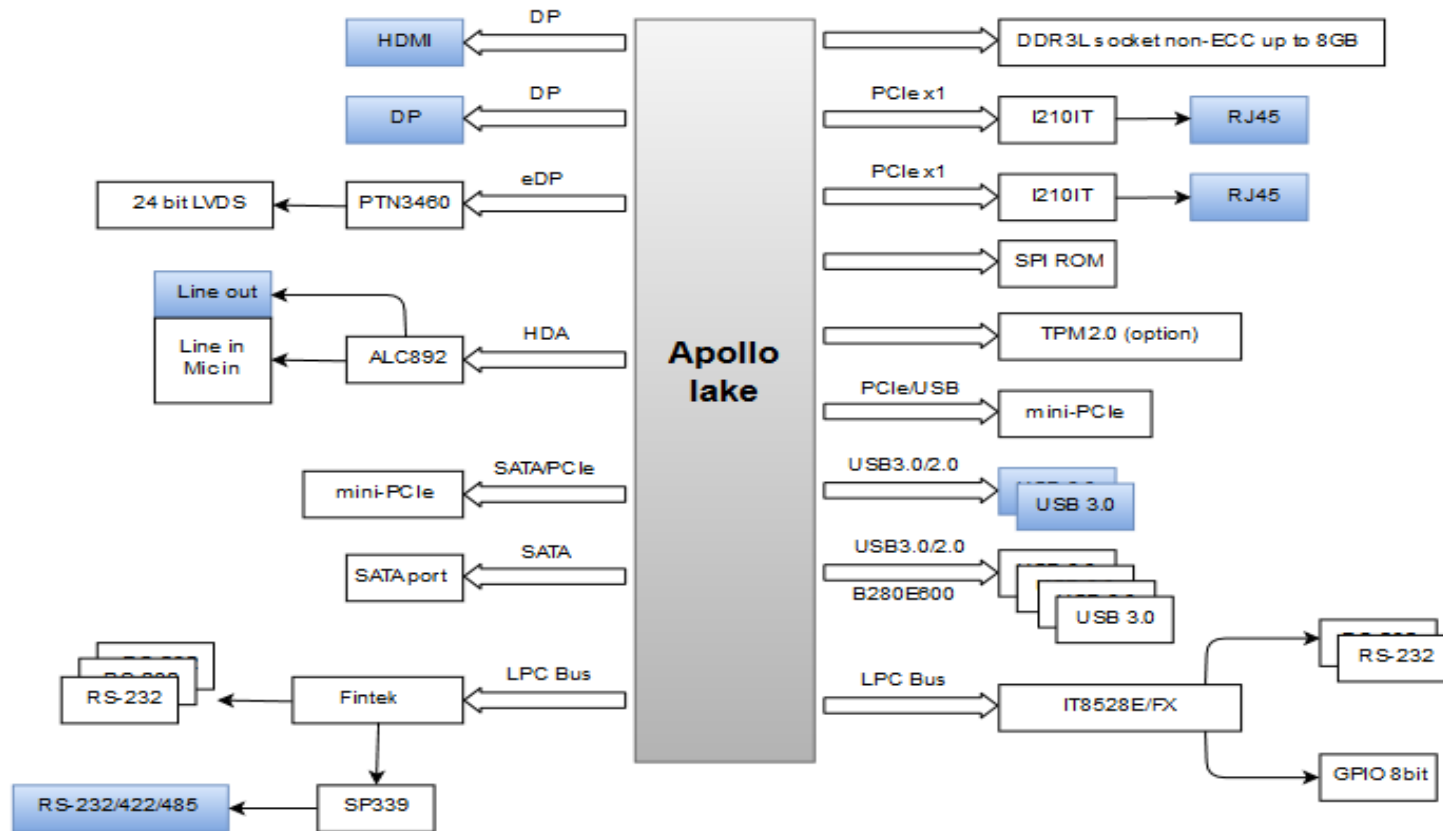
Storage Temperature : -40~85°C

Operation Temperature : -20~60°C

Storage Humidity : 5~90%

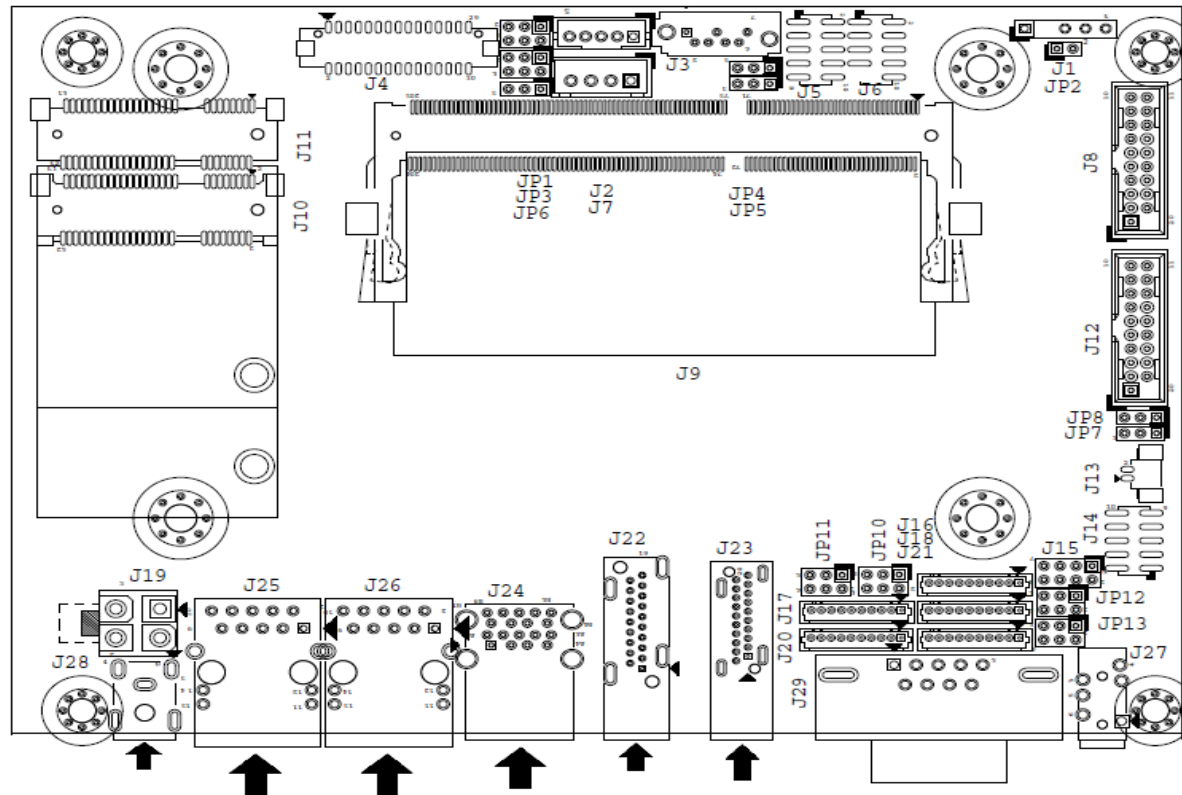
Operation Humidity: 10~90%

### 3 Block Diagram



## 4 Hardware Configuration

### 4.1 Jumpers and Connectors



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

## 4.2 Jumper Settings

For users to customize WEBS-13D1VGATM'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:

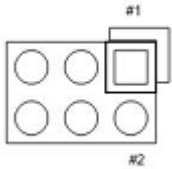
| Jumper | Function                | Remark         |
|--------|-------------------------|----------------|
| J1     | SMBus                   |                |
| J2     | Backlight Connector     |                |
| J3     | SATA GEN3 Connector     |                |
| J4     | LVDS Connector          |                |
| J5     | Front Panel Pin HDR     | 5x2 pin header |
| J6     | 80 Port Connector       | 10x2 connector |
| J7     | SATA Power Connector    |                |
| J8/J12 | External USB3 Connector |                |



|                  |   |                |
|------------------|---|----------------|
| J9               | DDR3L SO-DIMM Socket                              |                |
| J10              | miniPCIE/USB(half size)                           |                |
| J11              | mSATA/miniPCIE(full size)                         |                |
| J13              | Battery Socket                                    |                |
| J14              | GPIO Pin HDR                                      | 2x5 pin header |
| J15              | External Audio (Mic + Line_in + Line_out )Pin HDR | 4x2 pin header |
| J16/J17/18/20/21 | RS232 Pin HDR                                     |                |
| J19              | ATX 4 Pin Connector                               | +12V Input     |
| J22              | HDMI Connector                                    |                |
| J23              | DP Connector                                      |                |
| J24              | USB3.0 Connector                                  |                |
| J25/J26          | RJ45 Connector                                    |                |
| J27              | Audio Jack  |                |
| J28              | DC Jack   | +12~24V Input  |
| J29              | RS232/422/485 D-SUB Connector                     |                |

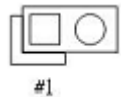
| Jumper | Function                                 | Remark         |
|--------|--|----------------|
| JP1    | BKLTCTRL Signal Level Selection          | 3x2 pin header |
| JP2    | mSATA/miniPCIE Selection                 | 1x2 pin header |
| JP3    | BACKLIGHT Enable Voltage Level Selection | 3x2 pin header |
| JP4    | BKLTCTRL Signal Source Selection         | 1x3 pin header |
| JP5    | BKLTCTRL Level Signal Selection          | 1x3 pin header |
| JP6    | Power On Mode Selection                  | 1x3 pin header |
| JP7    | GPIO Voltage Output Level Selection      | 1x3 pin header |
| JP8    | CMOS Clear                               | 1x3 pin header |
| JP10   | COM3 RI Voltage Output Level Selection   | 3x2 pin header |
| JP11   | COM4 RI Voltage Output Level Selection   | 3x2 pin header |
| JP12   | COM1 RI Voltage Output Level Selection   | 3x2 pin header |
| JP13   | COM2 RI Voltage Output Level Selection   | 3x2 pin header |

**JP1 : BKL PANEL Voltage Selection**



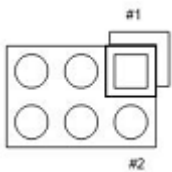
| PIN No.          | Signal Description |
|------------------|--------------------|
| <b>1-3 Short</b> | <b>VCC3 ★</b>      |
| 3-5 Short        | VCC5               |
| 3-4 Short        | +12V               |

**JP2 : mSATA/miniPCIE Selection**



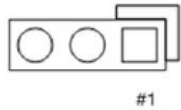
| PIN No.          | Signal Description |
|------------------|--------------------|
| vacancy          | mSATA              |
| <b>1-2 Short</b> | <b>miniPCIE ★</b>  |

**JP3 : BACKLIGHT Enable Voltage Level Selection**



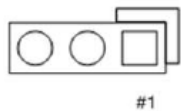
| PIN No.         | Signal Description       |
|-----------------|--------------------------|
| <b>1-3, 2-4</b> | <b>5V, Active High ★</b> |
| 1-3, 4-6        | 12V, Active High         |
| 3-5, 2-4        | 5V, Active Low           |
| 3-5, 4-6        | 12V, Active Low          |

**JP4 : BKLCTRL Signal Source Selection**



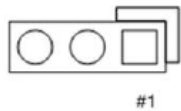
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | EC                 |
| <b>2-3 Short</b> | <b>SOC ★</b>       |

**JP5 : BKLCTRL Level Signal Selection**



| PIN No.          | Signal Description |
|------------------|--------------------|
| <b>1-2 Short</b> | <b>+3.3V ★</b>     |
| 2-3 Short        | +5V                |

**JP6: Power On Mode Selection**



| PIN No.          | Signal Description |
|------------------|--------------------|
| <b>1-2 Short</b> | <b>AT ★</b>        |
| 2-3 Short        | ATX                |

**JP7 : GPIO Voltage Output Level Selection**



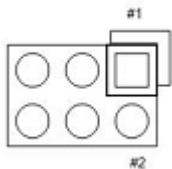
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | 5V                 |
| <b>2-3 Short</b> | <b>3.3V ★</b>      |

**JP8 : CMOS Clear**



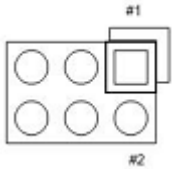
| PIN No.          | Signal Description        |
|------------------|---------------------------|
| <b>1-2 Short</b> | <b>Normal Operation ★</b> |
| 2-3 Short        | Clear CMOS Contents       |

**JP10 : COM3 RI Voltage Output Level Selection**



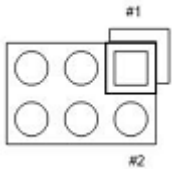
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | 5V                 |
| <b>3-4 Short</b> | <b>RI ★</b>        |
| 5-6 Short        | 12V                |

**JP11 : COM4 RI Voltage Output Level Selection**



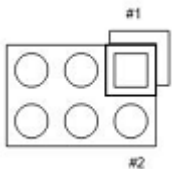
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | 5V                 |
| <b>3-4 Short</b> | <b>RI ★</b>        |
| 5-6 Short        | 12V                |

**JP12 : COM1 RI Voltage Output Level Selection**



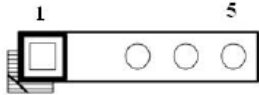
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | 5V                 |
| <b>3-4 Short</b> | <b>RI ★</b>        |
| 5-6 Short        | 12V                |

**JP13 : COM2 RI Voltage Output Level Selection**



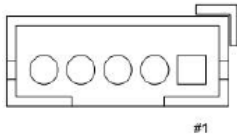
| PIN No.          | Signal Description |
|------------------|--------------------|
| 1-2 Short        | 5V                 |
| <b>3-4 Short</b> | <b>RI ★</b>        |
| 5-6 Short        | 12V                |

**J1 : SMBus**



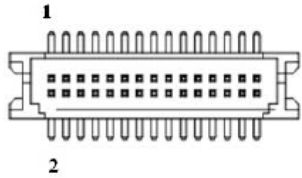
| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | SMBus Clock        | 2       | NA                 |
| 3       | Gnd                | 4       | SMBus Data         |
| 5       | +5V                |         |                    |

**J2 : Backlight Connector**



| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | +5V                | 2       | BL_CTRL            |
| 3       | +12V               | 4       | Ground             |
| 5       | BL_Enable          |         |                    |

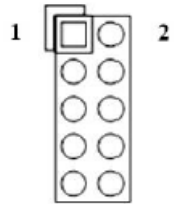
**J4 : LVDS Connector**



| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | VDD_LVDS           | 2       | VDD_LVDS           |
| 3       | LVDSA_DATA0        | 4       | LVDSA_DATA#0       |
| 5       | LVDSA_DATA1        | 6       | LVDSA_DATA#1       |
| 7       | LVDSA_DATA2        | 8       | LVDSA_DATA#2       |
| 9       | LVDSA_DATA3        | 10      | LVDSA_DATA#3       |
| 11      | LVDSA_CLKP         | 12      | LVDSA_CLKN         |
| 13      | DDC_SCL            | 14      | DDC_SDA            |
| 15      | Ground             | 16      | Ground             |
| 17      | LVDSB_DATA0        | 18      | LVDSB_DATA#0       |
| 19      | LVDSB_DATA1        | 20      | LVDSB_DATA#1       |
| 21      | LVDSB_DATA2        | 22      | LVDSB_DATA#2       |
| 23      | LVDSB_DATA3        | 24      | LVDSB_DATA#3       |
| 25      | LVDSB_CLKP         | 26      | LVDSB_CLKN         |
| 27      | N/C                | 28      | N/C                |
| 29      | Ground             | 30      | Ground             |



**J5 : Front Panel Pin HDR**

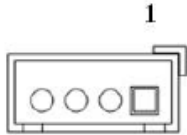


| PIN No. | Signal Description    | PIN No. | Signal Description    |
|---------|-----------------------|---------|-----------------------|
| 1       | Ground                | 2       | NC                    |
| 3       | External Power LED(+) | 4       | External Power LED(-) |
| 5       | HDD_LED(+)            | 6       | HDD_LED(-)            |
| 7       | Reset (+)             | 8       | Power On(-)           |
| 9       | Reset (-)             | 10      | Power On(+)           |

**J6 : 80 Port Pin HDR**

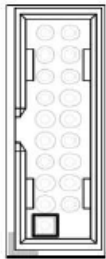
| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | LAD0               | 2       | 3.3V               |
| 3       | LAD1               | 4       | RESET              |
| 5       | LAD2               | 6       | LFRAME_N           |
| 7       | LAD3               | 8       | CLOCK              |
| 9       | KEY                | 10      | GND                |

**J7 : SATA Power Connector**



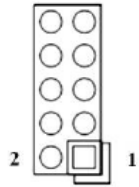
| PIN No. | Signal Description |
|---------|--------------------|
| 1       | +12V               |
| 2       | Ground             |
| 3       | Ground             |
| 4       | +5V                |

**J8/J12 : External USB3 Connector**



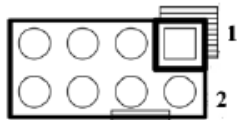
| PIN No. | Description | PIN No. | Description |
|---------|-------------|---------|-------------|
| 1       | 5V_Dual     |         |             |
| 2       | USB3.0_RX_N | 19      | 5V_Dual     |
| 3       | USB3.0_RX_P | 18      | USB3.0_RX_N |
| 4       | Ground      | 17      | USB3.0_RX_P |
|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

**J14 : GPIO Pin HDR**



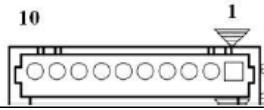
| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | GPI#0              | 2       | GPO#0              |
| 3       | GPI#1              | 4       | GPO#1              |
| 5       | GPI#2              | 6       | GPO#2              |
| 7       | GPI#3              | 8       | GPO#3              |
| 9       | GND                | 10      | 5V                 |

**J15 : External Audio (Mic + Line in + Line out )Pin HDR**



| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | MIC_L              | 2       | Line_in_L          |
| 3       | Ground             | 4       | Line_in_R          |
| 5       | Line_out_L         | 6       | Ground             |
| 7       | Line_out_R         | 8       | MIC_R              |

**J16/J17/J18/J20/J21 : COM2/4/5/3/6 RS232 Pin HDR**

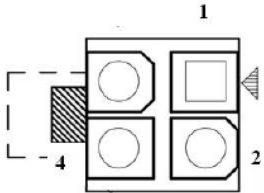


| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | DCD#               | 2       | DSR#               |
| 3       | RXD#               | 4       | RTS#               |
| 5       | TXD#               | 6       | CTS#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

**J16 : COM2 RS422/485 Pin HDR**

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | TX-/DATA-          | 2       | TX+/DATA+          |
| 3       | RX+/NC             | 4       | RX-/NC             |
| 5       | GND/GND            | 6       | NC/NC              |
| 7       | NC/NC              | 8       | NC/NC              |
| 9       | NC/NC              | 10      | NC/NC              |

**J19 : ATX 4 Pin Connector**



| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1       | GND                | 2       | GND                |
| 3       | +12V               | 4       | +12V               |

## 5 Signal Descriptions

### 5.1 Watch Dog Signal

```
#Define WDTCFG 0x06      // WDT Timer Control Register
#Define WDTMIN 0x07      // WDT Timer Counter Register (Minute)
#Define WDTSEC 0x08      // WDT Timer Counter Register (Second)
#Define EC_IOPort 0xE300  // Default, reference to BIOS configuration
```

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

```
    IoWrite8(EC_IOPort+Offset,Value);
}
```

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

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

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

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

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

## 5.2 Signal GPIO Signal

```
#Define GPCR 0x2B // GPIO Control Register, Bit7 = GPIO7, Bit6 = GPIO6, ...,
// 0: Output; 1: Input
```

```
#Define GPDR 0x2C // GPIO Status Register, Bit7 = GPIO7, Bit6 = GPIO6, ...,
// 0: Low; 1: High
```

```
#Define EC_IOPort 0xE300 // Default, reference to BIOS configuration
```

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

```
    loWrite8(EC_IOPort+Offset,Value);
}

Byte Read_EC_SRAM(UINT8 Offset){
    loRead8(EC_IOPort+offset,Value);
    return Value;
}

void GPIO()
{
    int Temp;
    // Set GPIO7 Input & get status
    Temp = Read_EC_SRAM(GPCR);
    Write_EC_SRAM(GPCR,Temp|0x80);    //Bit7: GPIO7 control, 0: Output 1: Input
    Temp = Read_EC_SRAM(GPDR);    //Bit7: GPIO7 status, 0: Output 1: Input

    // Set GPIO7 Output & High
    Temp = Read_EC_SRAM(GPCR);
    Write_EC_SRAM(GPCR,Temp&0x7F);    //Bit7: GPIO7 control, 0: Output 1: Input
    Temp = Read_EC_SRAM(GPDR);
    Write_EC_SRAM(GPDR,Temp|0x80);    //Bit7: GPIO7 status, 0: Low 1: High
}
```



## 6 System Resources

### 6.1 Intel® Apollo Lake SoC

Intel® Atom™ x7-E3950 Processor(4C, 2M Cache, up to 2.00 GHz)

Intel® Atom™ x5-E3940 Processor(4C, 2M Cache, up to 1.80 GHz)

Intel® Atom™ x5-E3930 Processor(2C, 2M Cache, up to 1.80 GHz)

Intel® Atom™ Pentium® Processor N4200 (4C, 2M Cache, up to 2.5 GHz)

Intel® Atom™ Celeron® Processor N3350 (2C, 2M Cache, up to 2.4 GHz)

### 6.2 Main Memory

WEBS-13D1 provides 1 x 204-pin SO-DIMM sockets which supports DDR3L non-ECC memory. The maximum memory can be up to 8GB. 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 System Computer

To install your WEBS-13D1 into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position

Step 2 : Install and configure memory module on right position

# WEBS-13D1

Step 3 : Place WEBS-13D1 into the dedicated position in the system

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

## **WARNING**

Please ensure that mothersystem 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**

The WEBS-13D1 build with Intel® Atom™ processor E3900 series(E3950 / E3940 / E3930 sku) ,Pentium N4200 and Celeron N3350 . 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 10, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WEBS-13D1 CD-title

### **6.3.2 Intel® HD Graphics 50X**

WEBS-13D1 has integrated Intel® HD Graphics 50X(E3950 / N4200\_ Intel® HD Graphics 505, E3940 / E3930 / N3350\_ Intel® HD Graphics 500)

Processor Graphics indicates graphics processing circuitry integrated into the processor, providing the graphics, compute, media, and display capabilities. Intel® HD Graphics, Iris™ Graphics, Iris Plus Graphics, and Iris Pro Graphics deliver enhanced media conversion, fast frame rates, and 4K Ultra HD (UHD) video. WEBS-13D1 supports LVDS, DP, HDMI display output. This combination makes WEBS-13D1VGATM an excellent performance hardware.

# WEBS-13D1

## **Drivers Support**

Please find the Graphic driver in the WEBS-13D1 CD-title. The driver supports Windows 10.

### **6.3.3 Intel LAN I210IT/I219LM Gigabit Ethernet Controller**

- Intel I210IT Gigabit Ethernet controller and 2x RJ45 connectors on rear I/O

## **Drivers Support**

Please find Intel I210IT LAN driver in Ethernet directory of WEBS-13D1 CD/DVD-title. The driver supports Windows 10.

## 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

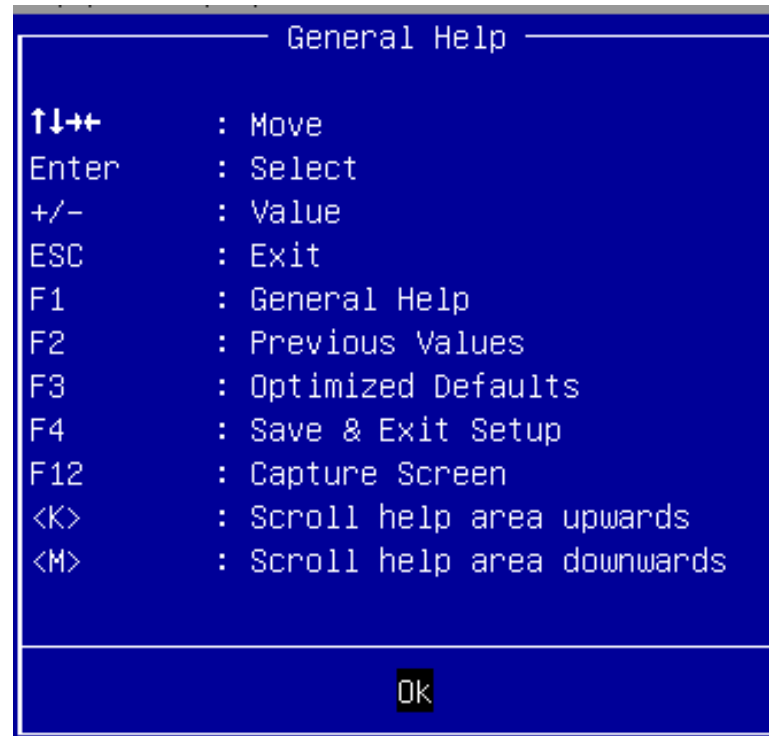
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

#### **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 key system 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.

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main Configuration Security Boot Save & Exit

Project Name                PEB-2773
BIOS Version & Build Date   70320T00 (04/24/2017 11:12:54)
EC Version & Build Date     70309T00 (03/09/2017)
Access Level                Administrator

Processor information
Brand String                Intel(R) Atom(TM) Processor E3950 @ 1.60GHz

Platform firmware Information
BXT SOC                    B1
TXE FW                     3.0.10.1129
GOP                         10.0.1030
CPU Flavor                  BXT Notebook/Desktop (1)

Memory Information
Total Memory                8192 MB
Memory Slot0                8192 MB (DDR3L)
Memory Speed                1600 MHz

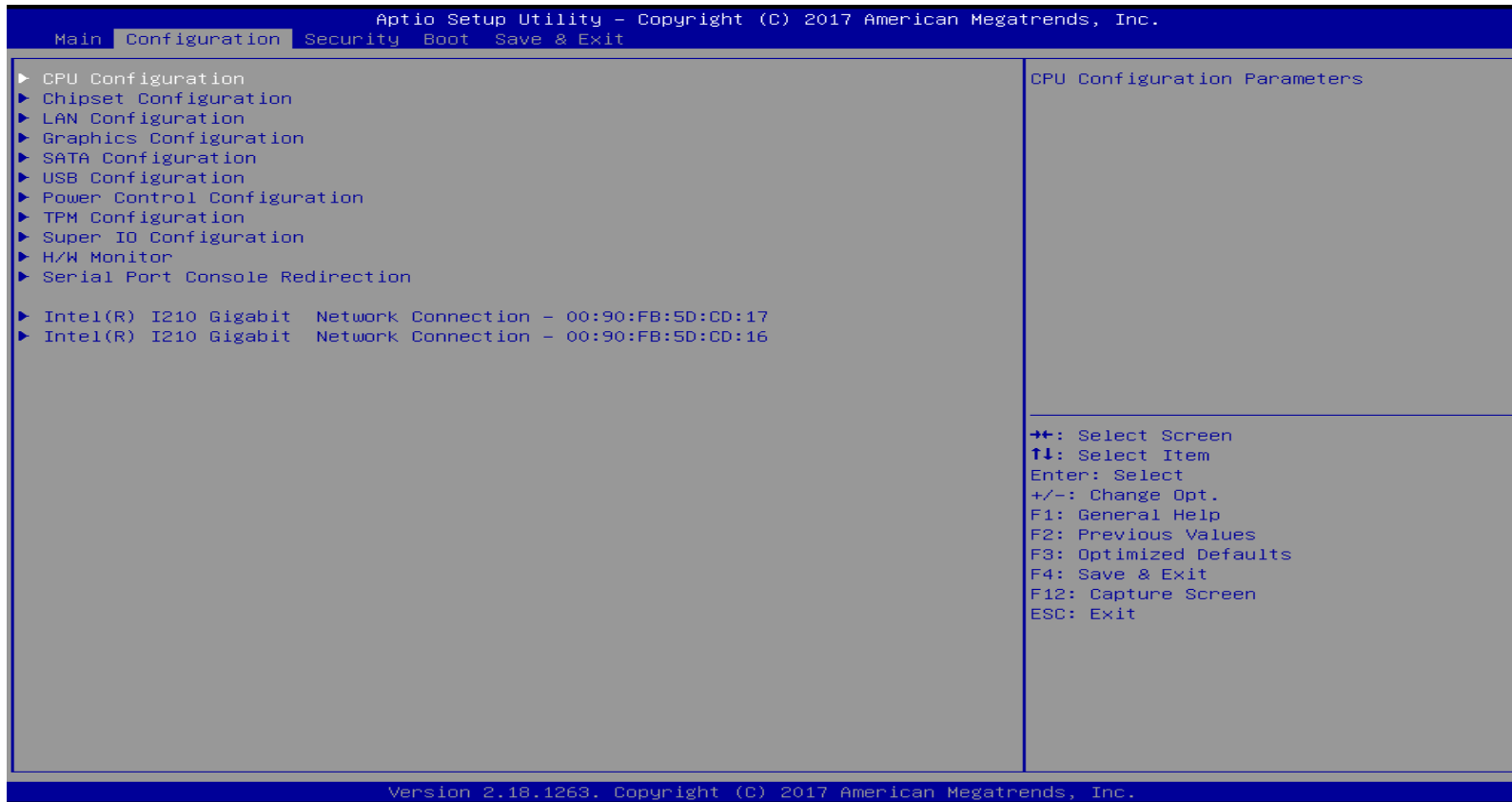
System Date                 [Tue 05/09/2017]
System Time                 [16:11:56]

Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

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

## 7.2.2 Configuration

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





## CPU Configuration

### CPU Configuration Parameters

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

Configuration

|                                    |               |  |
|------------------------------------|---------------|--|
| CPU Configuration                  |               | Number of cores to enable in each processor package. |
| CPU Signature                      | 506C9         |  |
| Microcode Patch                    | 20            |  |
| Max CPU Speed                      | 1600 MHz      |  |
| Min CPU Speed                      | 800 MHz       |  |
| Processor Cores                    | 4             |  |
| Intel HT Technology                | Not Supported |  |
| Intel VT-x Technology              | Supported     |  |
| 64-bit                             | Supported     |  |
| L1 Data Cache                      | 24 kB x 4     |  |
| L1 Code Cache                      | 32 kB x 4     |  |
| L2 Cache                           | 1024 kB x 2   |  |
| L3 Cache                           | Not Present   |  |
| Active Processor Cores             | [Disabled]    |  |
| Intel Virtualization Technology    | [Enabled]     |  |
| VT-d                               | [Enabled]     |  |
| CPU Power Management Configuration |               |  |
| EIST                               | [Enabled]     |  |
| Turbo Mode                         | [Enabled]     |  |
| C-States                           | [Disabled]    |  |

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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| Feature                                 | Description   | Options            |
|---|---|--------------------|
| <b>Active Processor Cores</b>           | Number of cores to enable in each processor package.  | ★Disabled, Enabled |
| <b>Active Processor Cores [Enabled]</b> |   |                    |
| <b>Core 0</b>                           |   | ★Enabled           |
| <b>Core 1</b>                           |   | ★Enabled, Disabled |
| <b>Core 2</b>                           |   | ★Enabled, Disabled |
| <b>Core 3</b>                           |   | ★Enabled, Disabled |
| <b>Intel Virtualization Technology</b>  | When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. | ★Enabled, Disabled |
| <b>VT-d</b>                             | Enable/Disable CPU VT-d.  | ★Enabled, Disabled |
| <b>EIST</b>                             | Enable/Disable Intel SpeedStep.   | ★Enabled, Disabled |
| <b>EIST [Enabled]</b>                   |   |                    |
| <b>Turbo Mode</b>                       | Turbo Mode.   | ★Enabled, Disabled |
| <b>CPU C states</b>                     | Enable or disable CPU C states  | ★Disabled, Enabled |
| <b>CPU C states [Enabled]</b>           |   |                    |
| <b>Enhanced C-states</b>                | Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.        | ★Enabled, Disabled |

**Chipset Configuration**

Configuration Chipset feature



| Feature                 | Description                                       | Options            |
|-------------------------|---|--------------------|
| <b>High Precision</b>   | Enable or Disable the High Precision Event Timer. | ★Enabled, Disabled |
| <b>HD-Audio Support</b> | Enable or Disable HD-Audio Support.               | ★Enabled, Disabled |

## LAN Configuration

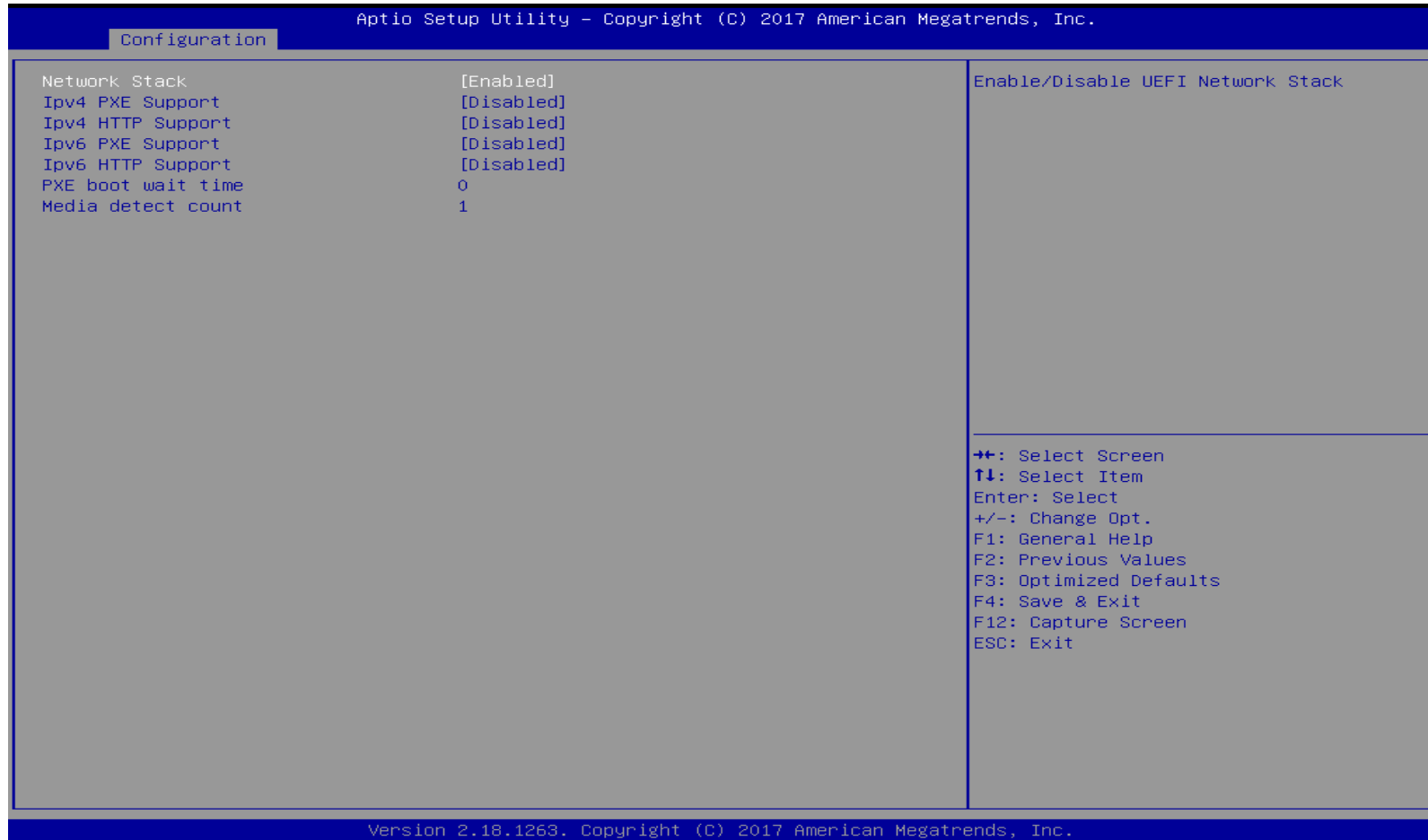
Configuration on System LAN device.

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Configuration
LAN Configuration
Intel Ethernet Controller WGI210AT
LAN1 Control [Enabled]
LAN MAC Address 00-90-FB-5D-CD-17
Intel Ethernet Controller WGI210AT
LAN2 Control [Enabled]
LAN MAC Address 00-90-FB-5D-CD-16
Wake On Lan [Disable]
▶ Network Stack Configuration
Set LAN1 Enable/Disabled
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F12: Capture Screen
ESC: Exit
Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

| Feature                | Description                        | Options            |
|------------------------|------------------------------------|--------------------|
| <b>LAN1 Controller</b> | Set LAN1 Enable/disable.           | ★Enabled, Disabled |
| <b>LAN2 Controller</b> | Set LAN2 Enable/disable.           | ★Enabled, Disabled |
| <b>Wake on LAN</b>     | Enable or disable the Wake on LAN. | ★Disabled, Enable, |

## Network Stack Configuration

Network Stack Settings.



| Feature                       | Description   | Options             |
|-------------------------------|---|---------------------|
| <b>Network Stack</b>          | Enable/disable UEFI Network Stack   | ★ Disabled, Enable  |
| <b>Network Stack [Enable]</b> |   |                     |
| <b>Ipv4 PXE Support</b>       | Enable Ipv4 PXE Boot Support. If disabled Ipv4 PXE Boot Option will not be created.   | ★ Disabled, Enabled |
| <b>Ipv4 HTTP Support</b>      | Enable Ipv4 HTTP Boot Support. If disabled Ipv4 HTTP Boot Option will not be created. | ★ Disabled, Enabled |
| <b>Ipv6 PXE Support</b>       | Enable Ipv6 PXE Boot Support. If disabled Ipv6 PXE Boot Option will not be created.   | ★ Disabled, Enabled |
| <b>Ipv6 HTTP Support</b>      | Enable Ipv6 HTTP Boot Support. If disabled Ipv6 HTTP Boot Option will not be created. | ★ Disabled, Enabled |
| <b>PXE boot wait time</b>     | Wait time to press ESC key to abort the PXE boot                                      | ★ 0, 1, 2, 3, 4, 5  |
| <b>Media detect count</b>     | Number of times presence of media will be checked.                                    | ★ 1, Max 50         |



**Graphics Configuration**

Configuration Graphics Settings

The screenshot shows the Aptio Setup Utility interface with the following content:

- Header: Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
- Tab: Configuration
- Left Panel (Graphics Configuration):
  - DVMT Pre-Allocated [64M]
  - IGD Output Display control - GOP GOP Driver [Enable]
  - IGD Output Display control - CSM Primary IGFX Boot Display [Auto]
  - ▶ eDP-to-LVDS configuration
- Right Panel (Description):

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device
- Bottom Panel (Legend):
  - +: Select Screen
  - ↑↓: Select Item
  - Enter: Select
  - +/-: Change Opt.
  - F1: General Help
  - F2: Previous Values
  - F3: Optimized Defaults
  - F4: Save & Exit
  - F12: Capture Screen
  - ESC: Exit
- Footer: Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.

| Feature  | Description   | Options   |
|--|---|---|
| <b>DVMT Pre-Allocated</b>  | Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.  | ★64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M |
| <b>IGD Output Display control – GOP (Boot item CSM Support [Disabled])</b> |   |   |
| <b>GOP Driver</b>  | Enable GOP Driver will unload VBIOS; Disable it will load VBIOS.  | ★Enabled, Disabled  |
| <b>IGD Output Display control – CSM (Boot item CSM Support [Enabled])</b>  |   |   |
| <b>Primary IGFX Boot Display</b>   | Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA mode will be supported only on primary display. | ★Auto, HDMI, LVDS, DP   |

## eDP-to-LVDS Configuration

eDP-to-LVDS (PTN3460)

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main
eDP-to-LVDS configuration
Panel Profile                [1280x1024]
Color depth and data format  [VESA 24 bpp]
Channel Mode                 [Dual Channel]
Clock Mode                   [Both Buses]
▶ OEM Profile

Select Panel Profile for current use

+/: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F12: Capture Screen
ESC: Exit

Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

| Feature                            | Description                         | Options   |
|------------------------------------|-------------------------------------|---|
| <b>Panel Profile</b>               | Select Panel Profile for current.   | ★1280x1024,640x480,<br>800x480,800x600,<br>1024x768, 1280x800,<br>1366x768, 1440x900,<br>1920x1080, OEM Profile |
| <b>Color depth and data format</b> | Select Color depth and data format. | ★VESA 24 bpp<br>JEIDA 24 bpp<br>VESA and JEIDA 18 bpp   |
| <b>Channel Mode</b>                | Select LVDS Channel Mode.           | ★Dual channel<br>Single channel   |
| <b>Clock Mode</b>                  | Select Clock output for LVDS.       | ★Both Bus<br>Even Bus<br>Odd Bus  |

## OEM Profile

### PANEL 1 Help

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

Main

PANEL 1 Configuration

|                             |                         |      |
|-----------------------------|-------------------------|------|
| Profile Name :              | empty                   |      |
| Rename Profile              |                         |      |
| Color depth and data format | [VESA and JEIDA 18 bpp] |      |
| Channel Mode                | [Single Channel]        |      |
| Clock Mode                  | [Even Bus]              |      |
| Pixel Clock                 | 25.000 Mhz              | 2500 |
| H Active Pixels             | 640                     | 640  |
| H Blank Pixels              | 160                     | 160  |
| H Offset Pixels             | 16                      | 16   |
| H Width Pixels              | 96                      | 96   |
| V Active Lines              | 480                     | 480  |
| V Blank Lines               | 45                      | 45   |
| V Offset Lines              | 10                      | 10   |
| V Width Lines               | 2                       | 2    |
| H & V sync Signal Polarity  | [Postive]               |      |

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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| Feature                               | Description  | Options  |
|---------------------------------------|--|--|
| <b>Rename Profile</b>                 | Rename Profile name  |  |
| <b>Color depth and data format</b>    | Select Color depth and data format.  | ★ VESA 24 bpp<br>JEIDA 24 bpp<br>VESA and JEIDA 18 bpp |
| <b>Channel Mode</b>                   | Select LVDS Channel Mode.  | ★ Dual channel<br>Single channel                       |
| <b>Clock Mode</b>                     | Select Clock output for LVDS.  | ★ Both Bus, Even Bus<br>Odd Bus                        |
| <b>Pixel Clock</b>                    | Pixel Clock (10Khz)  | ★ 2500   |
| <b>H Active Pixels</b>                | H Active Pixels (Pixel)  | ★ 640  |
| <b>H Blank Pixels</b>                 | H Blank Pixels (Pixel)   | ★ 160  |
| <b>H Offset Pixels</b>                | H Offset Pixels (Pixel)  | ★ 16   |
| <b>H Width Pixels</b>                 | H Width Pixels (Pixel)   | ★ 96   |
| <b>V Active Lines</b>                 | V Active Lines (Line)  | ★ 480  |
| <b>V Blank Lines</b>                  | V Blank Lines (Line)   | ★ 45   |
| <b>V Offset Lines</b>                 | V Offset Lines (Line)  | ★ 10   |
| <b>V Width Lines</b>                  | V Width Lines (Line)   | ★ 2  |
| <b>H &amp; V sync Signal Polarity</b> | Flag: 0x1E Signal Polarity is Postive; 0x18 Signal Polarity is Non-Postive | ★ Postive, Non-Postive                                 |

## SATA Configuration

### SATA Device Options Settings

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

Configuration

|                                 |                         |   |
|---------------------------------|-------------------------|---|
| SATA Configuration              |                         | Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port). |
| SATA Controller                 | [Enable]                |   |
| SATA Speed Selection            | [Auto]                  |   |
| SATA Port 0                     |                         |   |
| Port 0                          | Hitachi HDS721 (82.3GB) |   |
| SATA Port 0 Hot Plug Capability | [Enabled]               |   |
| SATA Device Type                | [Disabled]              |   |
| SATA Port 1                     |                         |   |
| Port 1                          | [Not Installed]         |   |
| mSATA                           | [Enabled]               |   |
| Mini-PCIe & mSATA Switch        | [mSATA]                 |   |
| mSATA Hot Plug Capability       | [Disabled]              |   |
| SATA Device Type                | [Hard Disk Drive]       |   |

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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| Feature                                | Description  | Options                             |
|--|--|-------------------------------------|
| <b>SATA Controller</b>                 | Enable or disable the chipset SATA Controller. The Chipset controller supports the 2 back internal SATA ports (up to 3Gb/s supported per port) | ★Enabled, Disabled                  |
| <b>SATA Speed Selection</b>            | Select SATA interface speed.   | ★Auto, Gen1, Gen2, Gen3             |
| <b>SATA Port 0</b>                     |  |                                     |
| <b>Port 0</b>                          | Enable or Disable SATA Port.   | ★Enabled, Disabled                  |
| <b>SATA Port 0 Hot Plug Capability</b> | If enable, SATA port will be reported as hot Plug capable.   | ★Disabled, Enabled                  |
| <b>SATA Device Type</b>                | Identify the SATA port is connected to Solid State Drive   | ★Hard Disk Drive, Solid State Drive |
| <b>SATA Port 1</b>                     |  |                                     |
| <b>mSATA</b>                           | Enable or Disable mSATA Port.  | ★Enabled, Disabled                  |
| <b>Mini-PCIe &amp; mSATA Switch</b>    | Select Mini-PCIe or mSATA device.  | Mini-PCIe, ★mSATA                   |
| <b>mSATA Hot Plug Capability</b>       | If enable, SATA port will be reported as hot Plug capable.   | ★Disabled, Enabled                  |
| <b>SATA Device Type</b>                | Identify the SATA port is connected to Solid State Drive   | ★Hard Disk Drive, Solid State Drive |



## USB Configuration

USB Configuration Parameters.

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

Configuration

USB Configuration

USB Controllers:  
1 XHCI

USB Devices:  
1 Drive, 1 Keyboard, 4 Hubs

SoC USB Configuration  
USB Port Disable Override [Disable]

Common USB Configuration  
Legacy USB Support [Enabled]  
USB Mass Storage Driver Support [Enabled]

USB hardware delays and time-outs:  
USB transfer time-out [20 sec]  
Device reset time-out [20 sec]  
Device power-up delay [Auto]

Mass Storage Devices:  
UFD 3.0 Silicon-Power16G1.00 [Auto]

Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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| Feature                                    | Description  | Options             |
|--|--|---------------------|
| <b>SoC USB Configuration</b>               |  |                     |
| <b>USB Port Disable Override</b>           | Selectively Enables/Disable. The corresponding USB port from reporting a Device Connection to the controller.  | ★ Disabled, Enabled |
| <b>USB Port Disable Override [Enabled]</b> |  |                     |
| <b>USB Port #0</b>                         | Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.  | ★ Enable, Disabled  |
| <b>USB Port #1</b>                         | Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.  | ★ Enable, Disabled  |
| <b>USB HUB Port</b>                        | Enable/Disable USB HUB (#2) for on System Head USB port (J8x2/J12x2). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.   | ★ Enable, Disabled  |
| <b>USB 3 Port #0</b>                       | Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.  | ★ Enable, Disabled  |
| <b>USB 3 Port #1</b>                       | Enable/Disable USB port. Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.  | ★ Enable, Disabled  |
| <b>USB 3 HUB Port</b>                      | Enable/Disable USB 3 HUB (#2) for on System Head USB port (J8x2/J12x2). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS. | ★ Enable, Disabled  |

| <b>Common USB Configuration</b>           |   |                                |
|---|---|--------------------------------|
| <b>Legacy USB Support</b>                 | Enables Legacy USB Support. Auto option disable legacy Support if no USB devices are connected. Disable option will keep USB device available only for EFI applications.                                    | ★Enabled, Disabled, Auto       |
| <b>USB Mass Storage Driver Support</b>    | Enable/Disable USB Mass Storage Driver Support.   | ★Enable, Disabled              |
| <b>USB Hardware delays and time-outs:</b> |   |                                |
| <b>USB transfer time-out</b>              | The time-out value for Control, Bulk, and Interrupt transfers.  | ★20 sec, 1 sec, 5 sec, 10 sec, |
| <b>Device reset time-out</b>              | USB mass storage device Start Unit command time-out.  | ★20 sec, 10 sec, 30sec, 40 sec |
| <b>Device Power-up delay</b>              | Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor. | ★Auto, Manual                  |

**Power Control Configuration**

System Power Control Configuration Parameters

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

Configuration

|                             |                       |   |
|-----------------------------|-----------------------|---|
| Power Control Configuration |                       | Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.   |
| Enable Hibernation          | [Enabled]             |   |
| ACPI Sleep State            | [S3 (Suspend to RAM)] |   |
| Restore AC Power Loss       | [Power Off]           |   |
| RTC Wakeup                  |                       | +↔: Select Screen<br>↑↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>F12: Capture Screen<br>ESC: Exit |
| System Time                 | [13:45:04]            |   |
| Wake up day                 | 0                     |   |
| Wake up Time(HH:mm:ss)      | [00:00:00]            |   |

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| Feature                         | Description  | Options                                |
|---------------------------------|--|--|
| <b>Enable Hibernation</b>       | Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.  | ★Enabled, Disabled                     |
| <b>ACPI Sleep State</b>         | Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.  | ★Suspend Disabled, S3 (Suspend to RAM) |
| <b>Restore AC Power Loss</b>    | Specify what state to go to when power is re-applied after a power failure (G3 state). Power On: System will boot directly as soon as power applied. Power Off: state until power button is pressed. | ★Power Off, Power On, Last State       |
| <b>RTC Wake up</b>              | Enable or disable System wake on alarm event.<br>[Enabled], system will wake up the Hour: Min: Sec specified.<br>[Disabled] Turn off RTC Wakeup.   | ★Disabled, Enabled                     |
| <b>RTC Wake up [Enabled]</b>    |  |  |
| <b>Wake up day</b>              | Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up  | ★0, 0-31                               |
| <b>Wake up Time(HH: mm: ss)</b> | Use [Enter], [TAB] to select field, HH: 0-23, mm: 0-59, ss: 0-59   | HH: 0-23, mm: 0-59, ss: 0-59           |

## TPM Configuration

### Trusted Computing settings

The screenshot shows the Aptio Setup Utility interface for TPM Configuration. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and the current screen is labeled "Configuration". The main content area is split into two columns. The left column displays the configuration for "Security Device Support", which is currently set to "[Disable]". Below this, it states "NO Security Device Found". The right column contains a detailed description: "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." At the bottom of the right column, a list of navigation keys is provided: "→+: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimized Defaults", "F4: Save & Exit", "F12: Capture Screen", and "ESC: Exit". The footer of the utility reads "Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc."

| Configuration   | Description   |
|---|---|
| Security Device Support [Disable]<br>NO Security Device Found | 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 Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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| Feature                                  | Description   | Options            |
|--|---|--------------------|
| <b>Security Device Support</b>           | Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A Interface will not be available. | ★Disabled, Enabled |
| <b>Security Device Support [Enabled]</b> |   |                    |
| <b>Device Select</b>                     | Option support integrated TPM 2.0 function (BIOS needs porting)<br>SPI interface SLB9670  |                    |

## Super IO Configuration

System Super IO Chip Parameters.





| Feature                          | Description                         | Options                              |
|----------------------------------|-------------------------------------|--------------------------------------|
| <b>Watch Dog Timer</b>           | Enable/Disable Watch Dog Timer      | ★Disabled, Enabled                   |
| <b>Watch Dog Timer [Enabled]</b> |                                     |                                      |
| <b>Timer Unit</b>                | Select Timer count unit of WDT      | ★Second, Minute                      |
| <b>Timer value</b>               | Set WDT Timer value seconds/minutes | ★20, 1-255 (Minute), 10-255 (Second) |

## Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA)

The screenshot shows the Aptio Setup Utility interface for Serial Port 1 Configuration. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and the menu bar shows "Configuration". The main area is split into two columns. The left column displays the configuration for Serial Port 1, which is currently [Enabled]. The right column shows the current UART mode settings: RS232, RS485, and RS485/RS422. A legend at the bottom right lists navigation keys: ++ for Select Screen, ↑↓ for Select Item, Enter for Select, +/- for Change Opt., F1 for General Help, F2 for Previous Values, F3 for Optimized Defaults, F4 for Save & Exit, F12 for Capture Screen, and ESC for Exit. The footer indicates "Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc."

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Configuration
Serial Port 1 Configuration
Serial Port      [Enabled]
Device Settings ID=3F8h; IRQ=3;
UART Mode       [RS232]
Set Current UART Mode: RS232, RS485,
RS485/RS422
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
F12: Capture Screen
ESC: Exit
Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

| Feature            | Description                                    | Options  |
|--------------------|--|--|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM)            | ★ Enabled, Disabled                                    |
| <b>UART Mode</b>   | Set Current UART Mode: RS232, RS485, RS485/422 | ★ RS-232, RS-485 HALF DUFLEX<br>RS-485/422 FULL DUFLEX |

## Serial Port 2 Configuration

Set Parameters of Serial Port 2 (COMB)

The screenshot shows the 'Serial Port 2 Configuration' screen in the Aptio Setup Utility. The title bar reads 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.' and the menu bar shows 'Configuration'. The main area is divided into two columns. The left column is titled 'Serial Port 2 Configuration' and contains the following text: 'Serial Port [Enabled]', 'Device Settings ID=3E8h; IRQ=5;'. The right column is titled 'Enable or Disable Serial Port (COM)' and is currently empty. At the bottom right of the screen, a list of navigation keys is provided: '+/: Select Screen', '↑↓: Select Item', 'Enter: Select', '+/-: Change Opt.', 'F1: General Help', 'F2: Previous Values', 'F3: Optimized Defaults', 'F4: Save & Exit', 'F12: Capture Screen', and 'ESC: Exit'. The footer of the screen reads 'Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.'

| Feature            | Description                         | Options            |
|--------------------|-------------------------------------|--------------------|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM) | ★Enabled, Disabled |

**Serial Port 3 Configuration**

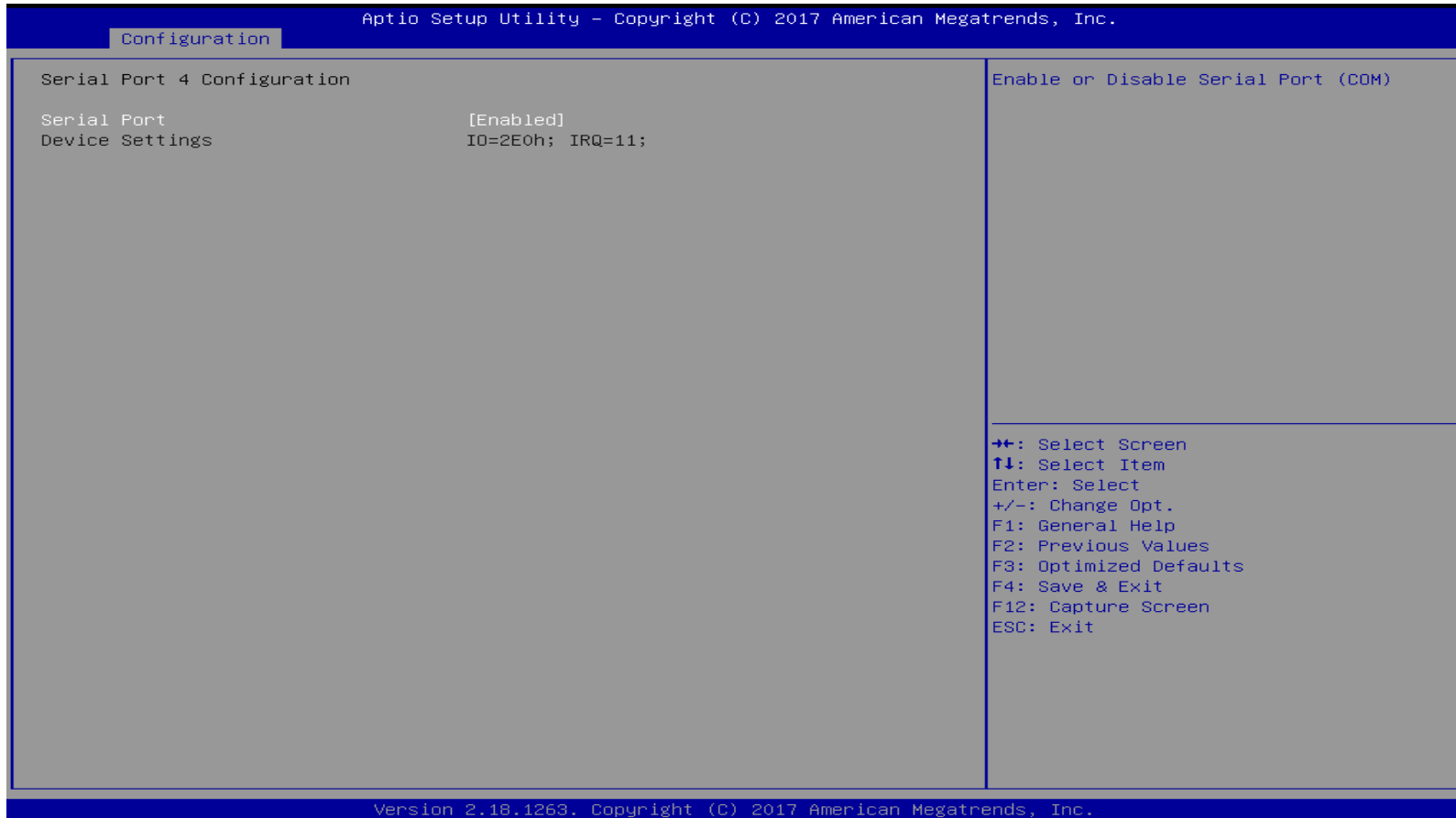
Set Parameters of Serial Port 3 (COMC)



| Feature            | Description                         | Options            |
|--------------------|-------------------------------------|--------------------|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM) | ★Enabled, Disabled |

## Serial Port 4 Configuration

Set Parameters of Serial Port 4 (COMD)

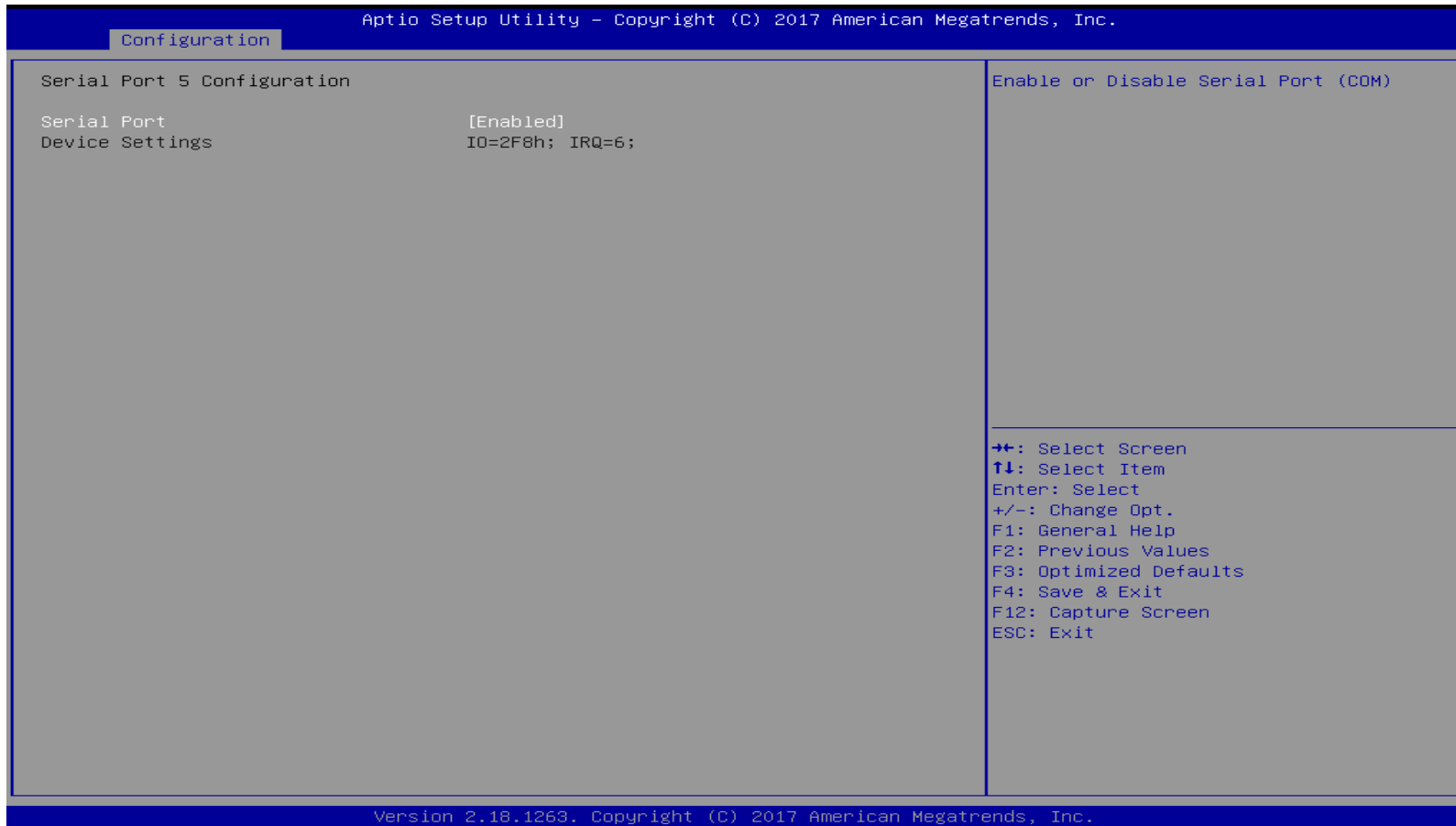




| Feature            | Description                         | Options            |
|--------------------|-------------------------------------|--------------------|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM) | ★Enabled, Disabled |

**Serial Port 5 Configuration**

Set Parameters of Serial Port 5 (EC\_COMA)



| Feature            | Description                         | Options            |
|--------------------|-------------------------------------|--------------------|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM) | ★Enabled, Disabled |

## Serial Port 6 Configuration

Set Parameters of Serial Port 6 (EC\_COMB)



| Feature            | Description                         | Options            |
|--------------------|-------------------------------------|--------------------|
| <b>Serial Port</b> | Enable or Disable Serial Port (COM) | ★Enabled, Disabled |

## H/W Monitor Configuration

Monitor hardware status

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

Configuration

Pc Health Status

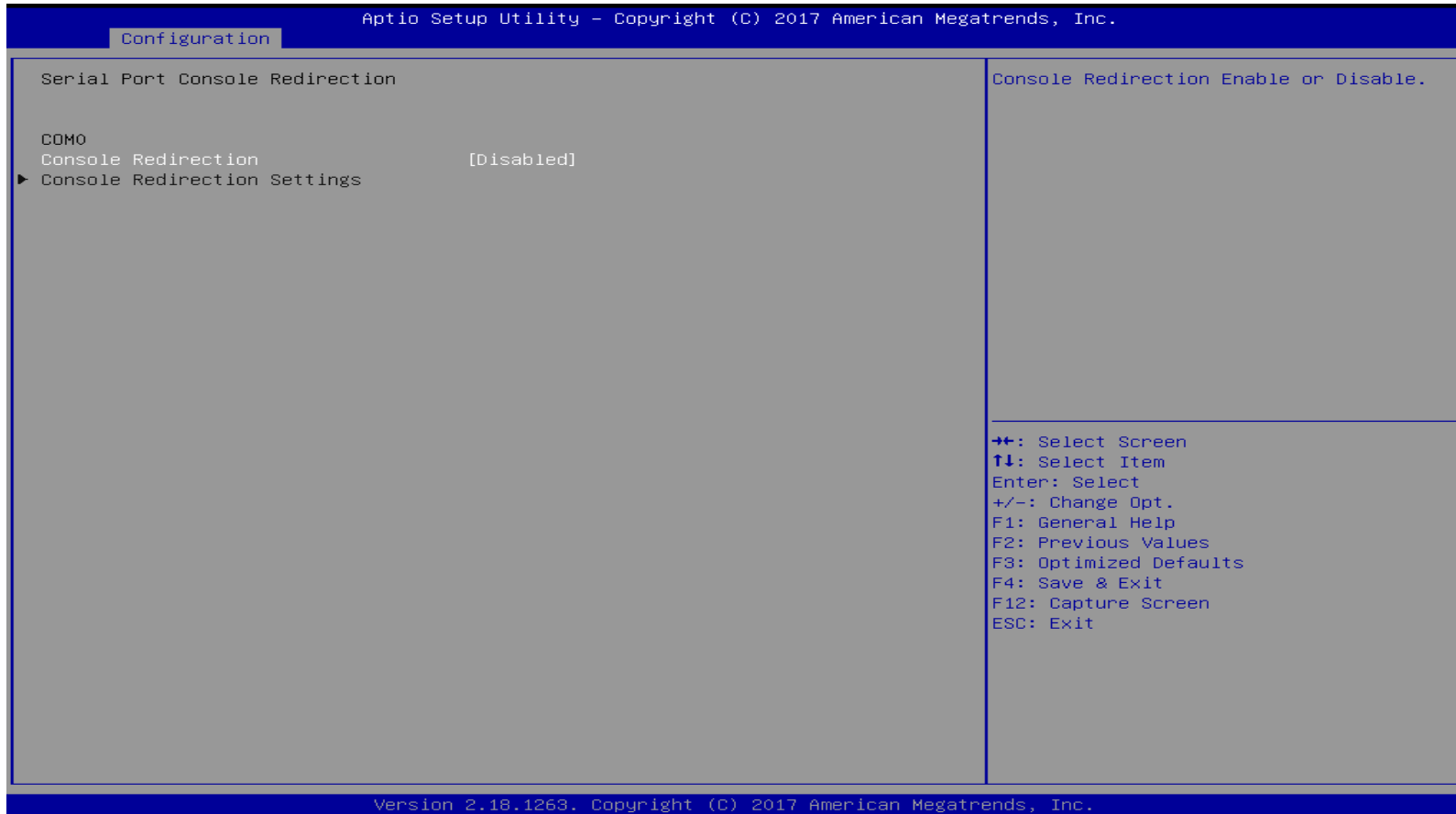
|                    |             |
|--------------------|-------------|
| CPU temperature    | : +48 %     |
| System temperature | : +44 %     |
| Vcore              | : +0.921 V  |
| +3.3V              | : +3.366 V  |
| +5V                | : +5.174 V  |
| +12V               | : +12.553 V |
| VDIMM              | : +1.383 V  |

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
F12: Capture Screen  
ESC: Exit

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**Serial Port Console Redirection**

Serial Port Console Redirection



| Feature                                 | Description                            | Options            |
|---|--|--------------------|
| <b>Console Redirection</b><br>(Enabled) | Console Redirection Enable or Disable. | ★Disabled, Enabled |



**COM 0 Serial Port Console Redirection Settings**

COM0 Serial Port console Redirection settings

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

Configuration

|                                      |                 |   |
|--------------------------------------|-----------------|---|
| COM0<br>Console Redirection Settings |                 | Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.   |
| Terminal Type                        | [ANSI]          |   |
| Bits per second                      | [115200]        | ++: Select Screen<br>↑↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>F12: Capture Screen<br>ESC: Exit |
| Data Bits                            | [8]             |   |
| Parity                               | [None]          |   |
| Stop Bits                            | [1]             |   |
| Flow Control                         | [None]          |   |
| VT-UTF8 Combo Key Support            | [Enabled]       |   |
| Recorder Mode                        | [Disabled]      |   |
| Resolution 100x31                    | [Disabled]      |   |
| Legacy OS Redirection Resolution     | [80x24]         |   |
| Putty KeyPad                         | [VT100]         |   |
| Redirection After BIOS POST          | [Always Enable] |   |

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| Feature                | Description   | Options                            |
|------------------------|---|------------------------------------|
| <b>Terminal Type</b>   | Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.   | ★ANSI, VT100, VT100+, VT-UTF8      |
| <b>Bits per second</b> | Select Serial port transmission speed. The speed must be matched on other side. Long or noisy lines may require lower speeds.   | ★115200, 9600, 19200, 38400, 57600 |
| <b>Data bits</b>       | Data bits   | ★8, 7                              |
| <b>Parity</b>          | A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit. | ★None, Even, Odd, Mark, Space      |
| <b>Stop Bits</b>       | Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.  | ★1,2                               |
| <b>Flow Control</b>    | Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signal.  | ★None, Hardware RTS/CTS            |

|   |  |                                       |
|---|--|---------------------------------------|
| <b>VT-UTFB Combo Key Support</b>        | Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals  | ★Enabled, Disabled                    |
| <b>Recorder Mode</b>                    | With this mode enabled only text will be sent. This is to capture Terminal data.   | ★Disabled, Enabled                    |
| <b>Resolution 100x31</b>                | Enables or disables extended terminal resolution   | ★Disabled, Enabled                    |
| <b>Legacy OS Redirection Resolution</b> | On Legacy OS, the Number of Rows and Columns supports redirection  | ★80x24, 80x25                         |
| <b>Putty KeyPad</b>                     | Select FunctionKey and KeyPad on Putty   | ★VT100, LINUX,XTERMR6, SCO,ESCN,VT400 |
| <b>Redirection After BIOS POST</b>      | The settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to legacy OS. Default value is Always Enable with means Legacy console Redirection is enabled for Legacy OS. | ★Always Enable, BootLoader            |

## Intel(R) I210 Gigabit Network Connection

Configure Gigabit Ethernet device parameters.

The screenshot shows the Aptio Setup Utility interface for configuring the Intel(R) I210 Gigabit Network Connection. The title bar reads "Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc." and the current screen is labeled "Configuration".

The main configuration area is titled "NIC Configuration" and contains the following settings:

|                     |  |
|---------------------|--|
| Blink LEDs          | 0  |
| UEFI Driver         | Intel(R) PRO/1000 6.3.27 PCI-E           |
| Adapter PBA         | 000300-000                               |
| Device Name         | Intel(R) I210 Gigabit Network Connection |
| Chip Type           | Intel i210                               |
| PCI Device ID       | 1533                                     |
| PCI Address         | 01:00:00                                 |
| Link Status         | [Disconnected]                           |
| MAC Address         | 00:90:FB:5D:CD:17                        |
| Virtual MAC Address | 00:90:FB:5D:CD:17                        |

To the right of the configuration table, there is a text box that says "Click to configure the network device port." Below this, a legend lists the navigation keys: ++ for Select Screen, ↑↓ for Select Item, Enter for Select, +/- for Change Opt., F1 for General Help, F2 for Previous Values, F3 for Optimized Defaults, F4 for Save & Exit, F12 for Capture Screen, and ESC for Exit.

At the bottom of the utility window, the version information is displayed: "Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc."

| Feature                  | Description  | Options |
|--------------------------|--|---------|
| <b>NIC Configuration</b> | Click to configure the network deice port.                         |         |
| <b>Blink LEDs</b>        | Identify the physical network port by blinking the associated LED. | ★0      |

## Intel(R) I210 Gigabit Network Connection

Configure Gigabit Ethernet device parameters.

The screenshot shows the 'Configuration' screen of the Aptio Setup Utility. The title bar reads 'Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.'. The main content area is titled 'NIC Configuration' and contains the following information:

|                     |  |
|---------------------|--|
| Blink LEDs          | 0  |
| UEFI Driver         | Intel(R) PRO/1000 6.3.27 PCI-E           |
| Adapter PBA         | 000300-000                               |
| Device Name         | Intel(R) I210 Gigabit Network Connection |
| Chip Type           | Intel i210                               |
| PCI Device ID       | 1533                                     |
| PCI Address         | 02:00:00                                 |
| Link Status         | [Disconnected]                           |
| MAC Address         | 00:90:FB:5D:CD:16                        |
| Virtual MAC Address | 00:90:FB:5D:CD:16                        |

On the right side of the screen, there is a text box that says 'Click to configure the network device port.' Below this, a list of navigation keys is provided:

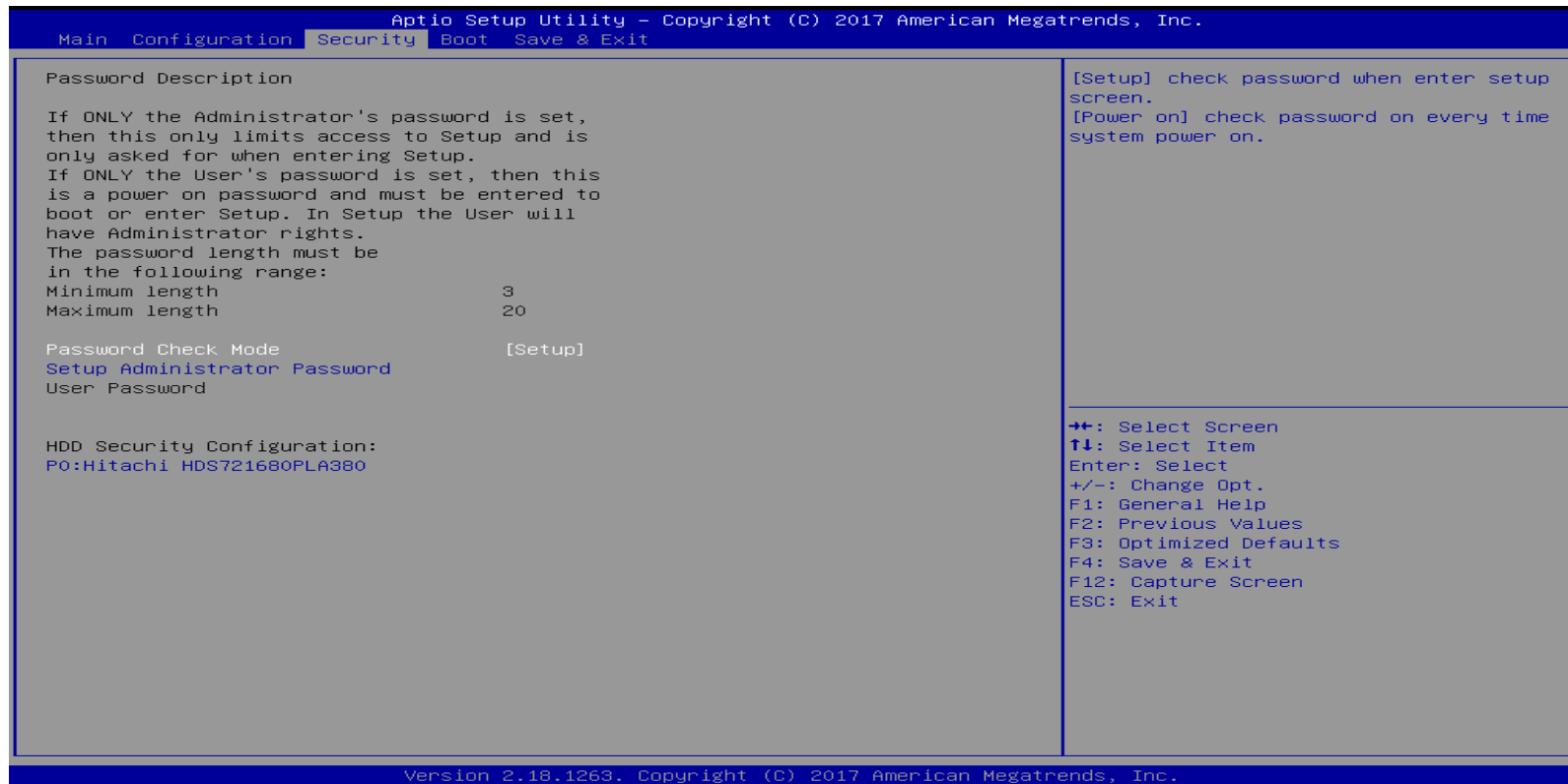
- ++: Select Screen
- ↑↓: Select Item
- Enter: Select
- +/-: Change Opt.
- F1: General Help
- F2: Previous Values
- F3: Optimized Defaults
- F4: Save & Exit
- F12: Capture Screen
- ESC: Exit

At the bottom of the screen, the version information is displayed: 'Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.'

| Feature                  | Description  | Options |
|--------------------------|--|---------|
| <b>NIC Configuration</b> | Click to configure the network deice port.                         |         |
| <b>Blink LEDs</b>        | Identify the physical network port by blinking the associated LED. | ★0      |

### 7.2.3 Security

This section lets you set security passwords to control access to the system at boot time and/or when entering the BIOS setup program.

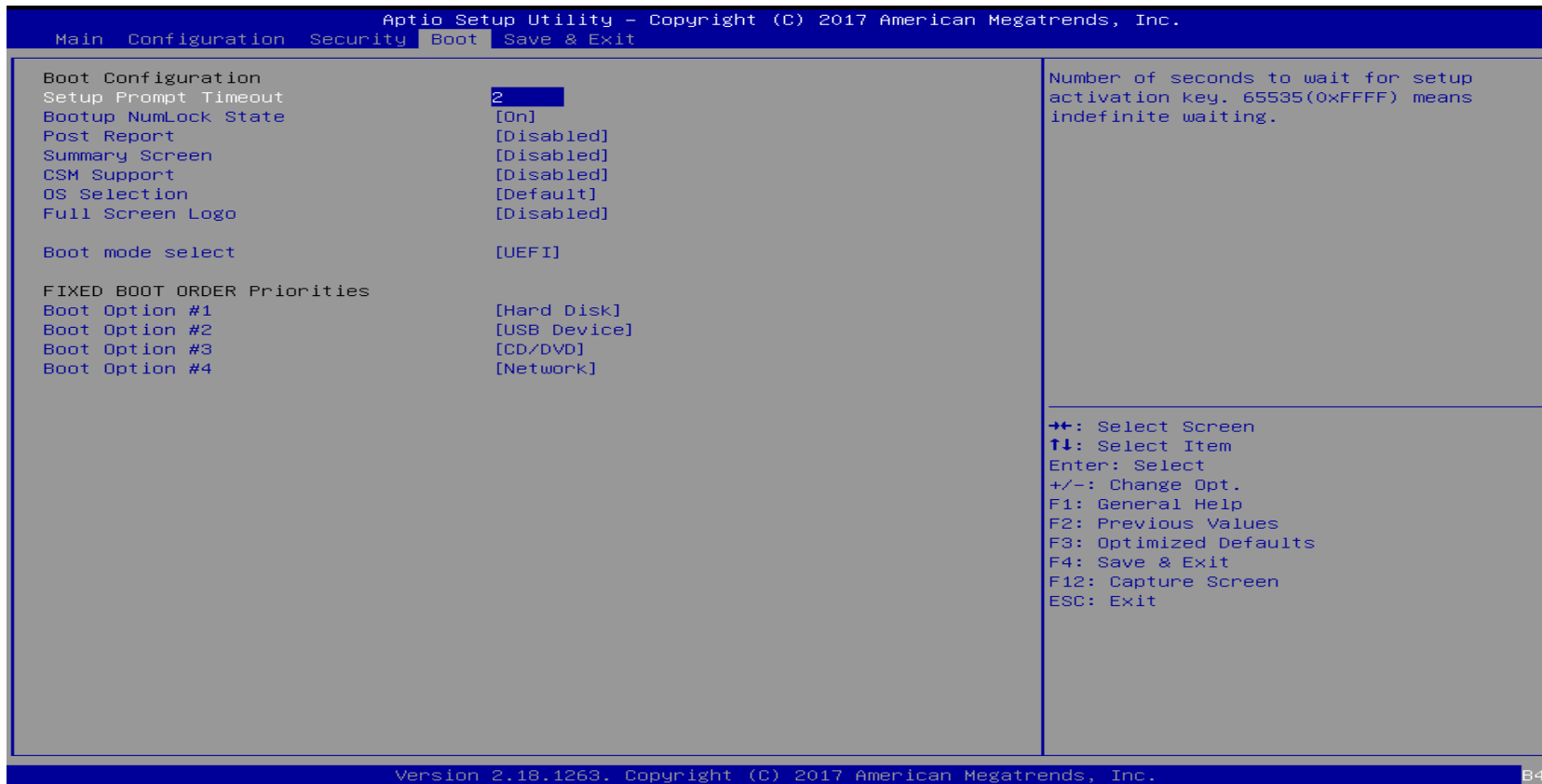




| Feature                             | Description  | Options             |
|-------------------------------------|--|---------------------|
| <b>Password Check Mode</b>          | [Setup] check password when enter setup screen. [Power on] check password on every time system power on. | ★Setup, Power on    |
| <b>Setup Administrator Password</b> | Set Setup Administrator Password   | ★No default setting |
| <b>HDD Security Configuration</b>   | HDD Security Configuration for selected drive.   |                     |

### 7.2.4 Boot

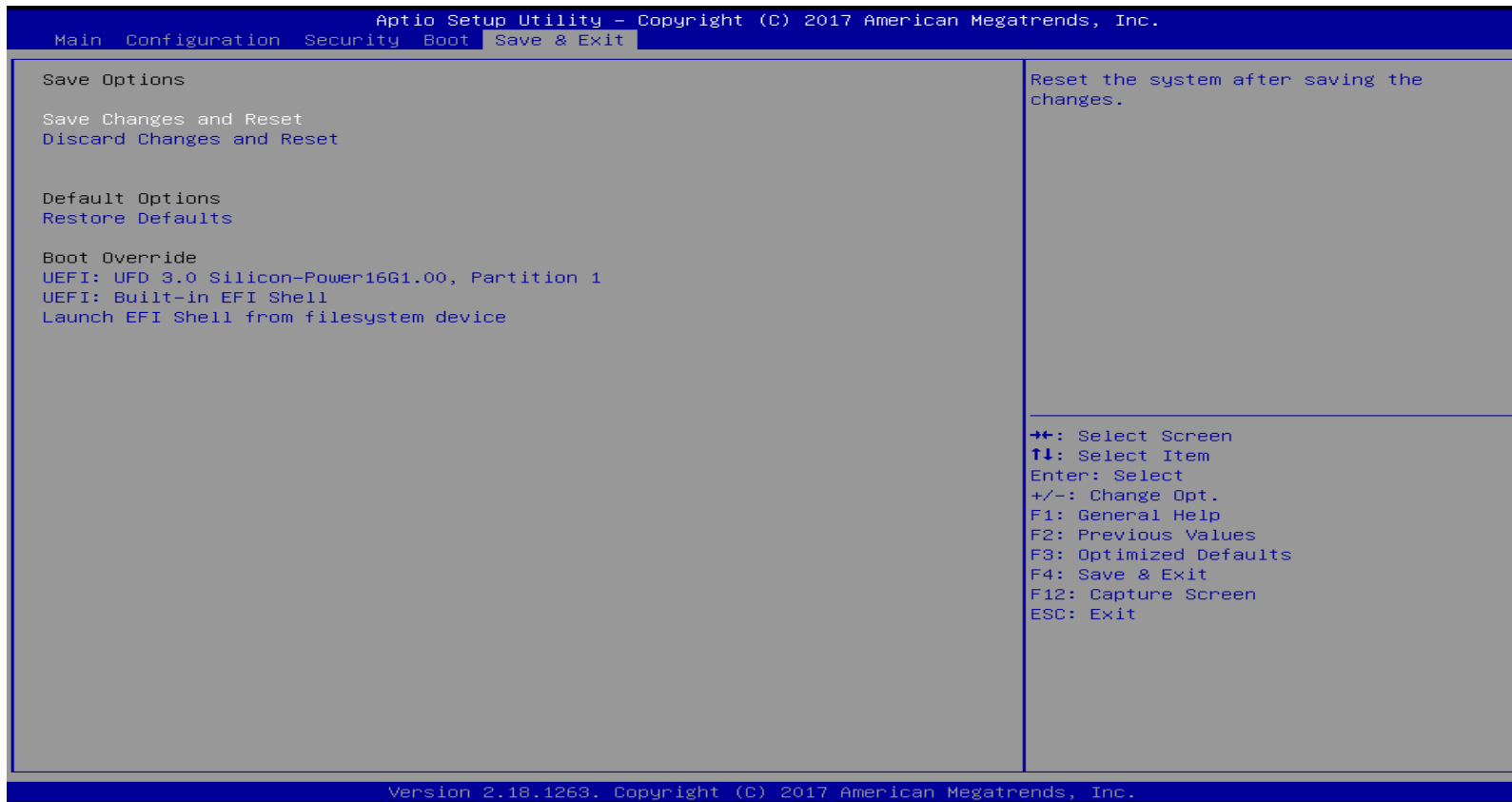
Use this menu to specify the priority of boot devices.



| Feature                            | Description  | Options   |
|------------------------------------|--|---|
| <b>Setup Prompt Timeout</b>        | Number of seconds to wait for setup activation key. 65535 (0xffff) means indefinite waiting.   | ★2, 1-65535                                       |
| <b>Bootup NumLock State</b>        | Select the keysystem NumLock state   | ★On, Off  |
| <b>Post Report</b>                 | Post Report Support Enabled/Disabled   | ★Disabled, Enabled                                |
| <b>Summary Screen</b>              | Summary Screen Support Enabled/Disabled  | ★Disabled, Enabled                                |
| <b>CSM Support</b>                 | Enable/Disable CSM Support   | ★Disabled, Enabled                                |
| <b>CSM Support [Enabled]</b>       |  |   |
| <b>Launch Storage OPROM</b>        | Controls the execution of UEFI and Legacy Storage OpROM  | ★UEFI, Legacy, Do not launch                      |
| <b>OS Selection</b>                | [Default] To Win8/8.1/10; [Other] Android / Linux; [Legacy System] Win7 / DOS; [Intel Linux] Linux. This item setting will affect LPSS & XHCI Hand-off item setting. | ★Default, Android, Legacy System, Intel Linux     |
| <b>Full screen Logo</b>            | Enables or disables Quiet Boot option and Full screen Logo.  | ★Disabled, Enabled                                |
| <b>Boot mode select</b>            | Select Boot mode LEGACY/UEFI   | ★UEFI, Legacy                                     |
| <b>FIXED BOOT ORDER Priorities</b> |  |   |
| <b>Boot Option #1</b>              | Sets the system boot order   | ★Hard Disk, USB Device, CD/DVD, Network, Disabled |
| <b>Boot Option #2</b>              | Sets the system boot order   | ★USB Device, Hard Disk, CD/DVD, Network, Disabled |

|                       |                            |   |
|-----------------------|----------------------------|---|
| <b>Boot Option #3</b> | Sets the system boot order | ★CD/DVD, USB Device, Hard Disk, Network, Disabled |
| <b>Boot Option #4</b> | Sets the system boot order | ★Network, CD/DVD, USB Device, Hard Disk, Disabled |

### 7.2.5 Save & Exit



| Feature  | Description  | Options |
|--|--|---------|
| <b>Save Changes and Reset</b>                                      | Reset the system after saving the changes.   |         |
| <b>Discard Changes and Reset</b>                                   | Reset system setup without saving any changes.   |         |
| <b>Restore Defaults</b>  | Restore/Load Default values for all the setup options.   |         |
| <b>UEFI: Built-in EFI Shell</b><br>(Boot option filter: UEFI only) | Reset the system after saving the changes.   |         |
| <b>Launch EFI Shell from filesystem device</b>                     | Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices. |         |

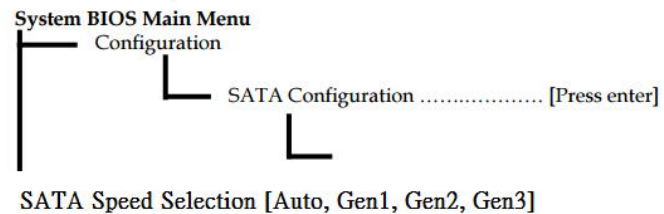
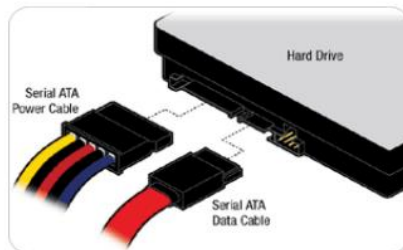
## 8 Troubleshooting

This chapter provides a few useful tips to quickly get WEBS-13D1 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

### 8.1 Hardware Quick Installation

#### Serial ATA

##### Serial ATA Hard Disk Setting for SATA Speed Selection



## 8.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on DC power. 204-pin DDR3L 1333/1600/1866 MH/z SO-DIMM Memory, keysystem, mouse, SATA hard disk, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with WEBS-13D1, it is recommended, when going with the boot-up sequence, to hit “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 “**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 JP8 on the WEBS-13D1 to set it from 1-2 short to 2-3 short and wait 10 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

#### **JP8 : CMOS Clear**

| PIN No.   | Signal Description  |
|-----------|---------------------|
| 1-2 Short | Normal Operation ★  |
| 2-3 Short | Clear CMOS Contents |

**Question: How to update the BIOS file of WEBS-13D1?**

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

[http://www.portwell.com.tw/support/download\\_center.php](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 **“WEBS-13D1”**.

4. Find the **“BIOS”** page and download the ROM file and flash utility.

5. Unzip file to bootable USB flash drive which can boot to dos mode. Then execute the **“update.efi”**. It will start to update BIOS.

NOTE: Once you use “update.efi” to update BIOS, it must be get into the SHELL MODE to update BIOS

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

[http://www.portwell.com.tw/support/download\\_center.php](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](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 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.

## 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 2.0 <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>