IEI Integration Corp.

MODEL:

AFL3-08A-BT

Flat Bezel Panel PC with Intel® Celeron® J1900 Quad-Core CPU, Touchscreen, Dual USB 3.0, Dual GbE LAN, RS-232, HD Audio, Wi-Fi 802.11a/b/g/n/ac and RoHS

User Manual

Rev. 1.01 - November 25, 2016

RoHS Lead Free

Revision

Date	Version	Changes
November 25, 2016	1.01	Added warning messages in the following sections: - Section 1.7: System Specifications - Section 3.4: Removing the Back Cover - Section 3.12: Powering On the System - Section 6.2.1: Battery Connector (BAT1)
July 5, 2016	1.00	Initial release

⚠ Safety Instructions

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en Warning! Read the user manual before connecting the system to the power source.

de Vorsicht! Bitte lesen Sie die Bedienungsanleitung, bevor Sie das System an eine Stromquelle anschließen.

fr Attention! Avant de brancher le système à la source d'alimentation, consultez le mode d'emploi.

it Avvertenza! Consultare il manuale utente prima di collegare il sistema all'alimentatore.

es Atención! Lea atentamente este manual del usuario antes de operar la fuente de alimentación.

zh 警告！在將系統連接到電源之前，請仔細閱讀使用手冊。

cn 警告！在將系統連接到電源之前，請仔細閱讀使用手冊。

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en Warning! To prevent the system from overheating, do not operate it in an area that exceeds the maximum operating temperature described in the user manual.

de Vorsicht! Um eine Überhitzung des Systems zu vermeiden, betreiben Sie es ausschließlich im zulässigen Betriebstemperaturbereich. Dieser ist in der Bedienungsanleitung vermerkt.

fr Attention! Pour éviter la surchauffe du système, ne l'utilisez pas dans une zone dont la température dépasse les limites décrits dans le mode d'emploi.

it Avvertenza! Per evitare che il sistema si surriscaldi, non utilizzarlo in aree che superino la temperatura massima d'esercizio descritta nel manuale utente.

es Atención! Para evitar el excesivo calentamiento del sistema, no opere en las condiciones de temperatura superior a lo recomendado en este manual del usuario.

zh 警告！為防止系統過熱，不要在超過使用手冊上記載的產品工作溫度範圍之外操作此系統。

cn 警告！為防止系統過熱，不要在超過使用手冊上記載的產品工作溫度範圍之外操作此系統。

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en Warning! Use only the adapter and power cord approved for this system. Use of another type of adapter may risk fire or explosion. Please refer to the user manual for the power adapter specifications.

de Vorsicht! Nur zugelassene Netzteile und Netzkabel dürfen verwendet werden. Die Benutzung von anderen Netzteilen kann einen Brand oder eine Explosion zur Folge haben. Prüfen Sie die jeweiligen Spezifikationen in der Bedienungsanleitung.

fr Attention! Utilisez exclusivement le câble d'alimentation et l'adaptateur homologués pour ce système. L'utilisation d'un autre type d'adaptateur risquerait de provoquer un incendie ou une explosion. Veuillez référer au mode d'emploi pour les spécifications de l'adaptateur d'alimentation.

it Avvertenza! Utilizzare solo l'adattatore e il cavo di alimentazione approvati per questo sistema. L'uso di un altro tipo di adattatore può causare rischio d'incendio o esplosione. Si prega di fare riferimento al manuale utente per le specifiche sull'alimentazione.

es Atención! Utilice solamente el adaptador de corriente alterna (CA) con Marcas Conformidad otorgadas. Cualquier otro adaptador no otorgado aumenta el riesgo de explosión o incendio. Por favor consulte el manual del usuario para las especificaciones del adaptador de alimentación.

zh 警告！只能使用經過認證、適用於本系統的電源變壓器與電源線。使用不適用的電源變壓器將可能導致火災或爆炸。電源變壓器規格請參考使用手冊。

cn 警告！只能使用经过认证，适用于本系统的电源适配器与电源线。使用不适用的电源适配器将可能导致火灾或爆炸。电源适配器规格请参考使用手册。

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en Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

de Vorsicht! Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

fr Attention! La mise au rebut ou le recyclage de ce produit sont généralement soumis aux lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

it Avvertenza! Lo smaltimento di questo prodotto deve essere eseguito secondo le leggi e i regolamenti locali.

es Atención! La disposición final de residuos de este producto se debe cumplir con las normativas y leyes del país.

zh 警告！本產品的廢棄處理應根據該國家的法律和規章進行。

cn 警告！本产品的废弃处理应根据该国家的法律和规章进行。

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Manual Conventions

WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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1

Introduction

1.1 Overview

Figure 1-1: AFL3-08A-BT Flat Bezel Panel PC

The AFL3-08A-BT series is a quad-core Intel® Celeron® processor J1900 powered 8.4" panel PC with a rich variety of functions and peripherals. The flat-bezel design is ideal for easy and simplified integration into various applications.

The Intel® Celeron® J1900 is a SoC (System-on-Chip) that ensures optimal memory, graphics, and peripheral I/O support. The system comes with 2.0 GB of DDR3L SO-DIMM memory ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Two serial ports and two external USB 3.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and two RJ-45 Ethernet connectors provide the system with smooth connection to an external LAN.

1.2 Model Variations

There are four models in the AFL3-08A-BT series. The model numbers and model variations are listed below.

Model	Touchscreen	Mifare RFID
AFL3-08A-BT-J1/PC/2G	Projected capacitive type	No
AFL3-08A-BT-J1/R/2G	5-wire resistive type	No
AFL3-08A-BT-J1/PC/2G/MF	Projected capacitive type	Yes
AFL3-08A-BT-J1/R/2G/MF	5-wire resistive type	Yes

Table 1-1: Model Variations

1.3 Features

The AFL3-08A-BT features are listed below:

- Flat-bezel LCD with LED backlight
- Intel® Celeron® processor J1900 (2.0 GHz, quad-core)
- Preinstalled with 2 GB of DDR3L memory (system max. 4 GB)
- 5-wire resistive type or projected capacitive type touchscreen
- Wi-Fi 802.11a/b/g/n/ac high speed wireless
- Two PCIe GbE RJ-45 connectors
- Two internal speakers
- Two USB 3.0 ports
- One RS-232/422/485 serial port by D-sub 9 connector
- One RS-232 serial port by RJ-45 connector
- Optional RFID reader
- Optional magnetic stripe card reader
- 9 V－30 V wide range DC power input
- IP 64 compliant front panel

1.4 Front Panel

The front side of the AFL3-08A-BT is a flat-bezel panel with a TFT LCD screen surrounded by a PC/ABS plastic frame (**Figure 1-2**).
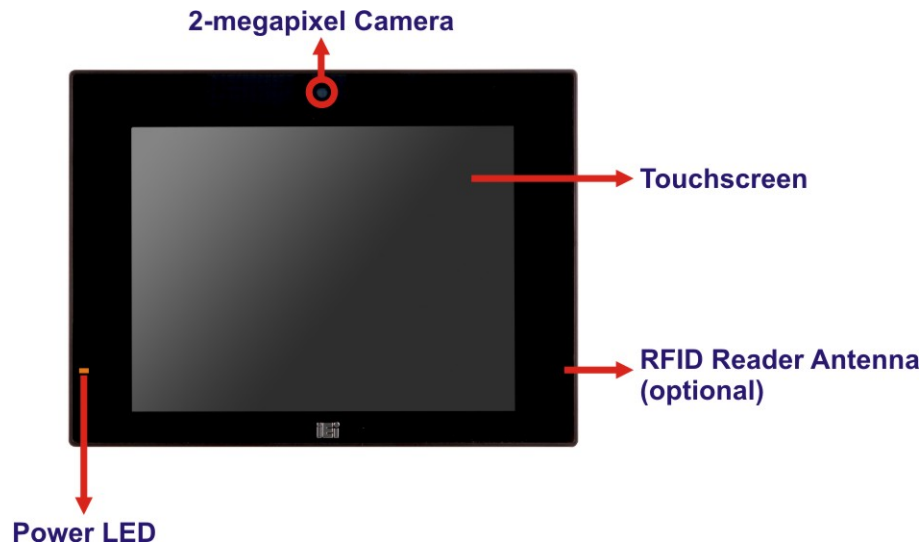
Figure 1-2: Front View

There is a power LED indicator located on the front panel. The status descriptions of the power LED indicator are listed below.

- **Off:** power cord not attached or power supply failure
- **Solid amber:** the system is connected to a power source and is ready to be turned on.
- **Solid green:** the system is turned on.

1.5 Rear Panel

The rear panel provides access to retention screw holes that support VESA mounting. See **Figure 1-3**.

Figure 1-3: Rear View

1.6 Bottom Panel

The bottom panel of the AFL3-08A-BT has the following connectors and switches (**Figure 1-4**).
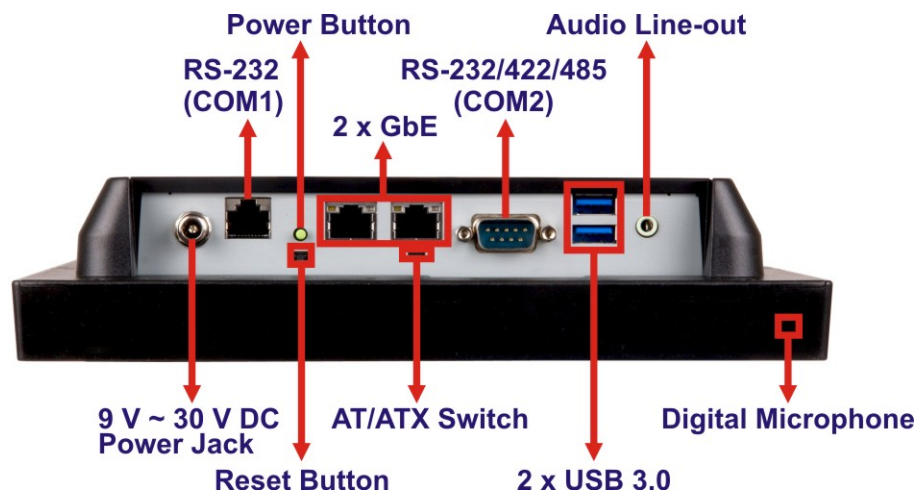
Figure 1-4: Bottom Panel

![NOTE icon] **NOTE:**

Before installing the operating system, the user must enter the **Boot** BIOS menu first and choose which operating system will be installed. Otherwise the USB 3.0 ports cannot be used for OS installation. Please refer to **Figure 3-29** and **Section 4.6**.

1.7 System Specifications

The technical specifications for the AFL3-08A-BT systems are listed in **Table 1-2**.

Specification	AFL3-08A-BT
LCD Size	8.4"
Max. Resolution	800 x 600 (4:3)
Brightness (cd/m^2)	450
Contrast Ratio	600:1
LCD Color	16.2M
Pixel Pitch (H x V) (mm)	0.213 x 0.213
Viewing Angle (H-V)	160° / 140°
Backlight MTBF	50,000 hrs
Backlight	LED
Touchscreen	5-wire resistive / Projected capacitive
Touch Controller	Resistive type: PenMount DMC9000 Capacitive type: EETI EXC 3146
CPU (SoC)	Intel® Celeron® processor J1900 (2.0 GHz, quad-core)
Memory	One 204-pin 1333 MHz single-channel DDR3L SO-DIMM slot preinstalled with 2 GB SDRAM (system max. 8 GB)

Ethernet	Two Realtek RTL8111E PCIe GbE controllers
Storage	One PCIe Mini card slot for mSATA module installation
Audio	Realtek ALC892 HD Audio codec
Internal Speaker	Two 2 W
Camera	2-megapixel with low light function
Wireless	One 802.11a/b/g/n/ac wireless LAN module (half-size PCIe Mini card)
RFID Reader	MIFARE 13.56 MHz card reader (optional)
Card Reader	Magnetic stripe card reader (optional)
OSD Function	Controlled by OSD software
Construction Material	PC + ABS plastic
VESA Mount	75 mm x 75 mm
Mounting	Panel, wall, rack, stand or arm mounting
Front Panel Color	Black C
Net Weight	1.0 kg
Dimensions (W x H x D)	233 mm x 175 mm x 50 mm
Operating Temperature	-10ºC ~ 50ºC
Storage Temperature	-20ºC ~ 60ºC
Humidity	10% ~ 95% (non-condensing)
IP Level	IP 64 compliant front panel
Safety/EMC	CE, FCC
Power Supply	36 W power adapter
	Input: 100 V ~ 240 V AC, 50 Hz ~ 60 Hz
	Output: 12 V DC, 2 A

Power Requirement	9 V ~ 30 V DC
Power Consumption	24 W, 12 V @ 2 A (with Intel® Celeron® J1900 CPU and 2 GB 1333 MHz DDR3L memory)
I/O Ports and Switches	1 x Audio line-out port
	1 x RS-232/422/485 serial port (DB-9 connector)
	1 x RS-232 serial port (RJ-45 connector)
	2 x GbE LAN (RJ-45 connector)
	2 x USB 3.0 connectors
	1 x Power button
	1 x AT/ATX switch
	1 x Reset button
	1 x 9 V ~ 30 V DC input jack

Table 1-2: System Specifications

WARNING:

This equipment is not suitable for use in locations where children are likely to be present.

1.8 Dimensions

The AFL3-08A-BT dimensions are shown below.
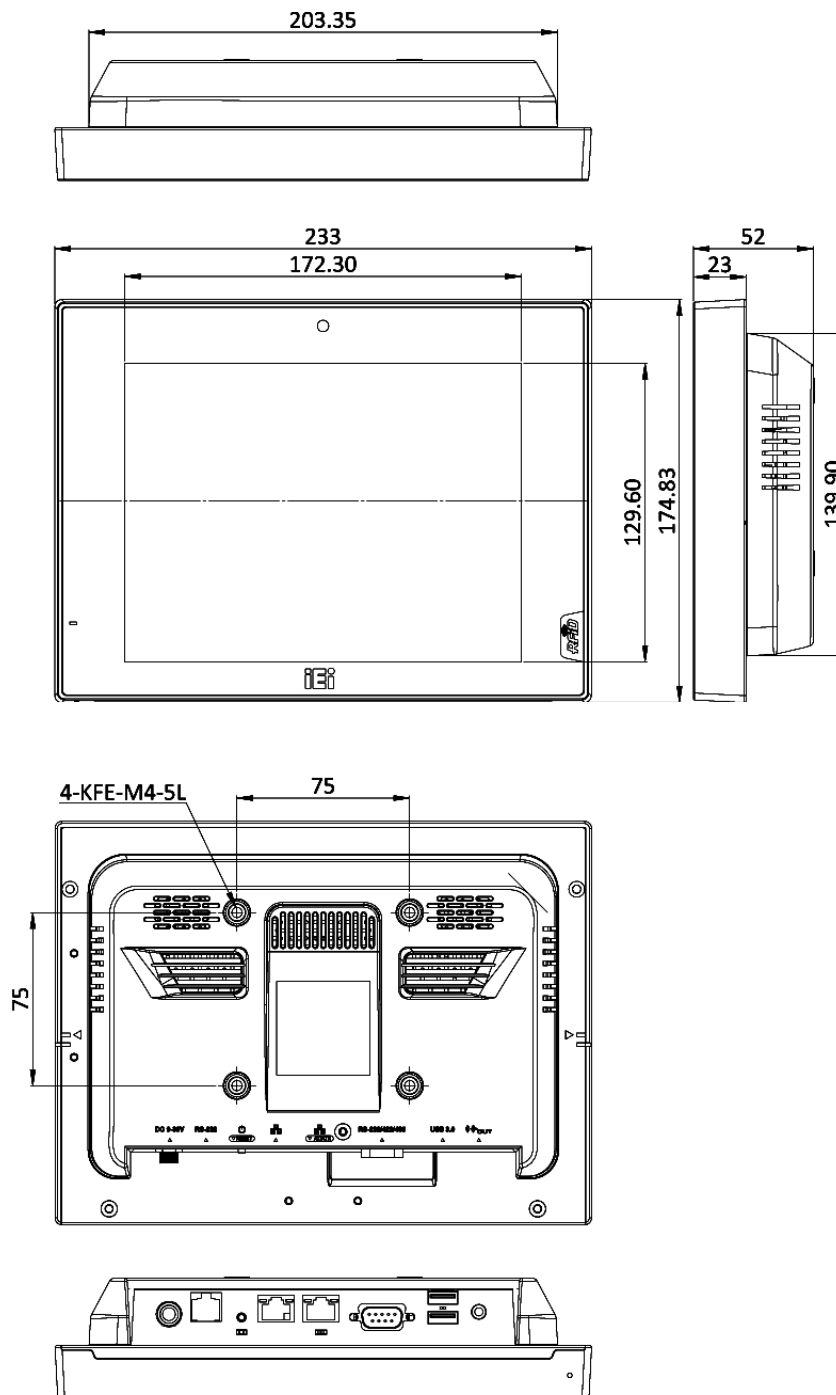
Figure 1-5: Dimensions (mm)

Chapter

2

Unpacking

2.1 Unpacking

To unpack the flat bezel panel PC, follow the steps below:

 WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the flat bezel panel PC has been properly installed. This ensures the screen is protected during the installation process.

Step 1:   Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.

Step 2:   Open the external (second) box.

Step 3:   Open the internal (first) box.

Step 4:   Lift the monitor out of the boxes.

Step 5:   Remove both polystyrene ends, one from each side.

Step 6:   Pull the plastic cover off the flat bezel panel PC.

Step 7:   Make sure all the components listed in the packing list are present.

2.2 Packing List

 NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the AFL3-08A-BT was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The AFL3-08A-BT flat bezel panel PC is shipped with the following components:

Quantity	Item	Image
1	AFL3-08A-BT panel PC	
1	36 W power adapter	
1	Power cord	
1	RJ-45 to DB-9 COM port cable	
4	Screws for VESA mounting	
2	Screws for PCIe Mini card installation	

1	Touch pen (resistive type models only)	
1	Utility CD	
1	One Key Recovery CD	

2.3 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
VESA 75 wall mount kit (**P/N**: AFLWK-12)	
Panel mounting kit (**P/N**: AFL3PK-W07A-R10)	
Rack mounting kit (**P/N**: AFL3RK-W07A-R10)	

Item and Part Number	Image
Arm (**P/N**: ARM-11-RS)	
Arm (**P/N**: ARM-31-RS)	
Stand for VESA 100 (**P/N**: STAND-A12-RS) (**P/N**: STAND-A19-RS)	
LCD monitor stand with adjustable hinge (**P/N**: VSTAND-A07-R11)	

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter

3

Installation

3.1 Anti-static Precautions

> ⚠️ **WARNING:**
>
> Failure to take ESD precautions during the maintenance of the AFL3-08A-BT may result in permanent damage to the AFL3-08A-BT and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL3-08A-BT. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL3-08A-BT is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband**: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding**: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad**: When configuring the AFL3-08A-BT, place it on an anti-static pad. This reduces the possibility of ESD damaging the AFL3-08A-BT.
- **Only handle the edges of the PCB**: When handling the PCB, hold the PCB by the edges.

3.2 Installation Precautions

When installing the flat bezel panel PC, please follow the precautions listed below:

- **Power turned off**: When installing the flat bezel panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard functionalities.

▪ **Anti-static Discharge**: If a user open the rear panel of the flat bezel panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear an anti-static wristband.

3.3 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the flat bezel panel PC.

Step 2: Install an mSATA module.

Step 3: Configure the system.

Step 4: Connect peripheral devices to the flat bezel panel PC.

Step 5: Mount the flat bezel panel PC.

3.4 Removing the Back Cover

WARNING:

Before any internal installation procedures are carried out on the system, make sure the system is turned off and cooled down for 15 minutes. Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

To access the AFL3-08A-BT internally the back cover must be removed. To remove the back cover, please follow the steps below.

Step 1: Remove the three retention screws from the back cover (**Figure 3-1**).

Figure 3-1: Back Cover Retention Screws

Step 2: Slide the back cover toward the I/O panel until it is disengaged from the locking

mechanism. Then, lift the back cover off the chassis. See **Figure 3-2**.

Figure 3-2: Remove the Back Cover

3.4.1 Reinstalling the Back Cover

To install the back cover, slide the back cover toward the top panel until the external and internal locking mechanisms are both clipped into place. Then, secure the back cover with the previously removed screws.

![WARNING icon] **WARNING:**

Over-tightening back cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).
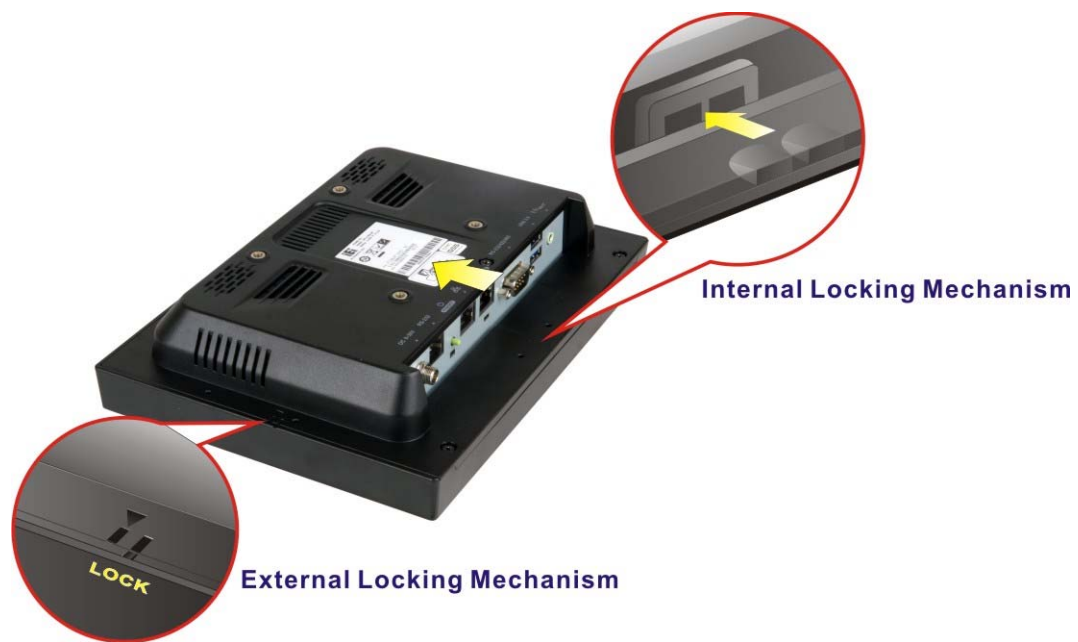
Figure 3-3: Internal Locking Mechanism

3.5 mSATA Module Installation

To install an mSATA module into the AFL3-08A-BT, please follow the steps below:

Step 1: Remove the back cover. See **Section 3.4** above.

Step 2: Locate the full-size PCIe Mini card slot. Remove the preinstalled retention screw on the standoff of the PCIe Mini card slot as shown in **Figure 3-4**.
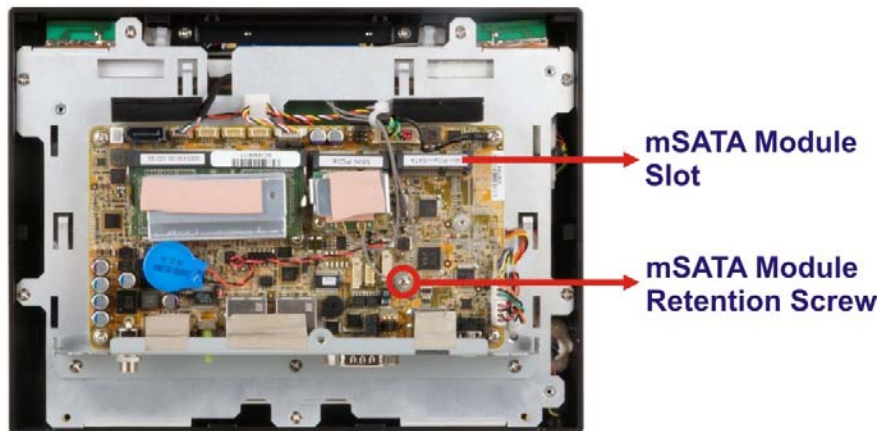
Figure 3-4: mSATA Module Slot Location

Step 3: Line up the notch on the mSATA module with the notch on the connector. Slide the PCIe Mini card into the socket at an angle of about 20º.

Step 4: Secure the mSATA module with the retention screw. Push the other end of the mSATA module down and secure the module with the previously removed retention screw (**Figure 3-5**).
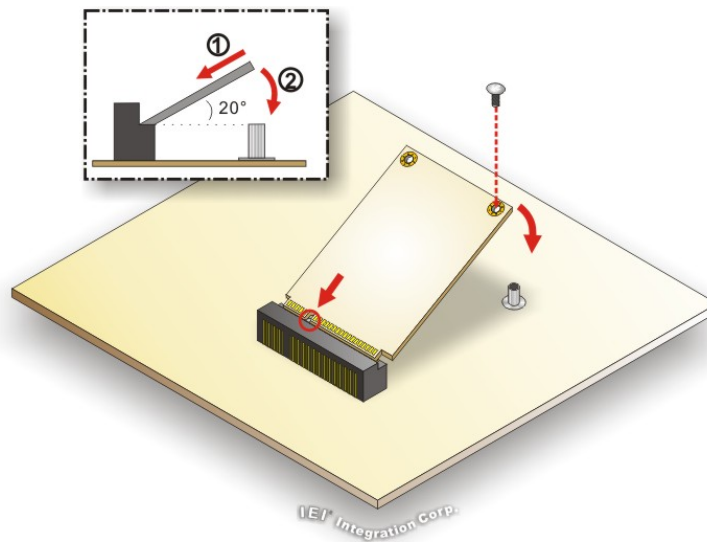
Figure 3-5: mSATA Module Installation

Step 5:   Replace the back cover and secure it using three retention screws.

3.6 DB-9 Serial Port Pin 9 Selection

The JP5 jumper configures pin 9 on the DB-9 serial port. Pin 9 on the COM2 DB-9 connector can be set as the ring (RI) signal, +5 V or +12 V. The jumper selection options are shown in **Table 3-1**.

JP5	Description
Short 1-2	COM2 RI Pin use +12 V
Short 3-4	COM2 RI Pin use RI (Default)
Short 5-6	COM2 RI Pin use +5 V

Table 3-1: DB-9 Serial Port Pin 9 Setting Jumper Settings

The DB-9 Serial Port Pin 9 Setting jumper location is shown in **Figure 3-6** below.
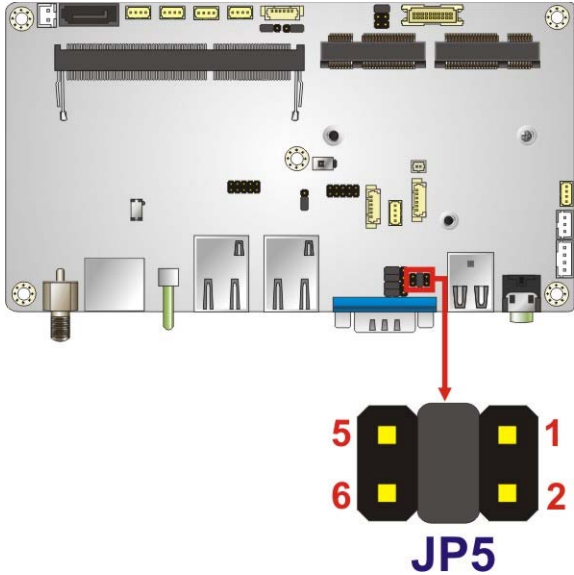
Figure 3-6: DB-9 Serial Port Pin 9 Setting Jumper Location

3.7 RS-232/422/485 Serial Port Selection

The JP4 jumper sets the communication protocol used by the DB-9 serial communication port as RS-232, RS-422 or RS-485. Please note that when the DB-9 serial port is set to RS-422/485, the DB-9 port becomes COM3. The RS-232/422/485 serial port selection settings are shown in **Table 3-2**.

JP4	Description	DB-9 Serial Port Number
Short 1-2	RS-232 (Default)	COM2
Short 4-5	RS-232 (Default)	COM2
Short 7-8	RS-232 (Default)	COM2
Short 10-11	RS-232 (Default)	COM2
Short 2-3	RS-422/485	COM3
Short 5-6	RS-422/485	COM3
Short 8-9	RS-422/485	COM3
Short 11-12	RS-422/485	COM3

Table 3-2: RS-232/422/485 Selection Jumper Settings

The RS-232/422/485 selection jumper location is shown in **Figure 3-7**.
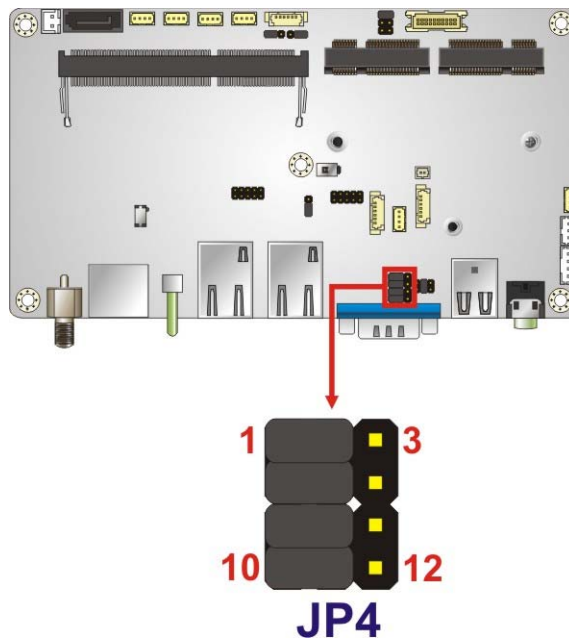
Figure 3-7: RS-232/422/485 Selection Jumper Location

3.7.1 COM3 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 1 and COM2 are detailed below.

COM 3	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 3-3: RS-422 Pinouts

COM 3	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 3-4: RS-485 Pinouts

3.8 Clear CMOS

If the AFL3-08A-BT fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, push the clear CMOS button for three seconds, then restart the system. The clear CMOS button location is shown in **Figure 3-8**.
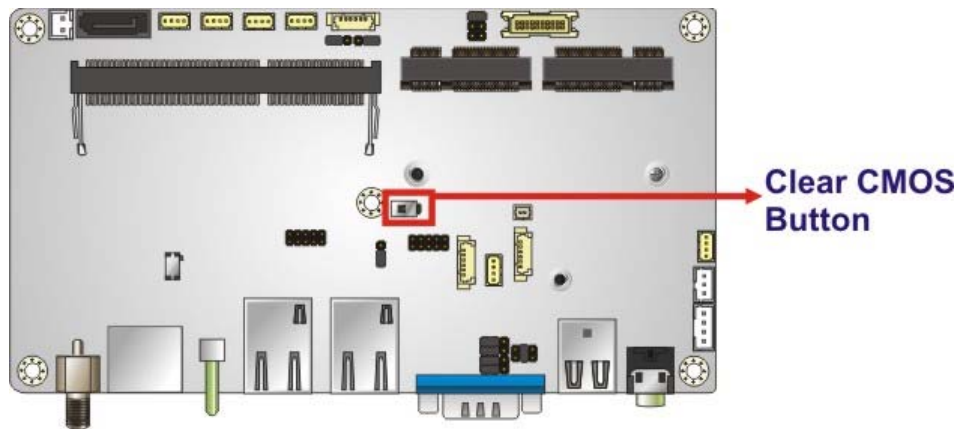
Figure 3-8: Clear CMOS Button Location

3.9 AT/ATX Mode Selection

AT or ATX power mode can be used on the AFL3-08A-BT. The selection is made through an AT/ATX switch located on the bottom panel (**Figure 3-9**).
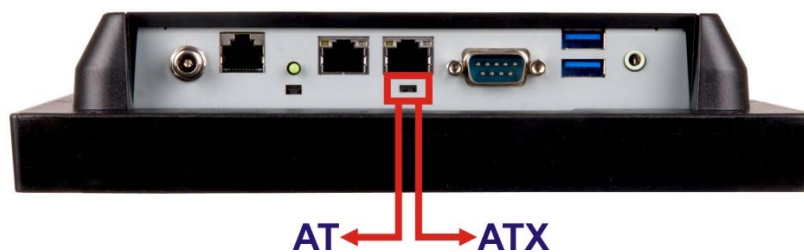
Figure 3-9: AT/ATX Switch Location

3.9.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL3-08A-BT panel PC turns on automatically when the power is

connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

3.9.2 ATX Power Mode

With the ATX mode selected, the AFL3-08A-BT panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

3.10 COM1 Connection

The COM1 port is a RJ-45 serial device connector on the bottom panel. The COM1 port connects to a cable with a standard D-sub 9 connector at the other end (cables included). Follow the steps below to connect a serial device to the AFL3-08A-BT panel PC.

Step 1: **Locate the RJ-45 connector**. The location of the RJ-45 serial port connector is shown in **Chapter 1**. The RJ-45 connector for the serial port can be identified easily as the RJ-45 for the network has two LEDs on the port, while the connector for the serial cable don't.

Step 2: **Insert the RJ-45 to D-sub 9 cable.** See **Figure 3-10**.
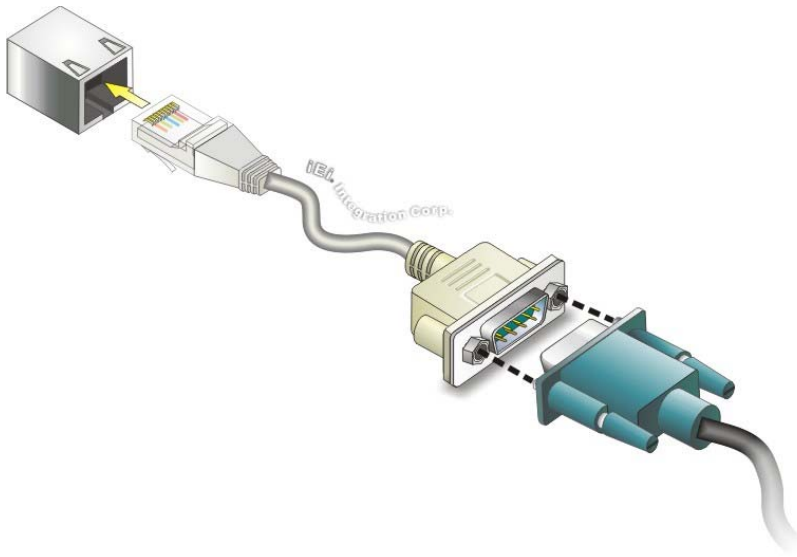
Figure 3-10: Serial Device Connector

Step 3: **Insert the serial connector**. Insert the D-sub 9 connector of a serial device into the D-sub 9 connector on the cable.

Step 4: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

The D-sub 9 connector pinouts of the RJ-45 to DB-9 cable are listed below.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	
1	NDCD1	6	NDSR1	
2	NRX1	7	NRTS1	
3	NTX1	8	NCTS1	
4	NDTR1	9	NRI1	
5	GND			
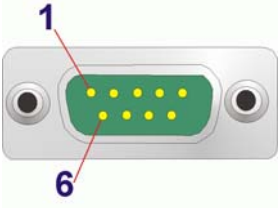
Table 3-5: DB-9 Serial Port (COM1) Pinouts

3.11 Mounting the System

The methods of mounting the AFL3-08A-BT are listed below.

- Wall mounting
- Panel mounting
- Rack mounting
- Arm mounting
- Stand mounting
- V-Stand mounting

The mounting methods are described below.

3.11.1 Wall Mounting

To mount the flat bezel panel PC onto the wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four screw holes in the bracket on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 3-11**).
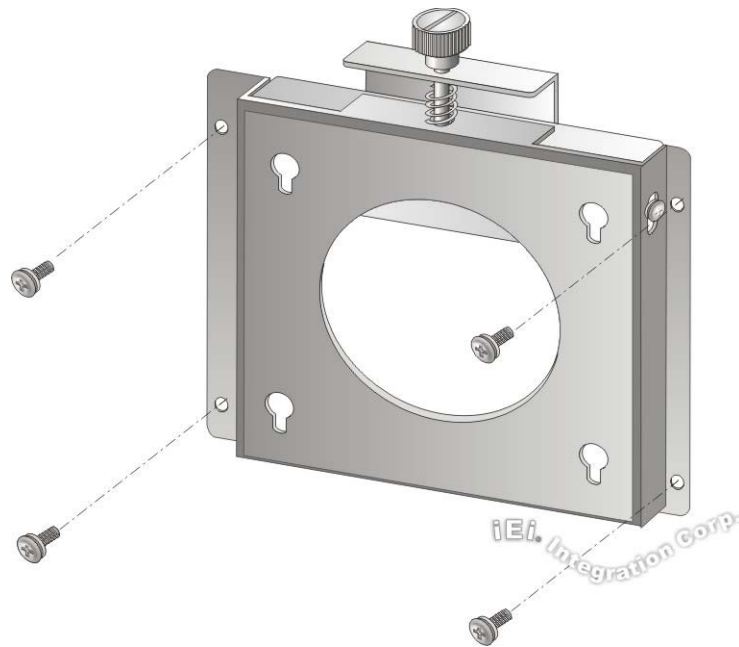
Figure 3-11: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mount kit into the four screw holes on the real panel of the flat bezel panel PC and tighten until the screw shank is secured against the rear panel (**Figure 3-12**).

![WARNING icon] **WARNING:**

Please use the M4 screws provided in the wall mount kit for the rear panel. If the screw is missing, the thread depth of the replacement screw should be not more than 4 mm.
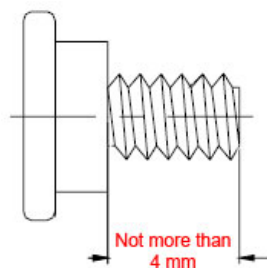
Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 3-12**). Ensure that all four of the mounting screws fit snugly into their respective slotted holes. Always keep the AFL3-08A-BT in landscape orientation when mounting on the wall.

![NOTE icon] **NOTE:**

In the diagram below the bracket is already installed on the wall.
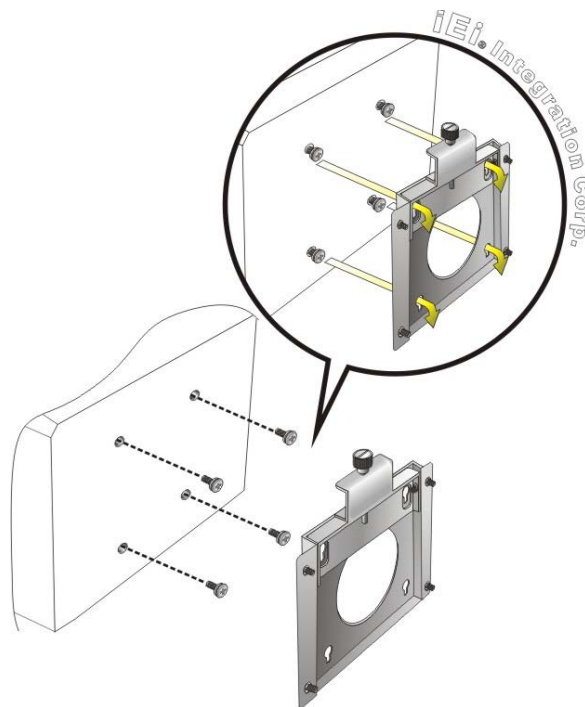
Figure 3-12: Chassis Support Screws

Step 9: Secure the panel PC by fastening the retention screw of the wall-mounting bracket (**Figure 3-13**).
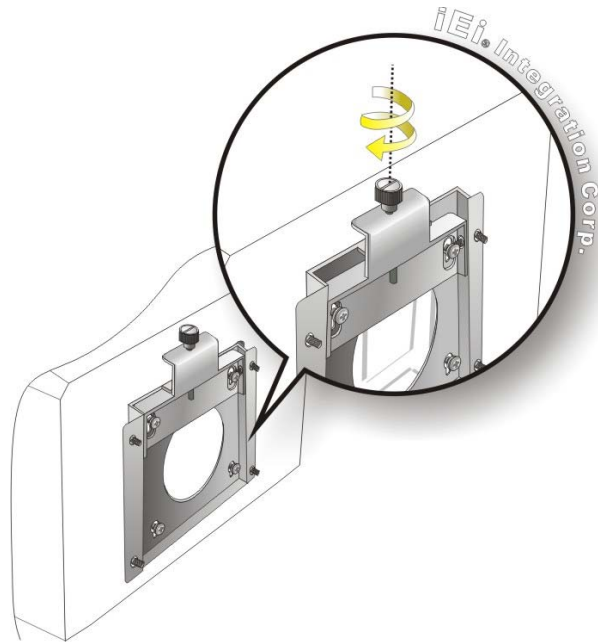
Figure 3-13: Secure the Panel PC

3.11.2 Panel Mounting

To mount the AFL3-08A-BT flat bezel panel PC into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the panel PC.

Step 2: Cut out a section corresponding to the size shown below. The size must be smaller then the outer edge.
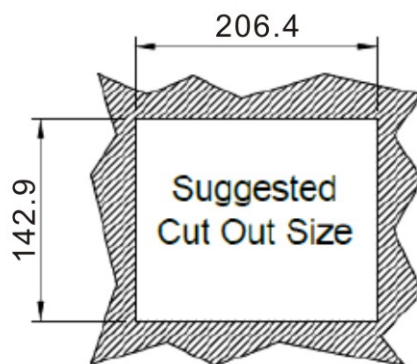
Figure 3-14: Cutout Dimensions

Step 3: Slide the panel PC through the hole until the frame is flush against the panel.

Step 4: Insert a M5*50 screw into the screw hole on the side of the panel mounting

bracket. Then, install the following components onto the screw in sequence.

See **Figure 3-15**.

Sequence	Item	Photo	Instruction
1	Spring		Install a spring onto the screw.
2	Nut		Tighten a nut until the spring is compressed enough for plastic cap.
3	Plastic cap		Tighten a plastic cap onto the end of screw thread.

Step 5: Repeat **Step 4** to install the other three screws into the sides of the two panel

mounting brackets.
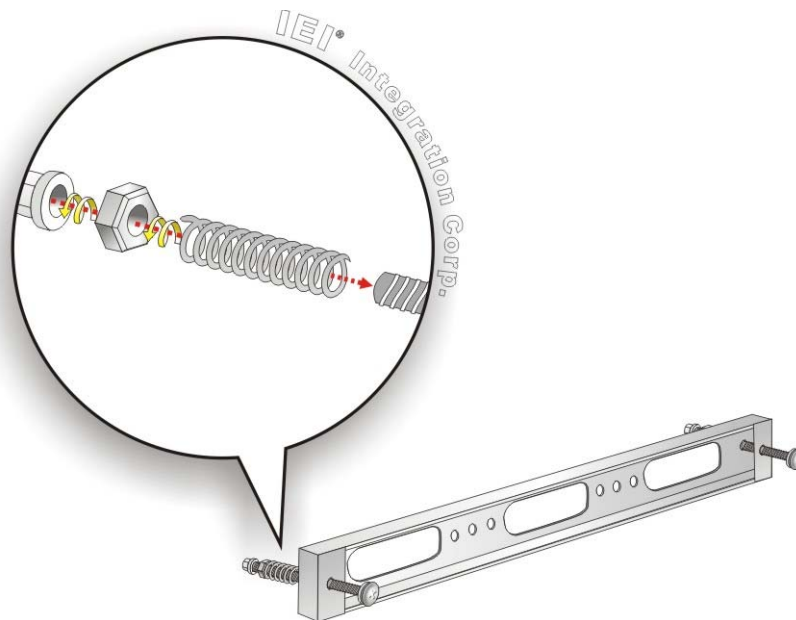
Figure 3-15: Panel Mounting Kit Installation

Step 6: Align the panel mounting bracket screw holes with the VESA mounting holes on

the rear of the panel PC.

Step 7: Secure the two panel mounting brackets to the rear of the panel PC by inserting the four retention screws into the VESA mounting holes and tightening them (**Figure 3-16**).

![NOTE icon] **NOTE:**

The panel mounting kit described in this section is an optional item. To purchase it, please contact an IEI sales representative.
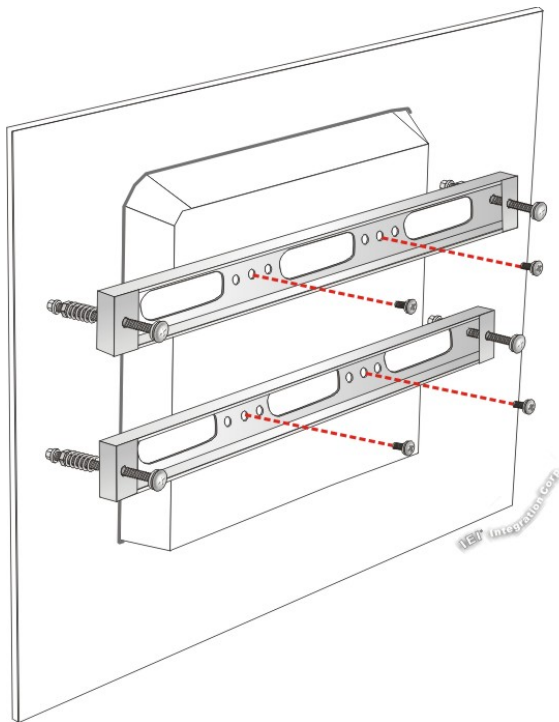
Figure 3-16: Securing Panel Mounting Brackets

3.11.3 Cabinet and Rack Installation

The AFL3-08A-BT flat bezel panel PC can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:

![IEI Integration Corp. logo]

NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the AFL3-08A-BT flat bezel panel PC and the rack/cabinet into which the AFL3-08A-BT is installed.

Step 1: Slide the rear chassis of the AFL3-08A-BT panel PC through the rack/cabinet bracket until the frame is flush against the front of the bracket (**Figure 3-17**).

Rack/Cabinet Bracket
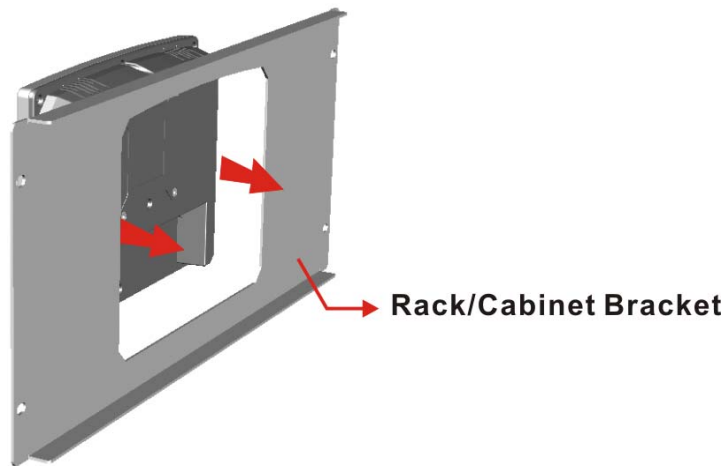
Figure 3-17: Rack/Cabinet Bracket Installation

Step 2: Insert a M5*50 screw into the screw hole on the side of the rack mounting bracket. Then, install the following components onto the screw in sequence. See **Figure 3-15**.

Sequence	Item	Photo	Instruction
1	Spring		Install a spring onto the screw.
2	Nut		Tighten a nut until the spring is compressed enough for plastic cap.
3	Plastic cap		Tighten a plastic cap onto the end of screw thread.

Step 3: Repeat **Step 4** to install the other three screws into the sides of the two rack mounting brackets.
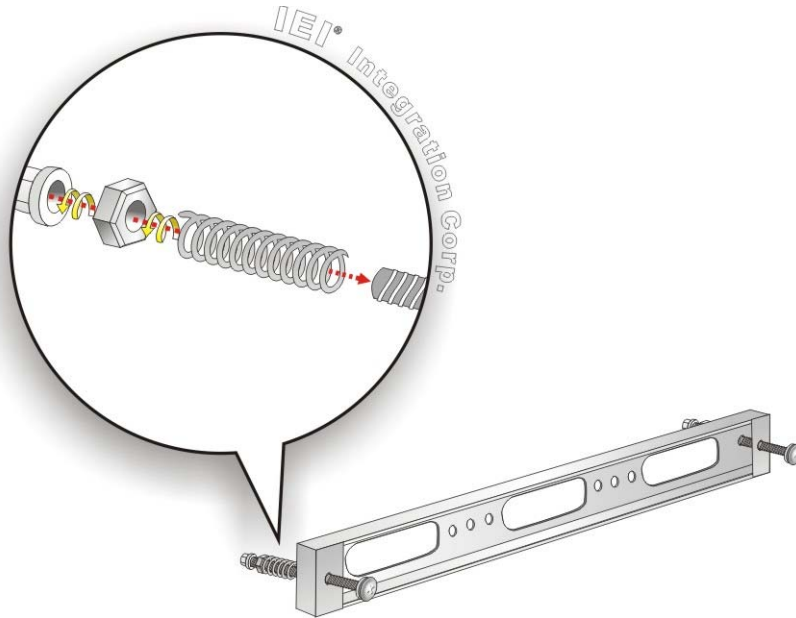
Figure 3-18: Rack Mounting Kit Installation

Step 4: Align the rack mounting bracket screw holes with the VESA mounting holes on the rear of the panel PC.

Step 5: Secure the two rack mounting brackets to the rear of the panel PC by inserting the four retention screws into the VESA mounting holes and tightening them (**Figure 3-19**).

![NOTE icon] **NOTE:**

The rack mounting kit described in this section is an optional item. To purchase it, please contact an IEI sales representative.
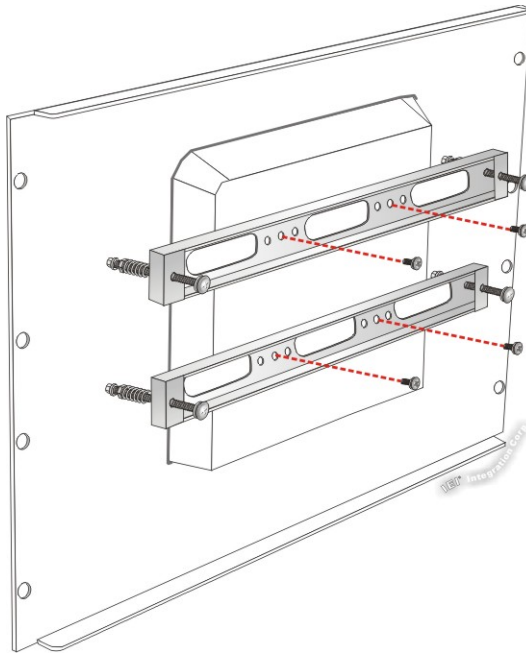
Figure 3-19: Securing Rack Mounting Brackets

Step 6: Slide the panel PC with the attached rack/cabinet bracket into a rack or cabinet

(**Figure 3-20**).
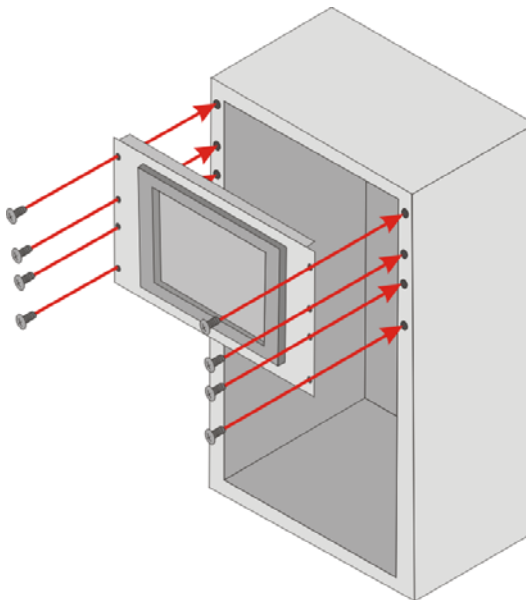
Figure 3-20: Install into a Rack/Cabinet

Step 7: Once the panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 3-20**).

3.11.4 Arm Mounting

The AFL3-08A-BT is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75 mm interface pad. To mount the AFL3-08A-BT on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL3-08A-BT flat bezel panel PC.

Step 2: Once the mounting arm has been firmly attached to the surface, lift the flat bezel panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat bezel panel PC (**Figure 3-21**).

Figure 3-21: Arm Mounting Retention Screw Holes

Step 4: Secure the AFL3-08A-BT to the interface pad by inserting four retention screws through the mounting arm interface pad and into the AFL3-08A-BT.
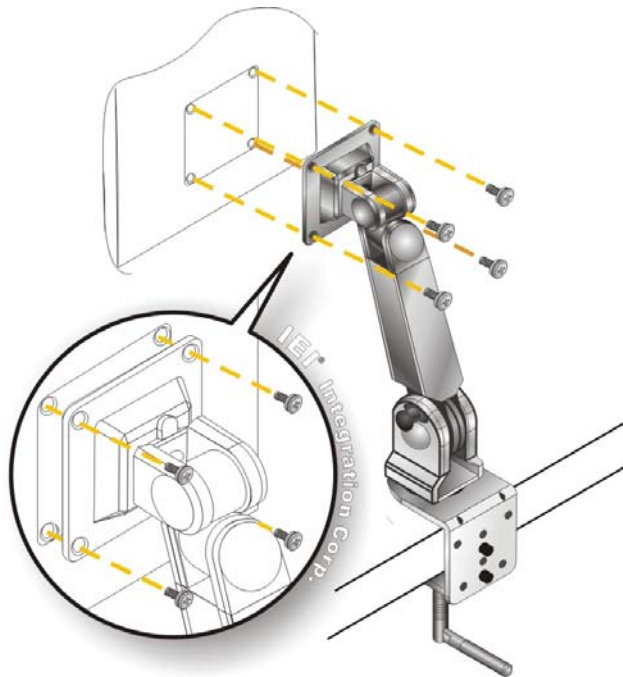
Figure 3-22: Arm Mounting

3.11.5 Stand Mounting

To mount the AFL3-08A-BT using the stand mounting kit, please follow the steps below.

Step 1: Locate the screw holes on the rear of the AFL3-08A-BT. This is where the bracket will be attached.

Step 2: Align the bracket with the screw holes.

Step 3: To secure the bracket to the AFL3-08A-BT insert the retention screws into the screw holes and tighten them.
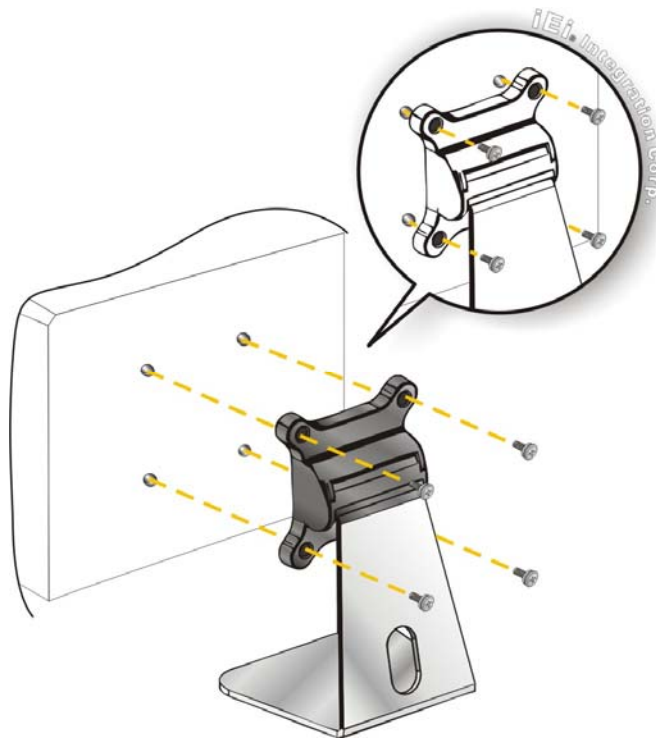
Figure 3-23: Stand Mounting (Stand-A/Bxx)

3.11.6 V-Stand Mounting

To mount the AFL3-08A-BT using the optional V-Stand mounting kit, please follow the steps below.

Step 1: Carefully mark the locations of the four V-Stand screw holes on the mounting area. Drill four pilot holes at the marked locations for the V-Stand retention screws.
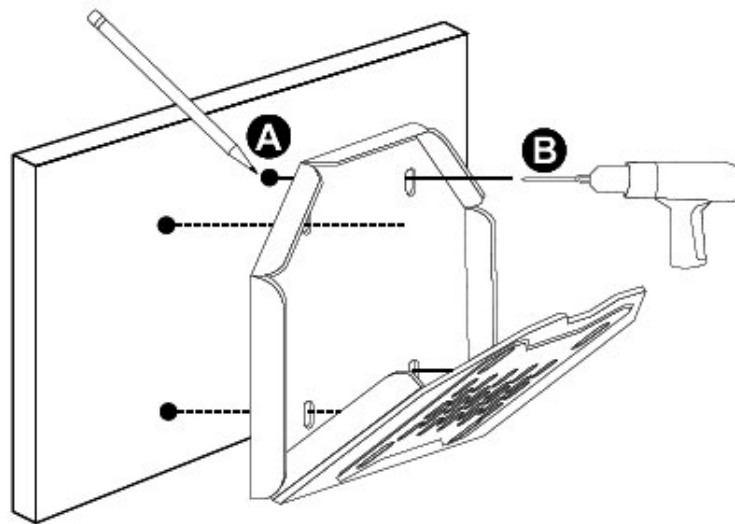
Figure 3-24: Drill Pilot Holes for V-Stand

Step 2: Align the screw holes on the V-Stand with the VESA mount screw holes on the system rear panel.

Step 3: Insert the four VESA mount screws into the four screw holes on the system rear panel. Adjust the V-Stand to a proper position.

Step 4: Tighten until the screw shank is secured against the rear panel.
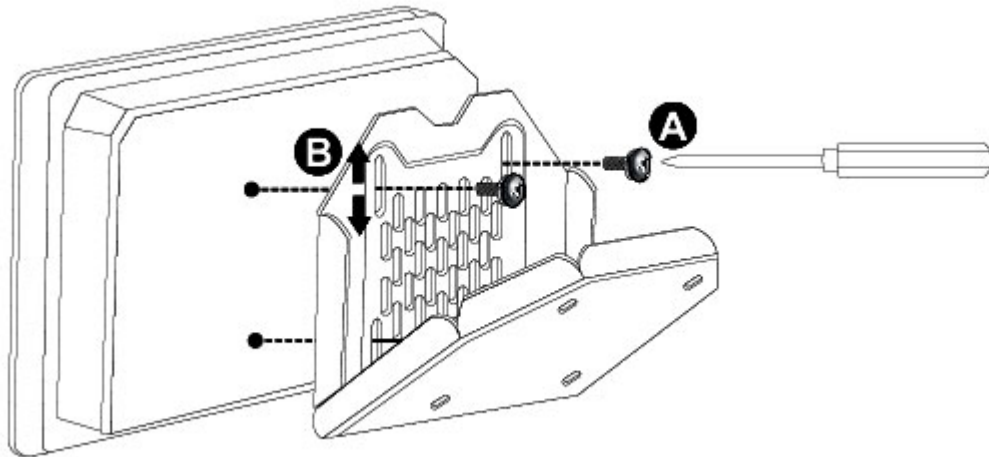
Figure 3-25: Secure V-Stand to System

Step 5: Align the V-Stand screw holes with the pilot holes on the mounting area. Mount the V-Stand by inserting the retention screws into the four pilot holes and tightening them.

Step 6: Adjust the V-Stand to have a best viewing angle to operate the system.
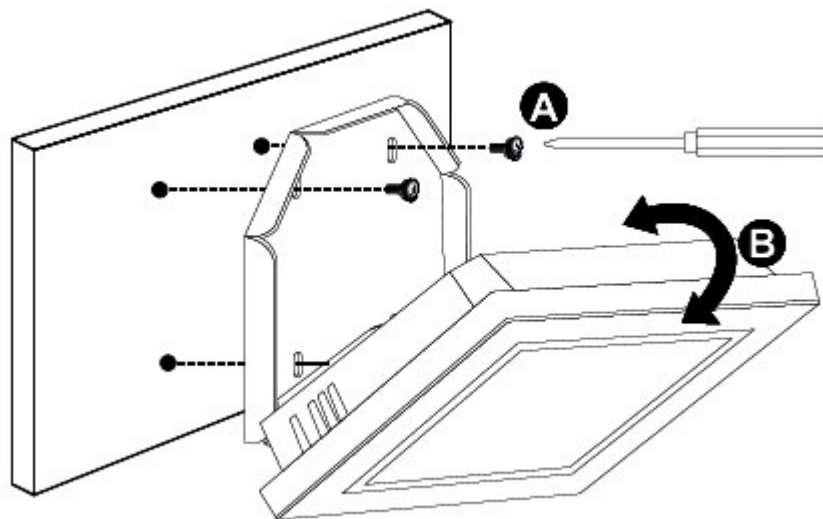
Figure 3-26: Secure V-Stand to Mounting Area

3.12 Powering On the System

![WARNING icon] **WARNING:**

To reduce potential safety issues, only the power adapter provided with the product, a replacement power adapter provided by IEI, or a power adapter purchased as an accessory from IEI should be used with the product.

To power on the system, follow the steps below:

Step 1: Connect the power cord to the power adapter. Connect the other end of the power cord to a power source.

Step 2: Connect the power adapter to the power connector of the AFL3-08A-BT. The power LED turns on in amber.

Step 3: Locate the power button on the I/O panel.

Step 4: Hold down the power button until the power LED on the front panel turns to green.
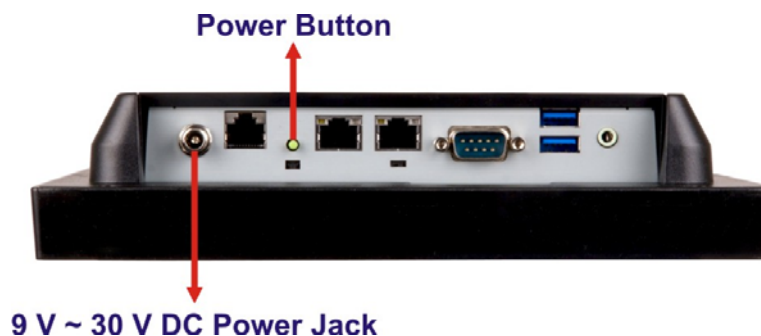
Power LED

Figure 3-27: Powering On the System

3.13 Reset the System

The reset button enables user to reboot the system when the system is turned on. The reset button location is shown in **Figure 3-28**. Press the reset button to reboot the system.
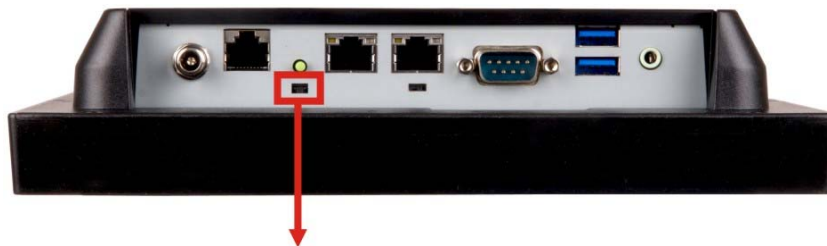
Reset Button

Figure 3-28: Reset Button Location

3.14 OS Installation

![WARNING icon] **WARNING:**

Before installing the operating system, the user must enter the **Boot** BIOS menu first and choose which operating system will be installed. Otherwise the USB 3.0 ports cannot be used for OS installation. Please refer to **Figure 3-29** and **Section 4.6**.
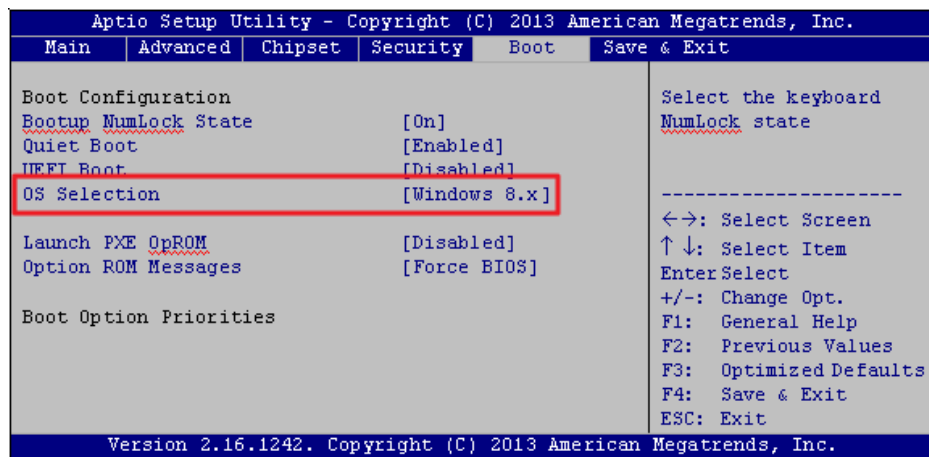
Figure 3-29: BIOS Option – OS Selection

3.15 Software Installation

![NOTE icon] **NOTE:**

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

All the drivers for the AFL3-08A-BT are on the utility CD that came with the system. The utility CD contains drivers for Windows 7 and Windows 8 operating systems. Please select the corresponding drivers for the system.

The following drivers can be installed on the **Windows 7** operating system:

- Chipset
- I/O driver
- Graphics
- TXE
- USB 3.0
- LAN
- Audio
- Wi-Fi
- Keypad AP

The following drivers can be installed on the **Windows 8** operating system:

- Chipset
- Graphics
- LAN
- Audio
- Wi-Fi
- Keypad AP

3.15.1 Keypad AP

Keypad AP is an OSD control tool developed by IEI. After the installation, the Keypad AP can be accessed by clicking the [icon] icon on the notification area. It allows users to control screen brightness and audio volume.

Figure 3-30: Keypad AP

Chapter

4

BIOS Setup

4.1 Introduction

A licensed copy of the BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration.   This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

![NOTE icon] **NOTE:**

> Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

4.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DEL** key as soon as the system is turned on or
2. Press the **DEL** key when the "**Press DEL to enter SETUP**" message appears on the screen.

If the message disappears before the **DEL** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press ESC to quit. Navigation keys are shown in the following table.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below

Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values.
F3 key	Load optimized defaults
F4 key	Save changes and Exit BIOS
Esc key	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

Table 6-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults.

4.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.

■ Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

```
         Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
  Main    Advanced   Chipset  Security    Boot    Save & Exit

 BIOS Information                                        Set the Date. Use Tab to
 BIOS Vendor                   American Megatrends       switch between Data
 Core Version                  5.009                     elements.
 Compliency                    UEFI 2.3; PI 1.2
 Project Version               H788AM15.ROM
 Build Date and Time           12/24/2015 15:49:07

 CPU Configuration
 Microcode Patch               829
 BayTrial SoC                  C0 Stepping

 Memory Information                                      ---------------------
 Total Memory                  2048 MB (LPDDR3)          ←→: Select Screen
                                                         ↑ ↓: Select Item
 TXE Information                                         EnterSelect
 Sec RC Version                00.05.00.00               +/-: Change Opt.
 TXE FW Version                01.00.02.1060             F1:  General Help
                                                         F2:  Previous Values
 System Date                   [Wed 02/11/2015]          F3:  Optimized Defaults
 System Time                   [16:49:37]                F4:  Save & Exit
                                                         ESC: Exit
 Access Level                  Administrator
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 1: Main

➔ **BIOS Information**

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

■ **BIOS Vendor:** Installed BIOS vendor
■ **Core Version:** Current BIOS version

- **Compliency:** Current compliant version
- **Project Version:** the board version
- **Build Date:** Date the current BIOS version was made

➔ **CPU Information**

The **CPU Information** lists a brief summary of the CPU. The fields in **CPU Information** cannot be changed. The items shown in the system overview include:

- **Microcode Patch:** Installed microcode patch
- **BayTrail SoC:** CPU stepping level

➔ **Memory Information**

The Memory Information lists the total memory of the system.

➔ **TXE Information**

The **TXE Information** lists a brief summary of Intel® Trusted Execution Engine (TXE). The fields in **TXE Information** cannot be changed. The items shown in the system overview include:

- **Sec RC Version:** Current sec reference code version
- **TXE FW Version:** Current Intel® TXE firmware version

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

4.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

![warning icon] **WARNING:**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Main    Advanced   Chipset   Security    Boot    Save & Exit

 > ACPI Settings                                        System ACPI Parameters.
 > F81866 Super IO Configuration
 > F81866 H/M Monitor
 > RTC Wake Settings
 > Serial Port Console Redirection                      ---------------------
 > iEi Feature
 > CPU Configuration                                    ←→: Select Screen
 > IDE Configuration                                    ↑↓: Select Item
 > USB Configuration                                    Enter Select
                                                        +/-: Change Opt.
                                                        F1:  General Help
                                                        F2:  Previous Values
                                                        F3:  Optimized Defaults
                                                        F4:  Save & Exit
                                                        ESC: Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

4.3.1 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
            Advanced

ACPI Settings                                          Select the highest ACPI
                                                       sleep state the system
ACPI Sleep State                [S3 (Suspend to RAM)]  will enter, when the
                                                       SUSPEND button is
                                                       pressed.

                                                       ----------------------

                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       Enter Select
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 3: ACPI Settings

➔ **ACPI Sleep State [S3 (Suspend to RAM)]**

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔ **S3 (Suspend to RAM)** DEFAULT The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

4.3.2 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 4**) to set or change the configurations for the serial ports.

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Advanced

F81866 Super IO Configuration                          Set Parameters of Serial
                                                       Port 1 (COMA)
Super IO Chip                     F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration                          --------------------
> Serial Port 3 Configuration                          ←→: Select Screen
> Serial Port 4 Configuration                          ↑ ↓: Select Item
> Serial Port 5 Configuration                          EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 4: F81866 Super IO Configuration

4.3.2.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 5**) to configure the serial port n.

```
           Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Advanced

Serial Port 1 Configuration                            Enable or Disable Serial
                                                       Port (COM)
Serial Port                    [Enabled]
Device Settings                IO=3F8h; IRQ=4
                                                       --------------------
Change Settings                [Auto]                  ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       EnterSelect
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 5: Serial Port n Configuration Menu

4.3.2.1.1 Serial Port 1 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   DEFAULT   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔	**Auto**	DEFAULT	The serial port IO port address and interrupt address are automatically detected.
➔	**IO=3F8h; IRQ=4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ4
➔	**IO=3F8h; IRQ=3, 4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔	**IO=2F8h; IRQ=3, 4**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔	**IO=3E8h; IRQ=3, 4**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4
➔	**IO=2E8h; IRQ=3, 4**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4

4.3.2.1.2 Serial Port 2 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   D_{EFAULT}   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**   D_{EFAULT}   The serial port IO port address and interrupt address are automatically detected.

➔ **IO=2F8h; IRQ=3**   Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

➔ **IO=3F8h;**   Serial Port I/O port address is 3F8h and the
    IRQ=3, 4   interrupt address is IRQ3, 4

➔ **IO=2F8h;**   Serial Port I/O port address is 2F8h and the
    IRQ=3, 4   interrupt address is IRQ3, 4

➔ **IO=3E8h;**   Serial Port I/O port address is 3E8h and the
    IRQ=3, 4   interrupt address is IRQ3, 4

➔ **IO=2E8h;**   Serial Port I/O port address is 2E8h and the
    IRQ=3, 4   interrupt address is IRQ3, 4

4.3.2.1.3 Serial Port 3 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   DEFAULT   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**   DEFAULT   The serial port IO port address and interrupt address are automatically detected.

➔ **IO=3E8h; IRQ=10**   Serial Port I/O port address is 3E8h and the interrupt address is IRQ10

➔ **IO=3F8h;**   Serial Port I/O port address is 3F8h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2F8h;**   Serial Port I/O port address is 2F8h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=3E8h;**   Serial Port I/O port address is 3E8h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2E8h;**   Serial Port I/O port address is 2E8h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2F0h;**   Serial Port I/O port address is 2F0h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2E0h;**   Serial Port I/O port address is 2E0h and the
   IRQ=10, 11   interrupt address is IRQ10, 11

4.3.2.1.4 Serial Port 4 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   DEFAULT   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**   DEFAULT   The serial port IO port address and interrupt address are automatically detected.

➔ **IO=2E8h; IRQ=11**   Serial Port I/O port address is 2E8h and the interrupt address is IRQ11

➔ **IO=3F8h; IRQ=10, 11**   Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11

➔ **IO=2F8h; IRQ=10, 11**   Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11

➔ **IO=3E8h; IRQ=10, 11**   Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11

➔ **IO=2E8h; IRQ=10, 11**   Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11

➔ **IO=2F0h; IRQ=10, 11**   Serial Port I/O port address is 2F0h and the interrupt address is IRQ10, 11

➔ **IO=2E0h; IRQ=10, 11**   Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

4.3.2.1.5 Serial Port 5 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   DEFAULT   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**   DEFAULT   The serial port IO port address and interrupt address are automatically detected.

➔ **IO=2F0h; IRQ=10**   Serial Port I/O port address is 2F0h and the interrupt address is IRQ10

➔ **IO=3F8h;**   Serial Port I/O port address is 3F8h and the
IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2F8h;**   Serial Port I/O port address is 2F8h and the
IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=3E8h;**   Serial Port I/O port address is 3E8h and the
IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2E8h;**   Serial Port I/O port address is 2E8h and the
IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2F0h;**   Serial Port I/O port address is 2F0h and the
IRQ=10, 11   interrupt address is IRQ10, 11

➔ **IO=2E0h;**   Serial Port I/O port address is 2E0h and the
IRQ=10, 11   interrupt address is IRQ10, 11

4.3.3 F81866 H/W Monitor

The F81866 H/W Monitor menu (**BIOS Menu 6**) shows the operating temperatures and voltages.

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
            Advanced

PC Health Status

CPU temperature                   :+41 ℃
System temperature                :+38 ℃
                                                      --------------------
CPU_CORE                          :+0.816 V           ←→: Select Screen
+5V                               :+5.087 V           ↑ ↓: Select Item
+12V                              :+12.056 V          EnterSelect
+DDR                              :+1.364 V           +/-: Change Opt.
+5VSB                             :+4.992 V           F1:  General Help
+3.3V                             :+3.328 V           F2:  Previous Values
+3.3VSB                           :+3.344 V           F3:  Optimized Defaults
                                                      F4:  Save & Exit
                                                      ESC: Exit
         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
BIOS Menu 6: F81866 H/W Monitor

➔ **Hardware Health Status**

The following system parameters and values are shown. The system parameters that are monitored are:

- CPU Temperature
- System Temperature
- Voltages:
  - CPU_CORE
  - +5V
  - +12V
  - +DDR
  - +5VSB
  - +3.3V
  - +3.3VSB

4.3.4 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 7**) configures RTC wake event.

```
          Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
             Advanced

Wake system with Fixed Time      [Disabled]              Enable or disable System
                                                         wake on alarm event. When
                                                         enabled, System will
                                                         wake on the
                                                         dat::hr::min::sec
                                                         specified

                                                         ----------------------

                                                         ←→: Select Screen
                                                         ↑ ↓: Select Item
                                                         EnterSelect
                                                         F1   General Help
                                                         F2   Previous Values
                                                         F3   Optimized Defaults
                                                         F4   Save
                                                         ESC  Exit
          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
BIOS Menu 7: RTC Wake Settings

➔ **Wake System with Fixed Time [Disabled]**

Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

➔ **Disabled**   DEFAULT   The real time clock (RTC) cannot generate a wake event

➔ **Enabled**   If selected, the following appears with values that can be selected:

*Wake up every day

*Wake up date

*Wake up hour

*Wake up minute

*Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

4.3.5 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 8**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

```
Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
    Advanced

COM1                                          Console Redirection
Console Redirection           [Disabled]      Enable or Disable.
> Console Redirection Settings

COM2                                          --------------------
Console Redirection           [Disabled]      ←→: Select Screen
> Console Redirection Settings                ↑↓: Select Item
                                              EnterSelect
COM3                                          +/-: Change Opt.
Console Redirection           [Disabled]      F1:  General Help
> Console Redirection Settings                F2:  Previous Values
                                              F3:  Optimized Defaults
                                              F4:  Save & Exit
                                              ESC: Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
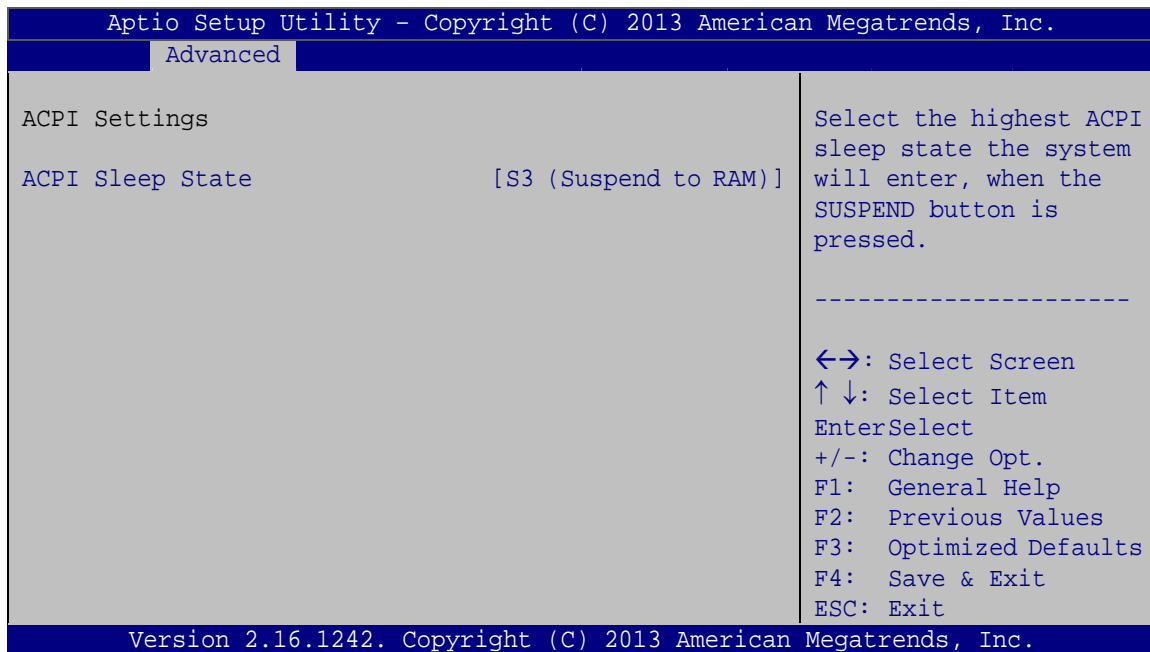
BIOS Menu 8: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

Use **Console Redirection** option to enable or disable the console redirection function.

➔ **Disabled** **DEFAULT** Disabled the console redirection function

➔ **Enabled** Enabled the console redirection function

4.3.6 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 9**) to configure One Key Recovery function.

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
          Advanced

 iEi Feature                                          Auto Recovery Function
                                                      Reboot and recover
 Auto Recovery Function           [Disabled]          system automatically
                                                      within 10 min, when OS
                                                      crashes. Please install
                                                      Auto Recovery API
                                                      service before enabling
                                                      this function.
                                                      --------------------
                                                      ➔←: Select Screen
                                                      ↑ ↓: Select Item
                                                      Enter: Select
                                                      +/-:  Change Opt.
                                                      F1:   General Help
                                                      F2:   Previous Values
                                                      F3:   Optimized Defaults
                                                      F4:   Save & Exit
                                                      ESC: Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
BIOS Menu 9: iEi Feature

➔ **Auto Recovery Function [Disabled]**

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

➔ **Disabled** **DEFAULT** Auto recovery function disabled

➔ **Enabled** Auto recovery function enabled

4.3.7 CPU Configuration

Use the **CPU Configuration** (**BIOS Menu 10**) to view detailed CPU specifications and configure the CPU.

```
        Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
         Advanced

 CPU Configuration                                        When enabled, a VMM can
                                                          utilize the additional
 Intel(R) Celeron(R) CPU J1900 @ 1.99GHz                 hardware capabilities
 CPU Signature                    30678                   provided by Vanderpool
 Microcode Patch                  829                     Technology
 Max CPU Speed                    1990 MHz
 Min CPU Speed                    1334 MHz
 Processor Cores                  4
 Intel HT Technology              Not Supported           ---------------------
 Intel VT-x Technology            Supported

 L1 Date Cache                    24 kB x 4               ←→: Select Screen
 L1 Code Cache                    32 kB x 4               ↑ ↓: Select Item
 L2 Cache                         1024 kB x 2             Enter Select
 L3 Cache                         Not Present            +/-:  Change Opt.
 64-bit                           Supported              F1:   General Help
                                                         F2:   Previous Values
 Intel Virtualization Technology  [Disabled]             F3:   Optimized Defaults
 EIST                             [Enabled]              F4:   Save & Exit
                                                         ESC:  Exit

        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 10: CPU Configuration

The CPU Configuration menu lists the following CPU details:

- CPU Signature: Lists the CPU signature value.
- Microcode Patch: Lists the microcode patch being used.
- Max CPU Speed: Lists the maximum CPU processing speed.
- Min CPU Speed: Lists the minimum CPU processing speed.
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.
- Intel VT-x Technology: Indicates if Intel VT-x Technology is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.
- L1 Code Cache: Lists the amount of code storage space on the L1 cache.

- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.
- 64-bit: Indicates if 64-bit OS is supported by the CPU.

➔ **Intel Virtualization Technology [Disabled]**

Use the **Intel Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

➔ **Disabled** DEFAULT Disables Intel Virtualization Technology.

➔ **Enabled** Enables Intel Virtualization Technology.

➔ **EIST [Enabled]**

Use the **EIST** option to enable or disable Enhanced Intel SpeedStep® Techonology (EIST).

➔ **Disabled** Disables Enhanced Intel SpeedStep® Techonology.

➔ **Enabled** DEFAULT Enables Enhanced Intel SpeedStep® Techonology.

4.3.8 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 11**) to change and/or set the configuration of the SATA devices installed in the system.

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
           Advanced

    IDE Configuration                                    Enable/Disable Serial
                                                         ATA
    Serial-ATA(SATA)               [Enabled]
    SATA Mode                      [IDE mode]            --------------------
                                                         ←→: Select Screen
    SATA1                                                ↑ ↓: Select Item
    Not Present                                          EnterSelect
                                                         +/-:  Change Opt.
    SATA2                                                F1   General Help
    Not Present                                          F2   Previous Values
                                                         F3   Optimized Defaults
                                                         F4   Save & Exit
                                                         ESC  Exit

           Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 11: IDE Configuration

➔ **Serial-ATA (SATA) [Enabled]**

Use the **Serial-ATA (SATA)** option to enable or disable the serial ATA controller.

➔ **Enabled**   DEFAULT   Enables the on-board SATA controller.

➔ **Disabled**   Disables the on-board SATA controller.

➔ **SATA Mode [IDE Mode]**

Use the **SATA Mode** option to configure SATA devices as normal IDE devices.

➔ **IDE Mode**   DEFAULT   Configures SATA devices as normal IDE device.

➔ **AHCI Mode**   Configures SATA devices as AHCI device.

4.3.9 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 12**) to read USB configuration information and configure the USB settings.

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
          Advanced

USB Configuration                                    Enables Legacy USB
                                                     support. AUTO option
USB Devices:                                         disables legacy support
        1 Keyboard, 2 Hubs                           if no USB devices are
                                                     connected. DISABLE
Legacy USB Support               [Enabled]           option will keep USB
                                                     devices available only
                                                     for EFI applications.

                                                     ---------------------
                                                     ←→: Select Screen
                                                     ↑↓: Select Item
                                                     Enter Select
                                                     +/-: Change Opt.
                                                     F1:  General Help
                                                     F2:  Previous Values
                                                     F3:  Optimized Defaults
                                                     F4:  Save & Exit
                                                     ESC: Exit
         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
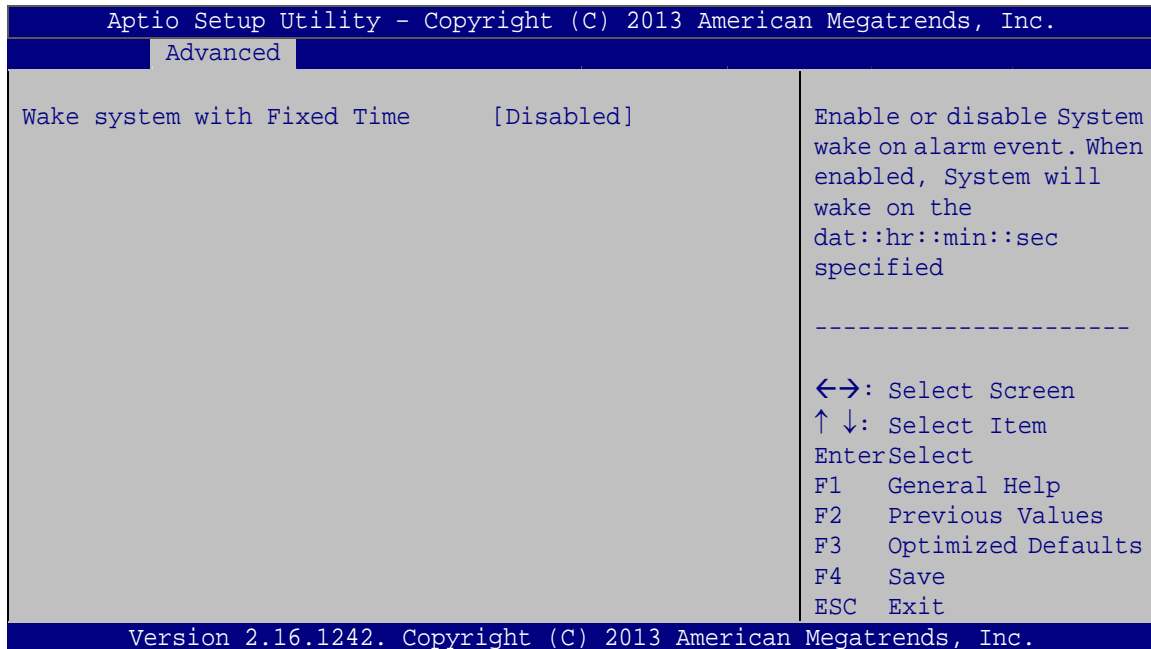   **BIOS Menu 12: USB Configuration**

➔ **USB Devices**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Enabled**   **DEFAULT**   Legacy USB support enabled

è   **Disabled**   Legacy USB support disabled

è   **Auto**   Legacy USB support disabled if no USB devices are
                         connected

4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 13**) to access the North Bridge, South Bridge, and
Integrated Graphics configuration menus.

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset
BIOS menu may cause the system to malfunction.
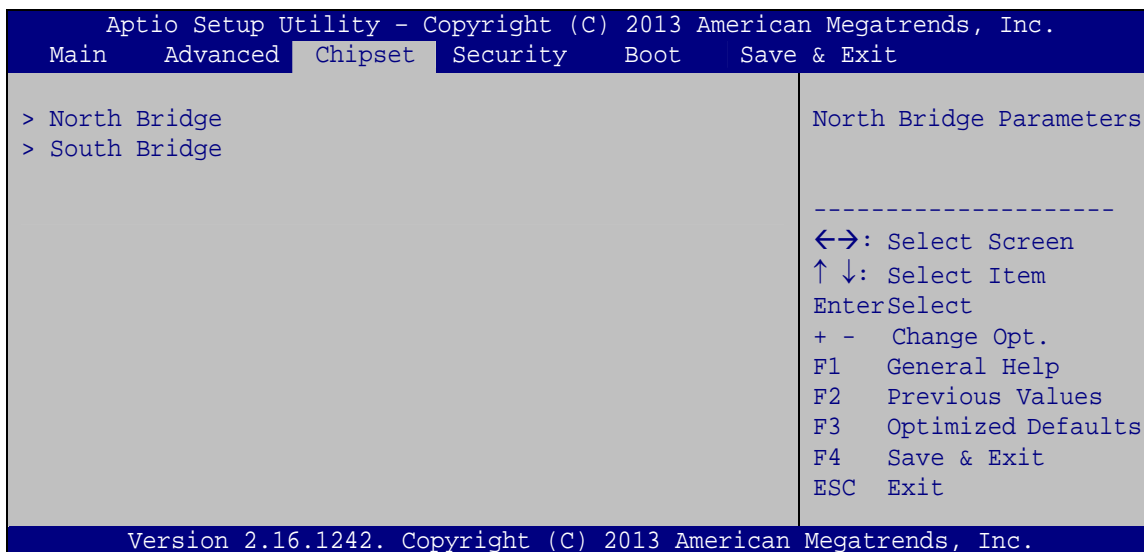
```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
    Main    Advanced  Chipset   Security    Boot   Save & Exit

  > North Bridge                                   North Bridge Parameters
  > South Bridge


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

        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
BIOS Menu 13: Chipset

4.4.1 North Bridge Configuration

Use the **North Bridge** menu (**BIOS Menu 14**) to configure the north bridge chipset.

```
        Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                    Chipset

> Intel IGD Configuration                          Config Intel IGD
                                                   Settings
Memory Information

Total Memory                    2048 MB (LPDDR3)   --------------------
                                                   ←→: Select Screen
On Board Memory                 2048 MB (LPDDR3)   ↑ ↓: Select Item
                                                   Enter Select
                                                   + -  Change Opt.
                                                   F1   General Help
                                                   F2   Previous Values
                                                   F3   Optimized Defaults
                                                   F4   Save & Exit
                                                   ESC  Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 14: North Bridge Configuration

4.4.1.1 Internal IGD Configuration

Use the Internal IGD Configuration (**BIOS Menu 15**) menu to set the integrated graphics.

```
        Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                    Chipset

Internal IGD Configuration                         Select DVMT 5.0
                                                   Pre-Allocated (Fixed)
DVMT Pre-Allocated            [256MB]              Graphics Memory size
DVMT Total Gfx Mem            [Max]                used by the Internal
                                                   Graphics Device.

                                                   --------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   Enter Select
                                                   + -  Change Opt.
                                                   F1   General Help
                                                   F2   Previous Values
                                                   F3   Optimized Defaults
                                                   F4   Save & Exit
                                                   ESC  Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 15: Internal IGD Configuration

➔ **DVMT Pre-Allocated [256M]**

Use the **DVMT Pre-Allocated** option to specify the amount of system memory that can be used by the internal graphics device.

➔ **64M** — 64 MB of memory used by internal graphics device

➔ **128M** — 128 MB of memory used by internal graphics device

➔ **256M** DEFAULT 256 MB of memory used by internal graphics device

➔ **512M** — 512 MB of memory used by internal graphics device

➔ **DVMT Total Gfx Mem [Max]**

Use the **DVMT Total Gfx Mem** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128MB
- 256MB
- Max **Default**

4.4.2 South Bridge Configuration

Use the **South Bridge** menu (**BIOS Menu 16**) to configure the south bridge chipset.

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
                     Chipset

Auto Power Button Status        [Disabled (ATX)]      Select AC power state
                                                      when power is re-applied
Restore AC Power Loss           [Last State]          after a power failure.

> PCI Express Configuration

Audio Configuration                                   --------------------
Audio Controller                [Enabled]             ←→: Select Screen
                                                      ↑ ↓: Select Item
                                                      Enter Select
                                                      + –   Change Opt.
                                                      F1   General Help
                                                      F2   Previous Values
                                                      F3   Optimized Defaults
                                                      F4   Save & Exit
                                                      ESC  Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 16: South Bridge Configuration

➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**   The system remains turned off

➔ **Power On**   The system turns on

➔ **Last State**   DEFAULT   The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Audio Controller [Enabled]**

Use the **Audio Controller** BIOS option to enable or disable the High Definition Audio controller.

➔ **Disabled**   The High Definition Audio controller is disabled.

➔   **Enabled**   **DEFAULT**   The High Definition Audio controller is enabled.

4.4.2.1 PCI Express Configuration

Use the **PCI Express Configuration** submenu (**BIOS Menu 17**) to configure the PCI Express slots.

```
         Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
                  Chipset

 PCI Express Configuration                                Configure PCIe Port
 PCI-E Mini Card (Full Size)                              Speed
   Speed                           [Auto]

 PCI-E Mini Card (Half Size)                              --------------------
   Speed                           [Auto]                 ←→: Select Screen
                                                          ↑ ↓: Select Item
                                                          Enter Select
                                                          + -  Change Opt.
                                                          F1   General Help
                                                          F2   Previous Values
                                                          F3   Optimized Defaults
                                                          F4   Save & Exit
                                                          ESC  Exit
         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
BIOS Menu 17: PCI Express Configuration

➔   **Speed [Auto]**

Use the **Speed** option to configure the PCIe Mini card slot speed.

- ▪   Auto   **DEFAULT**
- ▪   Gen 2
- ▪   Gen 1

4.5 Security

Use the **Security** menu (**BIOS Menu 18**) to set system and user passwords.

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main    Advanced   Chipset   Security    Boot    Save & Exit

 Password Description                                    Set Administrator
                                                         Password
 If ONLY the Administrator's password is set,
 then this only limits access to Setup and is
 only asked for when entering Setup.
 If ONLY the User's password is set, then this
 is a power on password and must be entered to
 boot or enter Setup. In Setup the User will             --------------------
 have Administrator rights.
 The password must be                                    ←→: Select Screen
 In the following range:                                 ↑↓: Select Item
 Maximum length                    3                     Enter Select
 Minimum length                   20                     +/-: Change Opt.
                                                         F1:  General Help
                                                         F2:  Previous Values
 Administrator Password                                  F3:  Optimized Defaults
 User Password                                           F4:  Save & Exit
                                                         ESC: Exit

        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 18: Security

➔ **Administrator Password**

Use the **Administrator Password** field to set or change an administrator password.

➔ **User Password**

Use the **User Password** field to set or change a user password.

4.6 Boot

Use the **Boot** menu (**BIOS Menu 19**) to configure system boot options.

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Main    Advanced   Chipset   Security    Boot    Save & Exit

 Boot Configuration                                    Select the keyboard
 Bootup NumLock State            [On]                  NumLock state
 Quiet Boot                      [Enabled]
 UEFI Boot                       [Disabled]
 OS Selection                    [Windows 8.X]         --------------------
                                                       ←→: Select Screen
 Launch PXE OpROM                [Disabled]            ↑ ↓: Select Item
 Option ROM Messages             [Force BIOS]          Enter Select
                                                       +/-: Change Opt.
 Boot Option Priorities                                F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
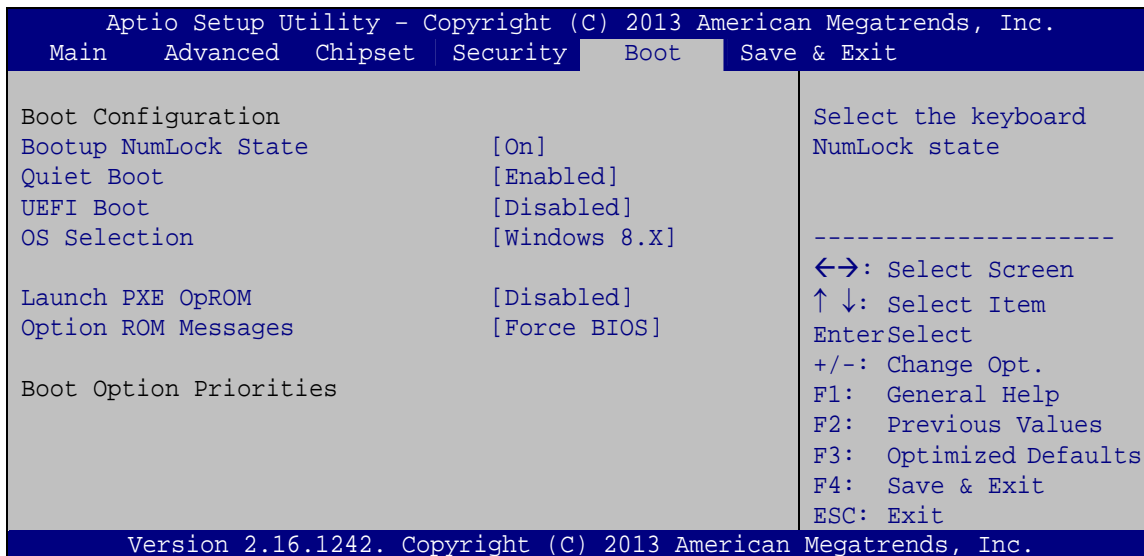
BIOS Menu 19: Boot

➔   **Bootup NumLock State [On]**

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

➔   **On**   DEFAULT   Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔   **Off**   Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**   Normal POST messages displayed

➔ **Enabled**   DEFAULT   OEM Logo displayed instead of POST messages

➔ **UEFI Boot [Disabled]**

Use the **UEFI Boot** BIOS option to enable or disable UEFI boot.

➔ **Enabled**   Enable UEFI boot if the 1st boot device is a GPT HDD.

➔ **Disabled**   DEFAULT   Disable UEFI boot.

➔ **OS Selection [Windows 8.x]**

Use the **OS Selection** BIOS option to select an operating system (OS) before installing OS.

➔ **Windows 8.x**   DEFAULT   The system will be installed with Windows 8.x operating system.

➔ **Android**   The system will be installed with Android operating system.

➔ **Windows 7**   The system will be installed with Windows 7 operating system.

> **WARNING:**
>
> Before installing the operating system, the user must enter the **Boot** BIOS menu and choose which operating system will be installed. Otherwise the USB 3.0 ports cannot be used for OS installation.

➔ **Launch PXE OpROM [Disabled]**

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

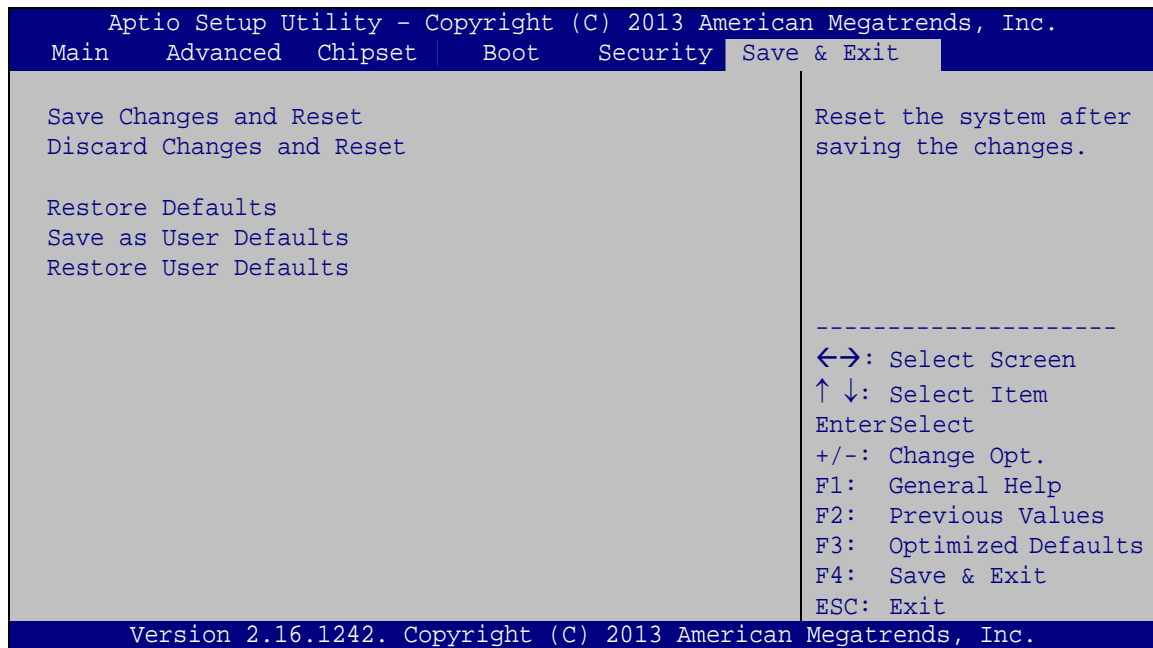| ➔	**Disabled**	DEFAULT	Ignore all PXE Option ROMs
➔	**Enabled**		Load PXE Option ROMs

➔ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

➔	**Force BIOS**	DEFAULT	Sets display mode to force BIOS.
➔	**Keep Current**		Sets display mode to current.

4.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
         Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Main    Advanced   Chipset    Boot    Security  Save & Exit


   Save Changes and Reset                              Reset the system after
   Discard Changes and Reset                           saving the changes.

   Restore Defaults
   Save as User Defaults
   Restore User Defaults


                                                       --------------------
                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       Enter Select
                                                       +/-: Change Opt.
                                                       F1:  General Help
                                                       F2:  Previous Values
                                                       F3:  Optimized Defaults
                                                       F4:  Save & Exit
                                                       ESC: Exit
         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 20: Save & Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

➔ **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

5

System Maintenance

5.1 System Maintenance Introduction

If the components of the AFL3-08A-BT fail they must be replaced. Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL3-08A-BT are described below.

5.2 Anti-static Precautions

⚠️ **WARNING:**

Failure to take ESD precautions during the maintenance of the AFL3-08A-BT may result in permanent damage to the AFL3-08A-BT and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL3-08A-BT. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL3-08A-BT is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ▪ **Wear an anti-static wristband**: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ▪ **Self-grounding**: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ▪ **Use an anti-static pad**: - When configuring the AFL3-08A-BT, place it on an anti-static pad. This reduces the possibility of ESD damaging the AFL3-08A-BT.
- ▪ **Only handle the edges of the PCB**: - When handling the PCB, hold the PCB by the edges.

5.3 Turn off the Power

![WARNING icon] **WARNING:**

Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

Before any maintenance procedures are carried out on the system, make sure the system is turned off.

5.4 WLAN Card Replacement

The AFL3-08A-BT has one WLAN card slot. To replace the WLAN card, follow the instructions below.

Step 1: Follow all anti-static procedures. See **Section 5.2**.

Step 2: Turn off the power. See **Section 5.3**.

Step 3: Remove the back cover. See **Section 3.4** above.

Step 4: Locate the WLAN module (**Figure 5-1**).
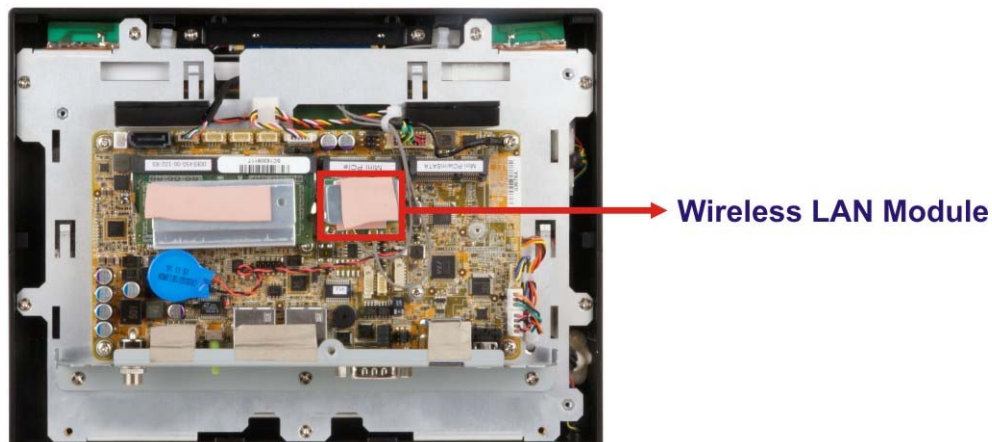
Figure 5-1: WLAN Module Location

Step 5: Disconnect the antenna cables on the WLAN module and remove the retention screw to release the WLAN card (**Figure 5-2**).
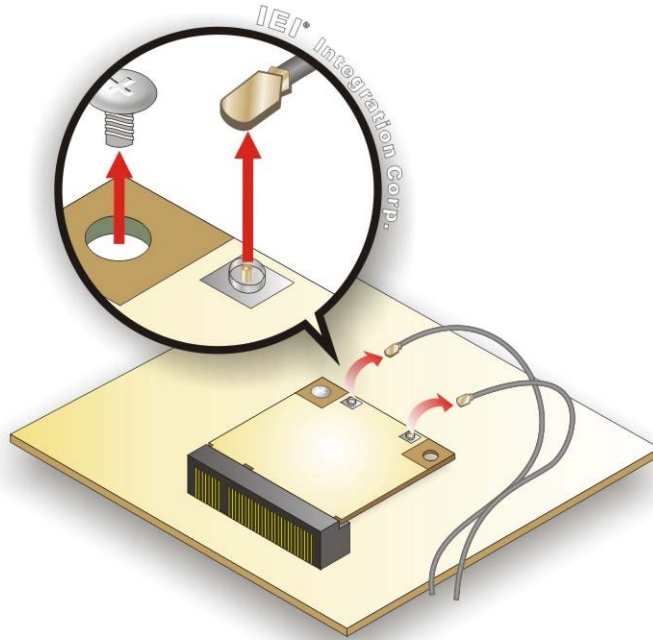
Figure 5-2: Releasing the WLAN Module

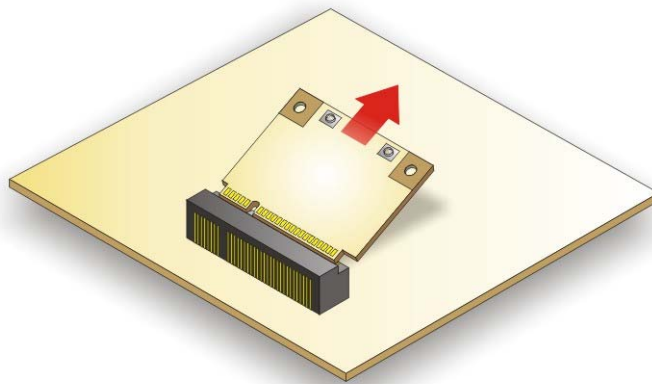**Step 6:** Grasp the WLAN module by the edges and carefully pull it out of the socket (**Figure 5-3**).

Figure 5-3: Removing the WLAN Module

Step 7: Install a new WLAN module by inserting the module into the slot at an angle.

Step 8: Push the WLAN module down and secure it with the previously removed retention screw.

Step 9: Connect the antenna cables.

Step 10: Replace the back cover and secure it using the previously removed retention screws.

5.5 Reinstalling the Cover

⚠️ **WARNING:**

Failing to reinstall the cover may result in permanent damage to the system. Please make sure all coverings are properly installed.

When maintenance procedures are complete, please make sure the back cover is replaced.

Chapter

6

Interface Connectors

6.1 Peripheral Interface Connectors

The AFL3-08A-BT panel PC motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 6-1** and **Figure 6-2**. The Pin 1 locations of the on-board connectors are also indicated in the diagram below. The connector pinouts for these connectors are listed in the following sections.
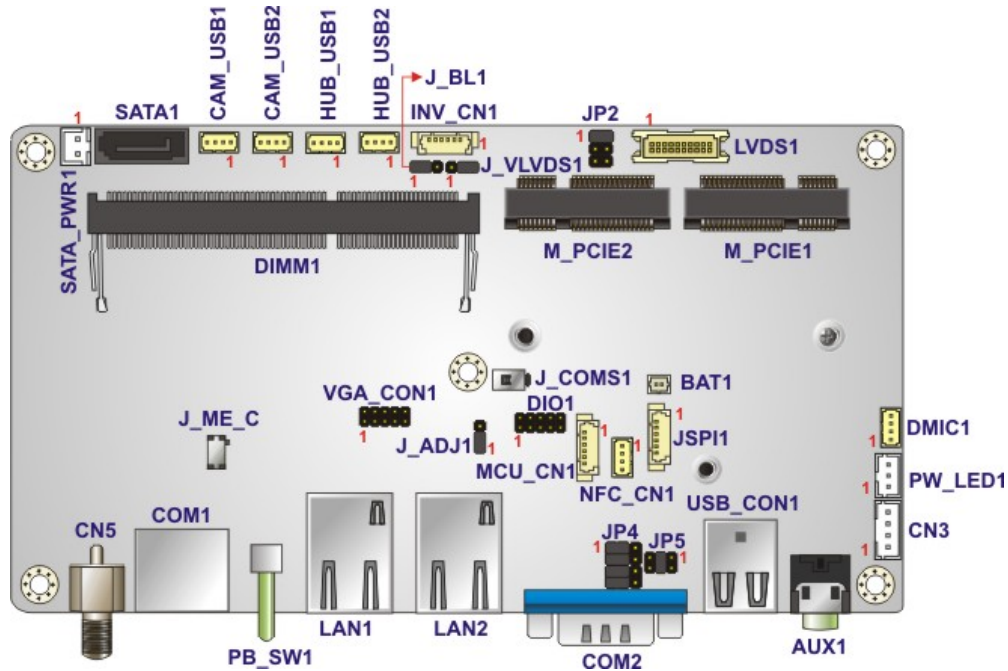

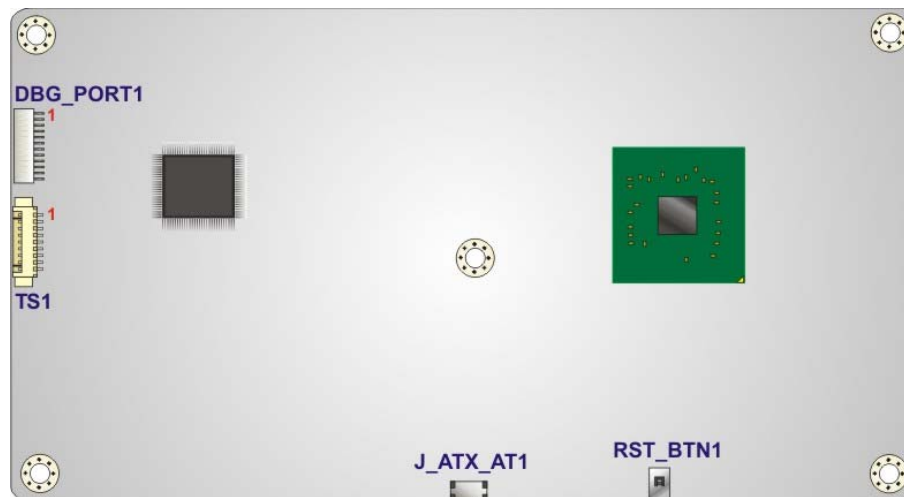**Figure 6-1: Main Board Layout Diagram (Front Side)**

Figure 6-2: Main Board Layout Diagram (Solder Side)

6.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the AFL3MB2-BT. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Battery connector	2-pin wafer	BAT1
Digital I/O connector	10-pin header	DIO1
Inverter connector	6-pin wafer	INV_CN1
LVDS connector	20-pin crimp	LVDS1
MCU connector	6-pin wafer	MCU_CN1
Microphone connector	4-pin wafer	DMIC1
PCIe Mini card slot	Full-size PCIe Mini slot	M_PCIE1
PCIe Mini card slot	Half-size PCIe Mini slot	M_PCIE2
Power LED connector	3-pin wafer	PW_LED1
SATA connector	7-pin connector	SATA1
SATA power connector	2-pin wafer	SATA_PWR1
Speaker connector	4-pin wafer	CN3
SPI Flash connector	6-pin wafer	JSPI1
TTL serial connector (COM4)	4-pin wafer	NFC_CN1
USB 2.0 connector	4-pin wafer	HUB_USB1
USB 2.0 connector	4-pin wafer	HUB_USB2
USB connector	4-pin wafer	CAM_USB2
VGA connector	10-pin header	VGA_CON1
Webcam connector	4-pin wafer	CAM_USB1

Table 6-1: Peripheral Interface Connectors

6.2.1 Battery Connector (BAT1)

PIN NO.	DESCRIPTION
1	+3V
2	GND

Table 6-2: Battery Connector (BAT1) Pinouts

CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

Leaving a battery in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.

A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

6.2.2 Digital I/O Connector (DIO1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC +5V
3	DGPO3	4	DGPO2
5	DGPO1	6	DGPO0
7	DGPI3	8	DGPI2
9	DGPI1	10	DGPI0
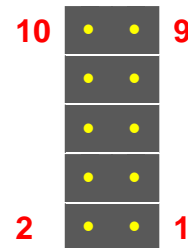
Table 6-3: Digital I/O Connector (DIO1) Pinouts

6.2.3 Inverter Connector (INV_CN1)

PIN NO.	DESCRIPTION
1	+12V
2	+12V
3	BLON
4	Brightness
5	GND
6	GND

Table 6-4: Inverter Connector (INV_CN1) Pinouts

6.2.4 LVDS Connector (LVDS1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDSA0+	4	LVDSA0-
5	LVDSA1+	6	LVDSA1-
7	LVDSA2+	8	LVDSA2-
9	LVDSACLK+	10	LVDSACLK-
11	LVDSA3+	12	LVDSA3-
13	GND	14	GND
15	NC	16	NC
17	VCC	18	VCC
19	VCC	20	VCC

Table 6-5: LVDS Connector (LVDS1) Pinouts

6.2.5 MCU Connector (MCU_CN1)

PIN NO.	DESCRIPTION
1	MCLR
2	+5V
3	GND
4	ICSPCLK
5	ICSPDAT
6	NC

Table 6-6: MCU Connector (MCU_CN1) Pinouts

6.2.6 Microphone Connector (DMIC1)

PIN NO.	DESCRIPTION
1	DMIC_CLK
2	DMIC_DATA
3	+3.3V
4	GND

Table 6-7: Microphone Connector (DMIC1) Pinouts

6.2.7 PCIe Mini Connector, Full-Size (M_PCIE1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	WAKE#	2	VCC3
3	NC	4	GND
5	NC	6	VCC1.5
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK0-	12	NC
13	REFCLK0+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PERST#

23	PERn0	24	VCC3_AUX
25	PERp0	26	GND
27	GND	28	VCC1.5
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_DATA1-
37	GND	38	USB_DATA1+
39	VCC3_AUX	40	GND
41	VCC3_AUX	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	VCC1.5
49	NC	50	GND
51	Reserved	52	VCC3

Table 6-8: PCIe Mini Connector (M_PCIE1) Pinouts

6.2.8 PCIe Mini Connector, Half-Size (M_PCIE2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	WAKE#	2	VCC3
3	Reserved	4	GND
5	Reserved	6	VCC1.5
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK1-	12	NC
13	REFCLK1+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PERST#
23	PERn2	24	VCC3_AUX
25	PERp2	26	GND

27	GND	28	VCC1.5
29	GND	30	SMB_CLK
31	PETn2	32	SMB_DATA
33	PETp2	34	GND
35	GND	36	NC
37	GND	38	NC
39	VCC3_AUX	40	GND
41	VCC3_AUX	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	VCC1.5
49	NC	50	GND
51	Reserved	52	VCC3

Table 6-9: PCIe Mini Connector (M_PCIE2) Pinouts

6.2.9 Power LED Connector (PW_LED1)

PIN NO.	DESCRIPTION
1	PW_LED +5V
2	GND
3	SUS PW LED +5V

Table 6-10: Power LED Connector (PW_LED1) Pinouts

6.2.10 SATA Connector (SATA1)

PIN NO.	DESCRIPTION
1	GND
2	STXP_0
3	STXN_0
4	GND
5	SRXN_0
6	SRXP_0
7	GND

Table 6-11: SATA Connector (SATA1) Pinouts

6.2.11 SATA Power Connector (SATA_PWR1)

PIN NO.	DESCRIPTION
1	+5V
2	GND

Table 6-12: SATA Power Connector (SATA_PWR1) Pinouts

6.2.12 Speaker Connector (CN3)

PIN NO.	DESCRIPTION
1	AUD_OUTL+
2	AUD_OUTL-
3	AUD_OUTR-
4	AUD_OUTR+

Table 6-13: Speaker Connector (CN3) Pinouts

6.2.13 SPI Flash Connector (JSPI1)

PIN NO.	DESCRIPTION
1	+1.8V
2	SPI_CS
3	SPI_SO
4	SPI_CLK
5	SPI_SI
6	GND

Table 6-14: SPI Flash Connector (JSPI1) Pinouts

6.2.14 TTL Serial Connector, COM4 (NFC_CN1)

PIN NO.	DESCRIPTION
1	+5V
2	SIN4
3	SOUT4
4	GND

Table 6-15: TTL Serial Connector, COM4 (NFC_CN1) Pinouts

6.2.15 USB 2.0 Connector (HUB_USB1)

PIN NO.	DESCRIPTION
1	+5V
2	DATA4-
3	DATA4+
4	GND

Table 6-16: USB 2.0 Connector (HUB_USB1) Pinouts

6.2.16 USB 2.0 Connector (HUB_USB2)

PIN NO.	DESCRIPTION
1	+5V
2	DATA3-
3	DATA3+
4	GND

Table 6-17: USB 2.0 Connector (HUB_USB2) Pinouts

6.2.17 VGA Connector (VGA_CON1)
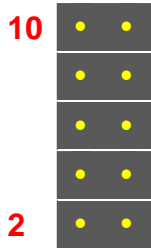
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	DDCDA
3	GREEN	4	DDCLK
5	BLUE	6	GND
7	HSYNC	8	GND
9	VSYNC	10	GND

Table 6-18: VGA Connector (VGA_CON1) Pinouts

6.2.18 USB Connector (CAM_USB2)

PIN NO.	DESCRIPTION
1	+5V
2	DATA3-
3	DATA3+
4	GND

Table 6-19: USB Connector (CAM_USB2) Pinouts

6.2.19 Webcam Connector (CAM_USB1)

PIN NO.	DESCRIPTION
1	+5V
2	DATA2-
3	DATA2+
4	GND

Table 6-20: Webcam Connector (CAM_USB1) Pinouts

6.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the AFL2MB-15A motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Ethernet connector	RJ-45	LAN1
Ethernet connector	RJ-45	LAN2
Power button	Push button	PB_SW1
Power connector	Power jack	CN5
RS-232 serial port	RJ-45	COM1
RS-232/422/485 serial port	D-sub 9	COM2
USB 3.0 connectors	USB 3.0 port	USB_CON1

Table 6-21: Rear Panel Connectors

6.3.1 Ethernet Connectors (LAN1 & LAN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	
1	MDI0+	10	MDI3-	
2	MDI0-	11	+3.3Vsus	
3	MDI1+	12	ACT-1	
4	MDI1-	13	LINNK1000 +3.3sus	
5	N/A	14	LINNK1000 +3.3sus	
6	N/A	15	GND	
7	MDI2+	16	GND	
8	MDI2-	17	N/A	
9	MDI3+	18	N/A	
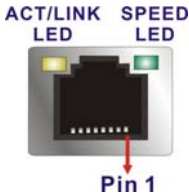
Table 6-22: Ethernet Connectors (LAN1 & LAN2) Pinouts

6.3.2 Power Connector (CN5)
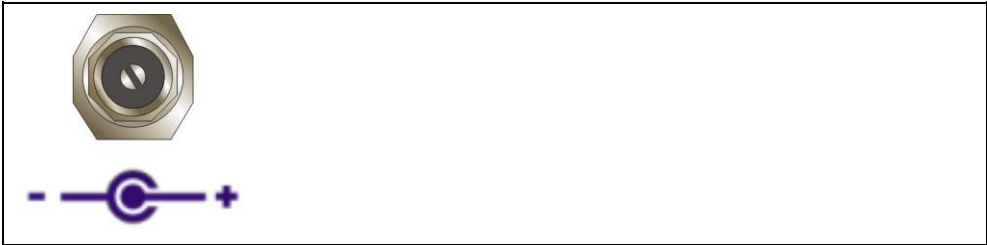
Table 6-23: Power Connector (CN5) Pinouts

6.3.3 RS-232 RJ-45 Serial Port (COM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	
1	NDCD1	5	NTX1	
2	NDSR1	6	NCTS1	
3	NRX1	7	NDTR1	
4	NRTS1	8	NRI1	
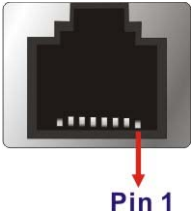
Table 6-24: RS-232 RJ-45 Serial Port (COM1) Pinouts

6.3.4 RS-232/422/485 DB-9 Serial Port (COM2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD2	6	NDSR2
2	NRX2	7	NRTS2
3	NTX2	8	NCTS2
4	NDTR2	9	NRI2
5	GND		
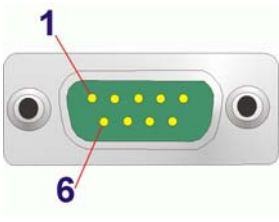
Table 6-25: RS-232/422/485 DB-9 Serial Port (COM2) Pinouts

6.3.5 USB 3.0 Connectors (USB_CON1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5Vsus	10	+5Vsus
2	DATA1-	11	DATA2-
3	DATA1+	12	DATA2+
4	GND	13	GND
5	SSRX1-	14	SSRX2-
6	SSRX1+	15	SSRX2+
7	GND	16	GND
8	SSTX1-	17	SSTX2-
9	SSTX1+	18	SSTX2+
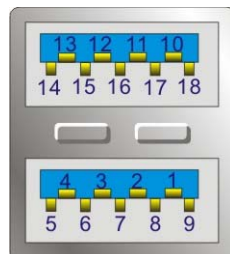
Table 6-26: USB 3.0 Connectors (USB_CON1) Pinouts

6.4 Preconfigured Jumper Settings

⚠ CAUTION:

The following jumpers are preconfigured for the AFL3-08A-BT. Users should not change these jumpers (**Table 6-27**). It is only for reference.

Jumper Name	Type	Label
Backlight voltage selection	3-pin header	J_BL1
Inverter power selection	6-pin header	JP2
LVDS voltage selection	3-pin header	J_VLVDS1
Panel PWM power selection	3-pin header	J_ADJ1
Serial port selection	12-pin header	JP4

Table 6-27: Preconfigured Jumpers

6.4.1 Backlight Voltage Selection Jumper (J_BL1)

Pin	Description
Short 1-2	+3.3 V (Default)
Short 2-3	+5 V

Table 6-28: Backlight Voltage Selection Jumper (J_BL1) Settings

6.4.2 Inverter Power Selection Jumper (JP2)

Pin	Description
Short 1-2	+12 V (Default)
Short 3-4	+5 V
Short 5-6	+3.3 V

Table 6-29: Inverter Power Selection Jumper (JP2) Settings

6.4.3 LVDS Panel Voltage Selection Jumper (J_VLVDS1)

Pin	Description
Short 1-2	+3.3 V
Short 2-3	+5 V (Default)

Table 6-30: LVDS Voltage Selection Jumper (J_VLVDS1) Settings

6.4.4 Panel PWM Power Selection Jumper (J_ADJ1)

Pin	Description
Short 1-2	+3.3V (Default)
Short 2-3	+5V

Table 6-31: Panel PWM Power Selection Jumper (J_ADJ1) Settings

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

$C\,\epsilon$

This equipment is in conformity with the following EU directives:

- EMC Directive (2004/108/EC, 2014/30/EU)
- Low-Voltage Directive (2006/95/EC, 2014/35/EU)
- RoHS II Directive (2011/65/EU, 2015/863/EU)
- Ecodesign Directive 2009/125/EC

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the Radio Equipment Directive 2014/53/EU.

English
IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.
Български [Bulgarian]
IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 2014/53/EU.
Česky [Czech]
IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 2014/53/EU.
Dansk [Danish]
IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU.
Deutsch [German]
IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 2014/53/EU.
Eesti [Estonian]
IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 2014/53/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish]

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/EU.

Ελληνική [Greek]

IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/EU.

Français [French]

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU.

Italiano [Italian]

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.

Latviski [Latvian]

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 2014/53/EU.

Lietuvių [Lithuanian]

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 2014/53/EU Direktyvos nuostatas.

Nederlands [Dutch]

IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2014/53/EU.

Malti [Maltese]

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/EU.

Magyar [Hungarian]

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 2014/53/EU irányelv egyéb elõírásainak.

Polski [Polish]

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2014/53/EU.

Português [Portuguese]

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/EU.

Româna [Romanian]

IEI Integration Corp declară că acest echipament este in conformitate cu cerinţele esenţiale şi cu celelalte prevederi relevante ale Directivei 2014/53/EU.

Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.

Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EU.

Suomi [Finnish]

IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

■ This device may not cause harmful interference, and
■ This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

■ Reorient or relocate the receiving antenna.
■ Increase the separation between the equipment and receiver.
■ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
■ Consult the dealer or an experienced radio/TV technician for help.

CHINA ROHS

The label on the product indicates the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Appendix

B

Safety Precautions

> ⚠ **WARNING:**
>
> The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL3-08A-BT.

B.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- *Follow the electrostatic precautions* outlined below whenever the device is opened.
- *Make sure the power is turned off and the power cord is disconnected* whenever the AFL3-08A-BT is being installed, moved or modified.
- *To prevent the risk of electric shock, make sure power cord is unplugged from wall socket.* To fully disengage the power to the unit, please disconnect the power cord from the AC outlet. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.
- *Do not apply voltage levels that exceed the specified voltage range*. Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
- *Electric shocks can occur* if the AFL3-08A-BT chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.
- *Do not drop or insert any objects* into the ventilation openings of the AFL3-08A-BT.

- *If considerable amounts of dust, water, or fluids enter the device*, turn off the power supply immediately, unplug the power cord, and contact the AFL3-08A-BT vendor.
- **RTC battery safety precautions:**
  - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE
  - Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion
  - Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas
  - A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas
- **DO NOT**:
  - Drop the device against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions

⚠ **WARNING:**

Failure to take ESD precautions during the installation of the AFL3-08A-BT may result in permanent damage to the AFL3-08A-BT and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL3-08A-BT. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL3-08A-BT is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.

- *Self-grounding*: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- *Only handle the edges of the electrical component*: When handling the electrical component, hold the electrical component by its edges.

B.1.3 Product Disposal

⚠️ **CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union – If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union – The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.
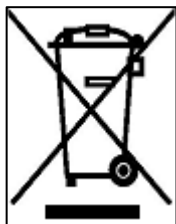
EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The

mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL3-08A-BT, please follow the guidelines below.

> **WARNING:**
> - For safety reasons, turn-off the power and unplug the panel PC before cleaning.
> - If you dropped any material or liquid such as water onto the panel PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL3-08A-BT, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the device does not require cleaning. Keep fluids away from the device interior.
- Be cautious of all small removable components when vacuuming the device.
- Never drop any objects or liquids through the openings of the device.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
- Avoid eating, drinking and smoking within vicinity of the device.

B.2.2 Cleaning Tools

Some components in the AFL3-08A-BT may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the AFL3-08A-BT.

- *Cloth* – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the device.
- *Water or rubbing alcohol* – A cloth moistened with water or rubbing alcohol can be used to clean the device.
- *Using solvents* – The use of solvents is not recommended when cleaning the device as they may damage the plastic parts.
- *Vacuum cleaner* – Using a vacuum specifically designed for computers is one of the best methods of cleaning the device. Dust and dirt can restrict the airflow in the device and cause its circuitry to corrode.
- *Cotton swabs* – Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** – Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

BIOS Menu Options

Appendix
D

Watchdog Timer

 NOTE:

> The following discussion applies to DOS. Contact IEI support or visit the IEI website for drivers for other operating systems.

The Watchdog Timer is a hardware-based timer that attempts to restart the system when it stops working. The system may stop working because of external EMI or software bugs. The Watchdog Timer ensures that standalone systems like ATMs will automatically attempt to restart in the case of system problems.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

The Watchdog Timer is activated through software. The software application that activates the Watchdog Timer must also deactivate it when closed. If the Watchdog Timer is not deactivated, the system will automatically restart after the Timer has finished its countdown.

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

```
        MOV         AX, 6F02H           ;setting the time-out value
        MOV         BL, 30              ;time-out value is 48 seconds
        INT    15H
```

;

; ADD THE APPLICATION PROGRAM HERE

;

```
        CMP         EXIT_AP, 1          ;is the application over?
        JNE    W_LOOP              ;No, restart the application

        MOV         AX, 6F02H           ;disable Watchdog Timer
        MOV         BL, 0            ;
        INT    15H
```

;

; EXIT ;

Hazardous Materials Disclosure

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	Ο	Ο	Ο	Ο	Ο	Ο
Display	Ο	Ο	Ο	Ο	Ο	Ο
Printed Circuit Board	Ο	Ο	Ο	Ο	Ο	Ο
Metal Fasteners	Ο	Ο	Ο	Ο	Ο	Ο
Cable Assembly	Ο	Ο	Ο	Ο	Ο	Ο
Fan Assembly	Ο	Ο	Ο	Ο	Ο	Ο
Power Supply Assemblies	Ο	Ο	Ο	Ο	Ο	Ο
Battery	Ο	Ο	Ο	Ο	Ο	Ο
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006 (now replaced by GB/T 26572-2011). X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006 (now replaced by GB/T 26572-2011).						

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T 11363-2006 (现由 GB/T 26572-2011 取代) 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 (现由 GB/T 26572-2011 取代) 标准规定的限量要求。						