VZ-PRO-MINI
USER MANUAL

ViewZ®
DRIVING VISUAL INNOVATION

VZ-PRO-MINI

USER MANUAL

Fanless and Slim size system with 4-display HDMI support

1.03-10312014-140100

ViewZ

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Regulatory Compliance

FCC-A Radio Frequency Interference Statement

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 personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Notice 3

The product described in this document is designed for general use, ViewZ USA assumes no responsibility for the conflicts or damages arising from incompatibility of the product. Check compatibility issue with your local sales representatives before placing an order.

CE

FC

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Battery Recycling and Disposal

- Only use the appropriate battery specified for this product.
- Do not re-use, recharge, or reheat an old battery.
- Do not attempt to force open the battery.
- Do not discard used batteries with regular trash.
- Discard used batteries according to local regulations.

Safety Precautions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- All cautions and warnings on the equipment should be noted.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord in such a way that people cannot step on it.
- Always unplug the power cord before inserting any add-on card or module.
- If any of the following situations arises, get the equipment checked by authorized service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment has not worked well or you cannot get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- Do not leave this equipment in an environment unconditioned or in a storage temperature above 60°C (140°F). The equipment may be damaged.
- Do not leave this equipment in direct sunlight.
- Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- Do not place anything over the power cord.
- Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating

Box ontents

VZ-PRO-MINI

- 1 x VZ-PRO-MINI system unit
- 1 x Power cord, 180 cm, Japan Type
- 1 x Power adaptor, 12V/8.5A 102W
- 1 x Power cable, 4-hole DC-In jack
- 2 x HDMI cable strap holder
- 4 x SATA SSD screws
- 4 x Mounting screws
- 2 x Screws for Mini card (module) installation
- 1 x 0.392cc thermal grease in tube syringe
- MagicView content management software (Multi-language/default English ver.)

Ordering Information

Part Number	Description
VZ-PRO-MINI	Fanless Embedded System with 1.0+GHz VIA QuadCore processor, 4 x HDMI®, 2 x USB 2.0, 2 x USB 3.0, 1 x GigaLAN, 1 x COM (RS-232), 1 x Digital I/O, HD Audio (Line-In and Line-Out) 1 x SATA SSD bay and DC-In 12V, power cord Japan type.

Optional Accessories

Peripherals

Model Number	Description
EMIO-1533-00A2	802.11 b/g/n Wireless LAN USB Module
EMIO-1541-00A1	HSPA/WCDMA/EDGE/GPRS mobile broadband Mini PCIe Card

External AC-to-DC Adapter and Power Cord

Model Number	Description
99G33-020316	AC-to-DC adaptor, 12V/8.5A 102W
99G33-02032C	Power Cord, 180 cm, USA type
99G33-02033C	Power Cord, 180 cm, Europe type
99G33-02034C	Power Cord, 180 cm, Japan type
99G33-02103C	Power Cord, 180 cm, China type

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1. Product Overview

The VZ-PRO-MINI is a rugged and completely fanless embedded system designed with 4-display (HDMI) support via discrete S3 5400E graphics processor onboard. Its system is based on the EITX-2003 mainboard powered by 1.0+ GHz VIA QuadCore processor which is superb in multi-tasking performance, high power computing operation with lower power consumption.

The VZ-PRO-MINI system supports dual-sided multiple I/O connectors such as high definition audio jacks, USB ports, Gigabit Ethernet LAN port, configurable COM connector and DIO connector. The VZ-PRO-MINI system offers a 2.5" SATA SSD bay and an optional WLAN USB (WiFi) connectivity which can be supported through one on-board USB pin header. In addition, it supports mini PCIe card slots for mSATA storage and 3G/3.5G connectivity
with SIM card slot.

The Video Wall Mini's system chassis is a robust aluminum (top and bottom cover) alloy and it is designed to support VESA-mounting for quick installation and easy maintenance.

These combined features make the VZ-PRO-MINI perfect for various digital signage, video-wall, gaming, industrial and embedded applications.

1.1. Key Features

1.1.1. Powered by VIA® QuadCore Processor

The VZ-PRO-MINI is powered by VIA® QuadCore 1.0+ GHz processor. The VIA® QuadCore processor has combined four 64-bit "Isaiah" cores on two dies offering enhanced multi-tasking and superb multimedia performance on a low power budget.

1.1.2. Fanless and Rugged Chassis

The VZ-PRO-MINI features fanless operation in a ruggedized aluminum chassis that does double duty as a thermal solution and designed to ensure maximum reliability.

1.1.3. Multiple Display Support

The VZ-PRO-MINI comes with discrete S3 5400E graphics processor that gives the ability to support four HDMI displays. Each display has a maximum high definition resolution of 1920 x 1080p.

1.1.4. Optimize Integration with Multiple I/O Access

Front and right side I/O access enables the VZ-PRO-MINI to easily access to peripherals, support various applications, easy integration, quick setup and easy maintenance.

1.1.5. Storage Expansion

In addition to 2.5-inch SATA SSD supports, the onboard mini PCIe card slot enables the VZ-PRO-MINI to have a flexible storage mSATA module.

1.1.6. Wide Range of Operating Temperatures

The VZ-PRO-MINI carries a qualified thermal performance design which allows a wide range of operating temperatures from 0°C ~ 45°C, suitable for critical applications.

1.1.7. Shock Resistant

The VZ-PRO-MINI is shock resistant to 50G for maximum reliability.

1.1.8. Networking Support

The VZ-PRO-MINI is equipped with RJ-45 port that supports high speed Gigabit Ethernet. It also has wireless networking option that gives the system a freedom of WiFi (WLAN) access and 3G/3.5G network connectivity through mini PCIe card slot and USB pin header respectively.

1.1.9. Embedded OS ready

The VZ-PRO-MINI is 100% compatible with Microsoft Windows 7, Microsoft Windows Embedded Standard 7 with MagicView

1.2. Product Specifications

Processor Core Logic System

- CPU
  - VIA QuadCore U4650E 1.0+ GHz processor
    - 800 MHz Front Side Bus
    - 4 MB L2 Cache memory
    - NanoBGA2 package
- Chipset
  - VIA VX11H Media System Processor
    - 33 mm x 33 mm FCBGA
- System Memory
  - One SODIMM slot supporting DDR3 1066/1333 MHz SDRAM
    - Supports up to 8 GB memory size
- BIOS
  - AMI BIOS
  - 32 Mbit EFI SPI flash memory
- System Power Management
  - Times Power On
  - ACPI 3.0 compliant

Graphics

- Controller
  - Integrated VIA Chrome™ 645/640 (DX11) graphics processor with 2D/3D video acceleration with MPEG-2, VC-1 and H.264 video decoder
- Display Memory
  - Optimized Shared Memory Architecture (UMA), supports 256MB to 1GB frame buffer using system memory
- HDMI® Interface
  - Supports four onboard HDMI® ports via S3 5400E graphics
- Video Wall
  - Four onboard HDMI ports via S3 5400E graphics can support four display video wall, dual view or other combination

Gigabit Ethernet

- Controller
  - Onboard RTL8111G Gigabit Ethernet controller
- Interface
  - One RJ-45 LAN port
  - Supports Wake On LAN (WOL)
  - Supports Pre-boot Execution Environment (PXE)

High Definition Audio

- Controller
  - VIA VT2021 High Definition Audio Codec
- Interface
  - Supports two 3.5ø audio jacks as Line-Out and Line-In

USB 2.0
- Controller
  - Integrated USB 2.0 host controller built-in VX11 chipset on system board
- Interface
  - Two USB 2.0 ports

USB 3.0
- Controller
  - VIA VL801 USB 3.0 host controller
- Interface
  - Supports two USB 3.0 ports

Serial Port
- Controller
  - Fintek F71869 LPC I/O controller
- Interface
  - Support two COM interface
    - One RS-232/RS-422/RS-485 COM connector (D-sub 9-pin)
    - One RS-232/RS-422/RS-485 COM connector through onboard pin header
  - Support 5V/12V Power selection pin headers onboard

Digital I/O
- Interface
  - Support 1 x DIO connector (D-sub 9-pin)

Storage
- Serial ATA
  - Built-in one SSD hard drive bay for 2.5-inch SATA SSD
- mSATA
  - Built-in one mini PCIe card slot for mSATA (support Gen2)

Expansion slot
- Mini PCIe card interface
  - Support one mini PCIe card slot (PCIe + USB 2.0) for 3G/3.5G module
- SIM card interface
  - Support one SIM card slot

Wireless LAN (optional)
- Controller
  - VIA VX11 Media System Processor
- Interface
  - Mini PCIe card interface of WiFi module
  - USB card interface of WiFi module

3G/3.5G (optional)
- Controller
  - VIA VX11 Media System Processor
- Interface
  - Mini PCIe card interface of Ublox ZU200 3G/3.5 module, VNT9485 WiFi module or AverMedia C353 capture card

Watchdog Timer

- Output
  - System reset
- Interval
  - Programmable 1 ~ 255 sec.

External I/O connectors

- Front panel I/O
  - One Power On/Off Button
  - One 4-hole DC-In jack power input
  - One green color LED indicator for Power On status
  - One red color LED indicator for SATA SSD activity
  - Four HDMI® ports
  - Two USB 3.0 ports
  - Two 3.5Ø audio jacks (Line-Out and Line-In)
  - One RJ-45 LAN port (Gigabit Ethernet)
- Right side panel I/O
  - One blue color LED for 3G/3.5G status
  - One blue color LED for WiFi (WLAN) status
  - One Digital I/O (D-sub 9-pin) connector (support 8-bit GPIO)
  - Two USB 2.0 ports
  - One COM (D-sub 9-pin) connector (support RS-232/RS-422/RS-485)
  - Two antenna holes (for WLAN antenna and 3G/3.5 antenna)

Onboard I/O connectors, pin headers and jumpers

- One SATA II connector
- One SATA II power connector
- One LPC pin header (for debugging)
- One CMOS battery connector
- One System temperature sensor pin header
- One Buzzer onboard speaker
- One SPI bus pin header
- One SPI address select jumper
- One System reset jumper
- One Reset/Clear CMOS RAM jumper
- One VDD/VSUSVDD manual/auto mode select jumper
- One Recovery BIOS function jumper

Power Supply

- Power Input Connector
  - One 4-hole DC-In jack
- Power Consumption
  - Typical 43.42W, Maximum 48.83W
- Input Voltage
  - Built-in system DC-to-DC converter
  - DC 12V Power Input

Mechanical Characteristics

- Construction
  - Aluminum chassis housing with metal I/O plates
- Mounting
  - VESA mount
- System dimension (Length x Width x Height)
  - 255 mm x 250 mm x 46 mm
- Weight
  - 3.7 Kg. (net weight)

Environmental Specification

- Operating Temperature
  - 0°C ~ 45°C (with 2.5" SATA SSD)
  - 0°C ~ 50°C (with mSATA)
- Operating Humidity
  - 0% ~ 90%, relative humidity, non-condensing
- Storage Temperature
  - 10°C ~ 60°C @ 90%, non-condensing
- Vibration Loading during operation (with 2.5" SATA SSD)
  - 5Grms, IEC 60068-2-64, random, 5~500Hz, 1hr/axis
- Shock during operation (with 2.5" SATA SSD)
  - 50G, IEC 60068-2-27, half size, 11ms duration

Certification Requirements

- EMC Approved
  - CE FCC, Class B, CCC

Software Compatibility

- Operating System
  - Microsoft Windows 7
  - Microsoft Windows Embedded Standard 7 with MagicView

Reminder:

Use HDMI extender if the HDMI cable is over 10 meters (32.8 feet) long to overcome transmission problem.

Note:
As the operating temperature provided in the specifications is a result of the test performed in ViewZ USA's chamber, a number of variables can influence this result. Please note that the working temperature may vary depending on the actual situation and environment. It is highly suggested to execute a solid testing and take all the variables into consideration when building the system. Please ensure that the system runs well under the operating temperature in terms of application.

1.3. Panel Layout

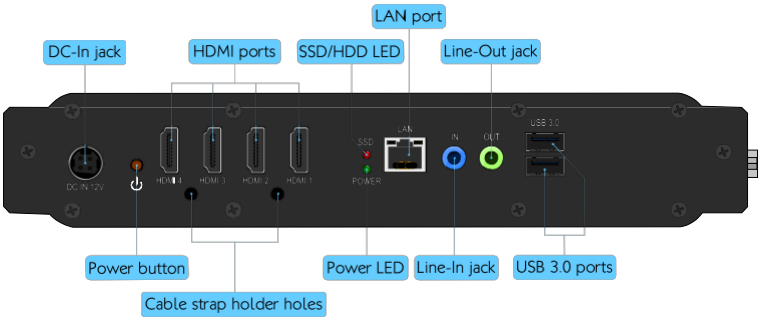

Figure 1: Front side layout label

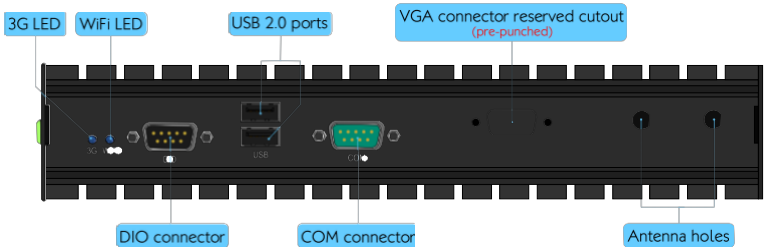

Figure 2: Right side layout label

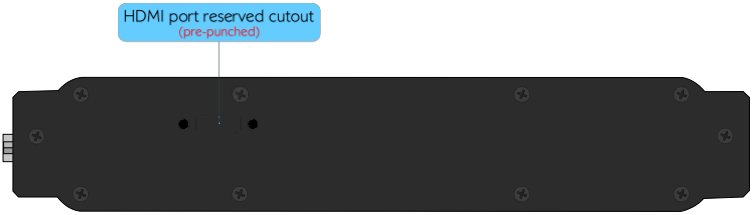

Figure 3: Rear side layout label

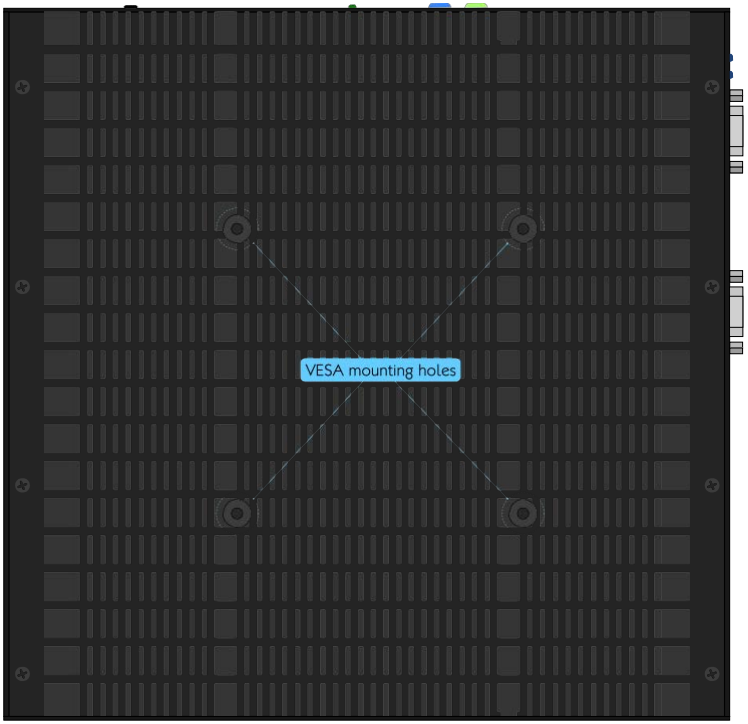

Figure 4: Bottom side layout label

1.4. Dimensions

Figure 5: Front view dimensions

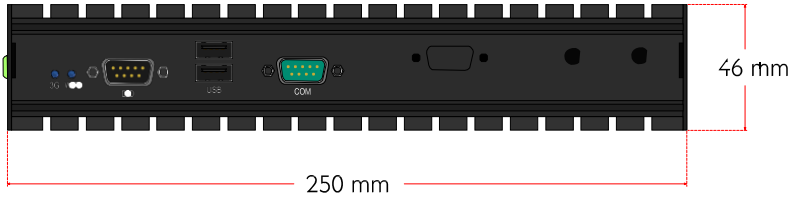

Figure 6: Side view dimensions

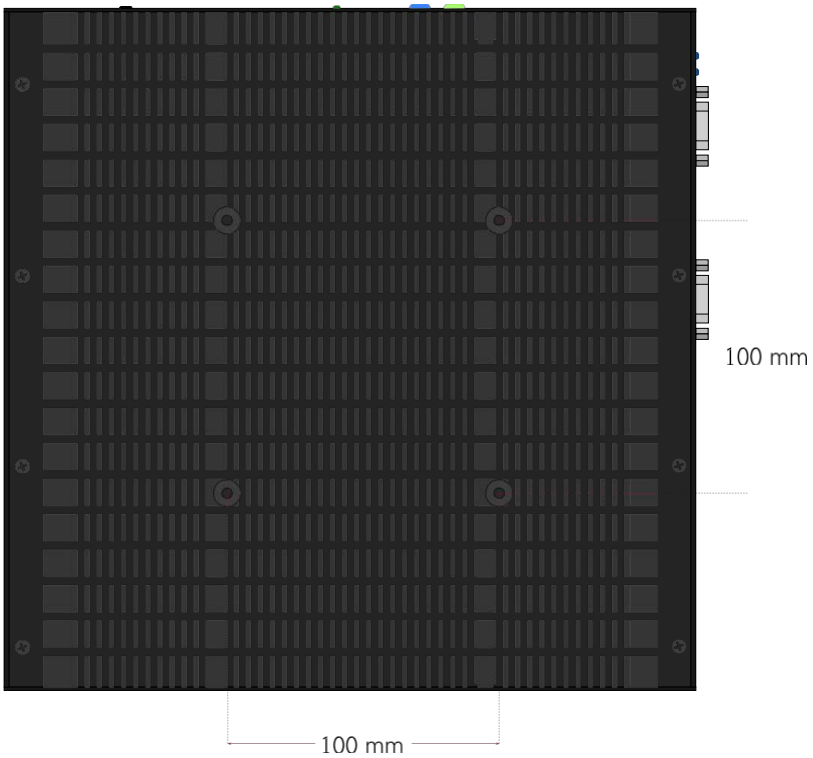

Figure 7: Bottom view dimensions

2. External I/O Pin Descriptions and Functionality

The VZ-PRO-MINI has a wide selection of interfaces located on the front and right panel as part of the external I/O.

2.1. Front Panel I/O

2.1.1. DC-In Jack (Power Input)

The VZ-PRO-MINI comes with a 4-hole DC-In jack that carries 12V DC external power input.

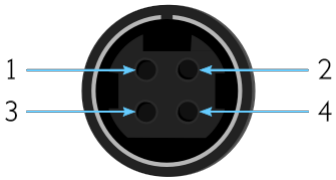

Figure 8: DC-In jack diagram

Pin	Signal
1	+12V
2	+12V
3	GND
4	GND

Table 1: DC-In jack pinout

2.1.2. Power Button

The VZ-PRO-MINI comes with a Power On/Off button, that supports Soft Power-On/Off (Instant Off or 4 second delay) and Suspend.

Figure 9: Power button diagram

2.1.3. HDMI® Port

The VZ-PRO-MINI provides four HDMI® ports (19-pin HDMI Type A receptacle connector) via discrete S3 5400E graphics processor onboard. The HDMI® ports allow you to connect up to four digital video devices which utilize a high definition video playback. The pinout of the HDMI® port is shown below.

Figure 10: HDMI® port diagram

Pin	Signal	Pin	Signal
1	TX2+	2	GND
3	TX2-	4	TX1+
5	GND	6	TX1-
7	TX0+	8	GND
9	TX0-	10	TXC+
11	GND	12	TXC-
13	-	14	-
15	DDCSCL	16	DDCSDA
17	GND	18	+5V
19	Hot Plug Detect		

Table 2: HDMI® port pinout

2.1.4. LED Indicators (Power LED and SATA SSD LED)

There are two LEDs on the front panel of VZ-PRO-MINI that indicate the status of the system:

- Power LED flashes in green and indicates system's power status.
- SATA SSD LED flashes in red and indicates hard drive storage activity for 2.5" SATA SSD.

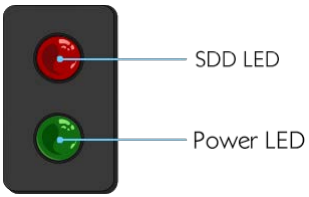

Figure 11: Power and SATA SSD LED indicator diagram

2.1.5. RJ-45 LAN Port (Gigabit Ethernet)

The VZ-PRO-MINI is equipped with a Gigabit Ethernet LAN port. The Gigabit Ethernet LAN port is using 8 Position 8 Contact (8P8C) receptacle connector or commonly referred to as RJ-45. It is fully compliant with IEEE
802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. The pinout of the LAN port is shown below.

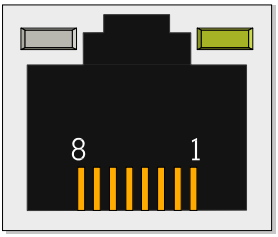

Figure 12: RJ-45 LAN port diagram

Pin	Signal
1	LAN1_TD0+
2	LAN1_TD0-
3	LAN1_TD1+
4	LAN1_TD1-
5	LAN1_TD2+
6	LAN1_TD2-
7	LAN1_TD3+
8	LAN1_TD3-

Table 3: RJ-45 LAN port pinout

The LAN port has two individual LED indicators located on the front side to show its Active/Link status and Speed status.

	Link LED (Left LED on RJ-45	Active LED (Right LED on RJ-45
Link Off	Off	Off
Speed_10Mbit	Off	Flash in Orange color
Speed_100Mbit	The LED is always On in Green color	Flash in Orange color
Speed_1000Mbit	The LED is always On in Orange color	Flash in Orange color

Table 4: RJ-45 LAN port color definition

2.1.6. Audio Jacks

The VZ-PRO-MINI has High Definition Audio through two 3.5 mm audio jacks for Line-Out and Line-In. The Line-In jack is for connecting to an external audio device such as CD player, tape player, etc., while Line-Out jack is for connecting to external to speakers or headphones.

Figure 13: Audio jack receptacle stack diagram

2.1.7. USB 3.0 Port

The VZ-PRO-MINI is equipped with two USB 3.0 ports. The USB 3.0 port has a maximum data transfer rate up to 5 Gbps and offers a backward compatible with previous USB 2.0 specifications. It gives complete Plug and Play and hot swap capability for external devices. The pinout of the typical USB 3.0 port is shown below.

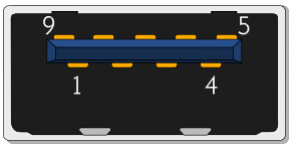

Figure 14: USB 3.0 port diagram

USB 3.0 port 1	
Pin	Signal
1	+5V
2	Data1-
3	Data1+
4	GND
5	RX1-
6	RX1+
7	GND
8	TX1-
9	TX1+

USB 3.0 port 2	
Pin	Signal
1	+5V
2	Data2-
3	Data2+
4	GND
5	RX2-
6	RX2+
7	GND
8	TX2-
9	TX2+

Table 5: USB 3.0 port pinout

2.2. Right Side Panel

2.2.1. LED Indicators (3G/3.5G and WLAN)

There are two LEDs on the right side panel of the VZ-PRO-MINI that indicate the status of the 3G/3.5G and WLAN (WiFi) connectivity:

- 3G/3.5G flashes in blue and indicates the activity status of 3G/3.5G connectivity.
- WLAN LED flashes in blue and indicates activity status of WLAN (WiFi).

Figure 15: 3G/3.5G and WLAN LED indicator

2.2.2. Digital I/O Connector

The VZ-PRO-MINI is equipped with 8-bit Digital I/O (GPIO) connector (D-sub 9-pin), which offers Digital I/O communication interface. The Digital I/O default settings supports up to four GPO and four GPI signals. The pinout of the Digital I/O connector is shown below.

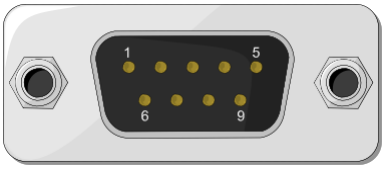

Figure 16: DIO connector diagram

Pin	Signal
1	GPO_37
2	GPO_35
3	GPI_53
4	GPI_51
5	GND
6	GPO_36
7	GPO_34
8	GPI_52
9	GPI_50

Table 6: DIO connector pinout

2.2.3. USB 2.0 Port

The VZ-PRO-MINI has two USB 2.0 ports on the right side panel. Each port gives complete Plug & Play and hot swapping capability for external devices. The USB interface complies with USB UHCI, Rev. 2.0. The USB 2.0 pinout is shown below.

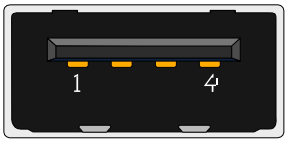

Figure 17: USB 2.0 port diagram

USB port 1	
Pin	Signal
1	VCC
2	USB1_data-
3	USB1_data+
4	GND

USB port 2	
Pin	Signal
1	VCC
2	USB2_data-
3	USB2_data+
4	GND

Table 7: USB 2.0 port pinout

2.2.4. COM Connector

The VZ-PRO-MINI provides one COM connector for serial communications. The COM connector can be configured to operate in RS-232/RS-422/RS-485 mode by adjusting the BIOS setup items. However, the default setting of COM connector is the standard RS-232. The pinout of the COM connector is shown below.

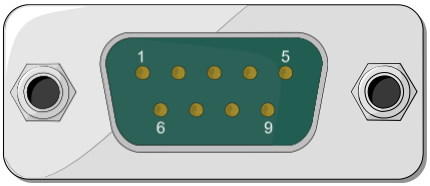

Figure 18: COM connector diagram

Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Table 8: COM connector pinout

3. Onboard Connector and Pin Headers

This chapter provides information about the onboard connectors and pin headers of VZ-PRO-MINI system's mainboard.

3.1. LPC Connector

The VZ-PRO-MINI has one LPC connector for debugging purpose. The connector is labeled as "JLPC1". The pinout of the connector is shown below.

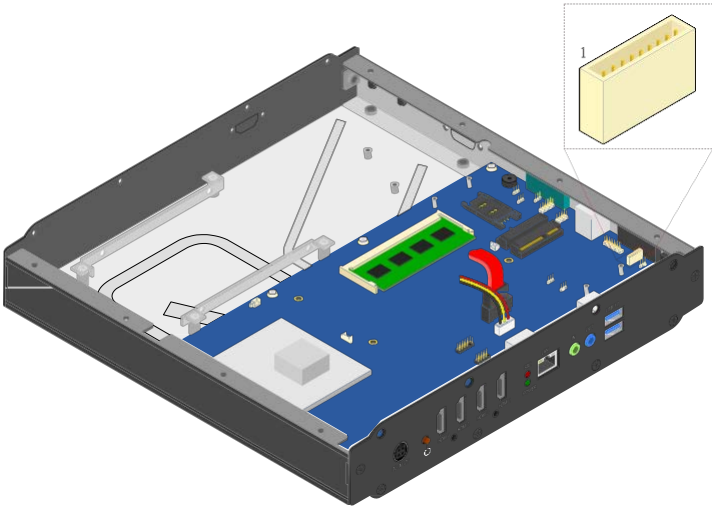

Figure 19: LPC connector diagram

Pin	Signal
1	GND
2	LPCAD2
3	LPCAD3
4	LPCAD1
5	-LPCFRAME
6	LPCAD0
7	LPC33CLK
8	-LPCRST
9	+3.3V

Table 9: LPC connector pinout

3.2. VGA Pin Header

The VZ-PRO-MINI mainboard has an onboard VGA pin header that allows connection of VGA connector cable for analog VGA monitor. The onboard VGA pin header is labeled as “JVGA1”. The pinout of the VGA pin header is shown below.

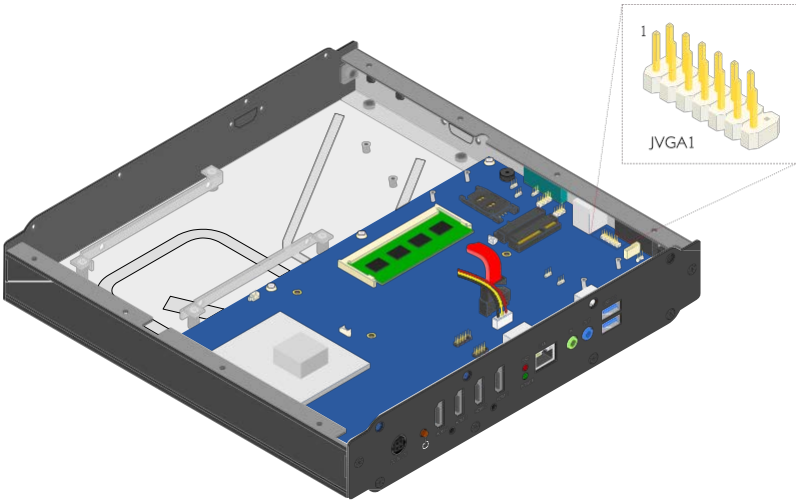

Figure 20: VGA pin header diagram

Pin	Signal	Pin	Signal
1	GND	2	+5V_CRT
3	VGA-R	4	VGA-SPD
5	VGA-G	6	VGA-SPCLK
7	VGA-B	8	VGA HS
9	GND	10	VGA VS
11	GND	12	GND
13	GND	14	NC

Table 10: VGA pin header pinout

3.3. SPI Pin Header

The VZ-PRO-MINI mainboard has one SPI (Serial Peripheral Interface) pin header used to connect to the SPI BIOS programming fixture for updating the SPI flash ROM. The SPI pin header is labeled as “SPI1”. The pinout of the SPI pin header is shown below.

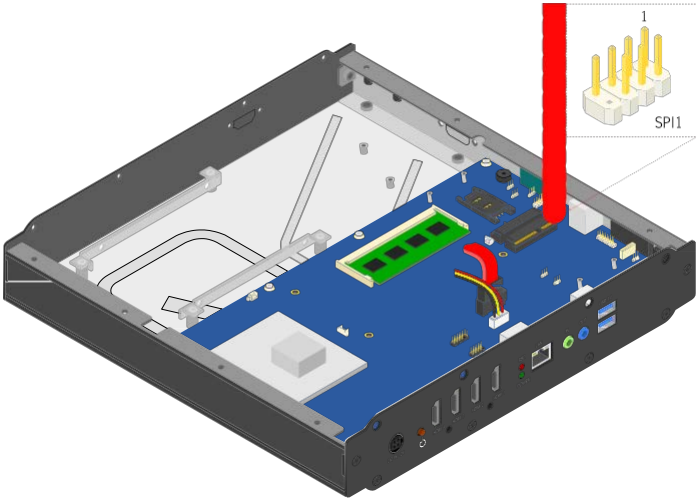

Figure 21: SPI pin header diagram

Pin	Signal	Pin	Signal
1	SPIVCC	2	GND
3	MSPISA	4	MSPICLK
5	MSPIDI	6	MSPIDO
7	—	8	-PCIRST

Table 11: SPI pin header pinout

3.4. System Temperature Sensor Pin Header

The VZ-PRO-MINI supports an onboard pin header (3-pin) that allows the connection of a temperature sensor cable for detecting the system's internal temperature. The temperature data can be seen in the BIOS Setup Utility. The pin header is labeled as "J7". The pinout of the temperature sensor pin header is shown below.

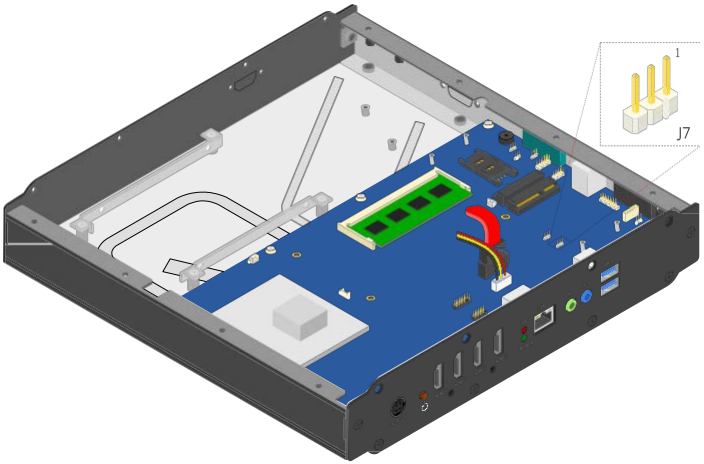

Figure 22: System temperature sensor pin header diagram

Pin	Signal
1	TMPIN2
2	TMPIN2
3	HWMGND

Table 12: System temperature sensor pin header pinout

4. Onboard Jumpers

Jumper Description

A jumper consists of pair conductive pins used to close in or bypass an electronic circuit to set up or configure particular feature using a jumper cap. The jumper cap is a small metal clip covered by plastic. It performs like a connecting bridge to short (connect) the pair of pins. The usual colors of the jumper cap are black/red/blue/white/yellow.

Jumper Setting

There are two settings of the jumper pin: “Short and Open”. The pins are “Short” when a jumper cap is placed on the pair of pins. The pins are ”Open” if the jumper cap is removed.

In addition, there are jumpers that have three or more pins, and some pins are arranged in series. In case of a jumper with three pins, place the jumper cap on pin 1 and pin 2 or pin 2 and 3 to Short it.

Some jumper size is small or mounted on the crowded location on the board that makes it difficult to access. Therefore, using a long-nose pliers in installing and removing the jumper cap is very helpful.

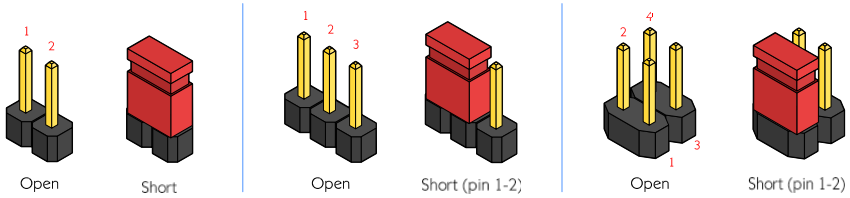

Figure 23: Jumper settings example

Caution:

Make sure to install the jumper cap on the correct pins. Installing it in the wrong pin might cause damage and malfunction.

4.1. System Reset Jumper

To restart the hardware, temporarily close the jumper of the 2-pin reset pin header. The reset pin header is labeled as “JRST1”.

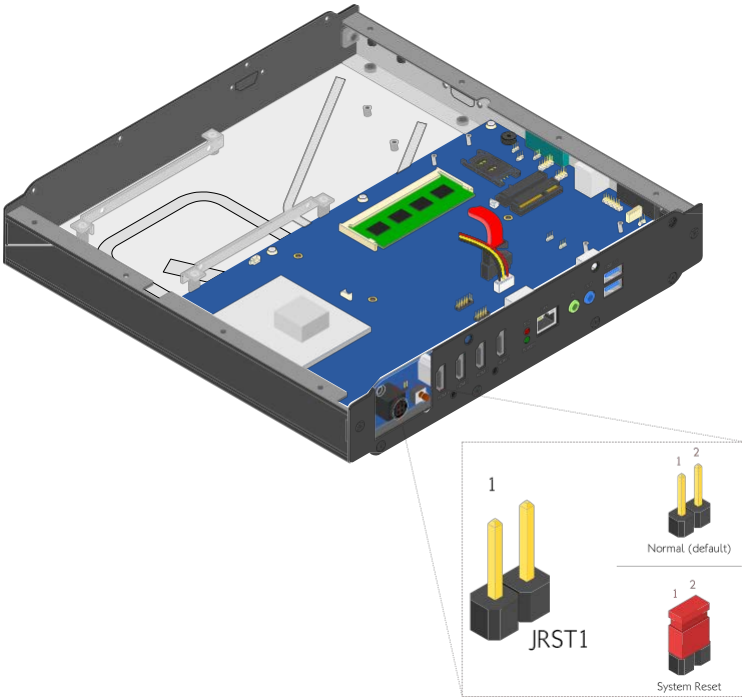

Figure 24: System reset jumper diagram

Setting	Pin 1	Pin 2
Normal (default)	Open	Open
System Reset	Short	Short

Table 13: System reset jumper settings

4.2. Reset CMOS RAM Jumper

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. To reset the CMOS settings, set the jumper on pins 2 and 3 while the system is off. Return the jumper to pins 1 and 2 afterwards. Setting the jumper while the system is on will damage the mainboard. The default setting is on pins 1 and 2. The Reset CMOS RAM jumper is labeled as “J10”.

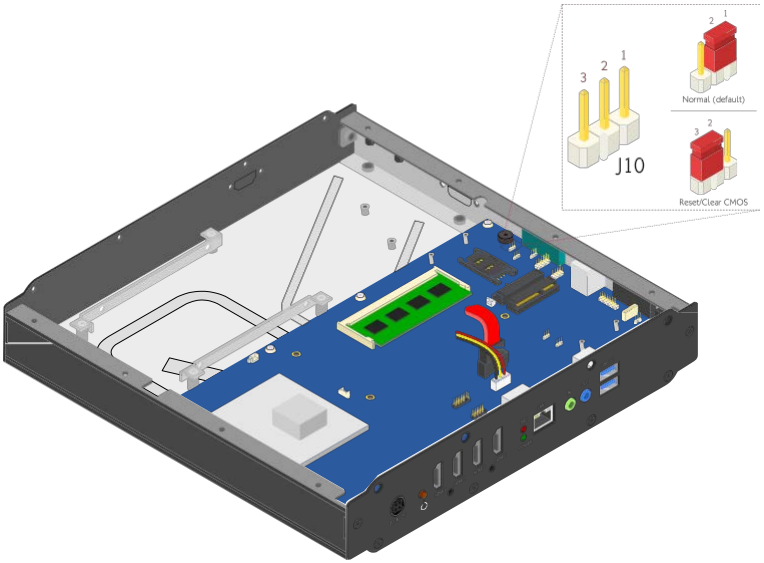

Figure 25: Reset CMOS RAM jumper diagram

Setting	Pin 1	Pin 2	Pin 3
Normal (default)	Short	Short	Open
Reset/Clear CMOS	Open	Short	Short

Table 14: Reset CMOS RAM jumper settings

Note:

Except when clearing the RTC RAM, never remove the cap from the Reset CMOS RAM jumper (J10) default position. Removing the cap will cause system boot failure. Avoid resetting/clearing the CMOS while the system is on; it will damage the system mainboard.

4.3. SPI Address Select Jumper

Selection of address for SPI pin header is controlled by the jumper labeled as “J6”. The jumper settings are shown below.

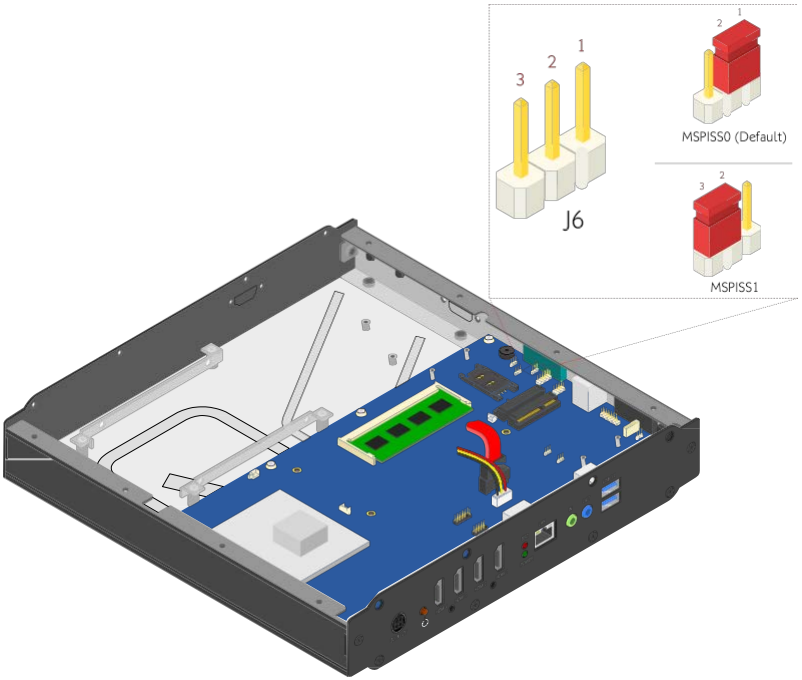

Figure 26: SPI address select jumper diagram

Setting	Pin 1	Pin 2	Pin 3
MSPISS0 (default)	Short	Short	Open
MSPISS1	Open	Short	Short

Table 15: SPI address select jumper settings

4.4. Recovery BIOS Jumper

The VZ-PRO-MINI mainboard offers a BIOS recovery jumper labeled as “JRC_BIOS1”. To recover the default BIOS program, set the jumper on pins 1 and 2 while the system is off. Return the jumper to pins 2 and 3 afterwards. The default setting is on pins 2 and 3.

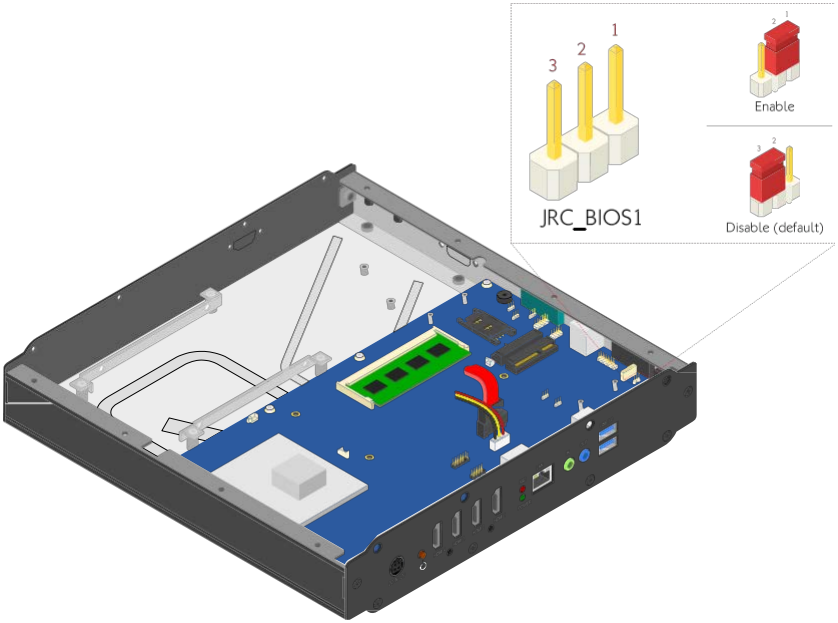

Figure 27: Recovery BIOS jumper diagram

Setting	Pin 1	Pin 2	Pin 3
Enable	Short	Short	Open
Disable (default)	Open	Short	Short

Table 16: Recovery BIOS jumper settings

4.5. VDD/VSUSVDD Mode Select Jumper

Selection of VDD/VUSVDD mode jumper is controlled by the jumper labeled as “J9”. The jumper settings are shown below.

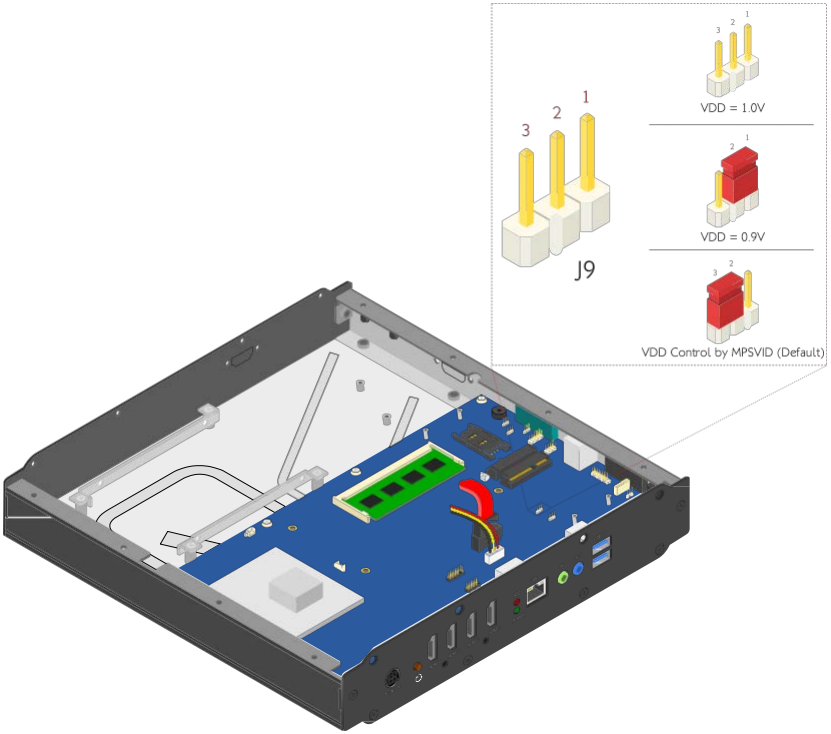

Figure 28: VDD/VSUSVDD mode select jumper diagram

Setting	Pin 1	Pin 2	Pin 3
VDD = 1.0 V	Open	Open	Open
VDD = 0.9V	Short	Short	Open
VDD Control by MPSVID (Default)	Open	Short	Short

Table 17: VDD/VSUSVDD mode select jumper settings

5. Hardware Installation

This chapter provides the information about hardware installation procedures.

5.1. How to remove the top cover

Step 1

Remove the top screws (x4) of front and rear plates, and remove the eight screws of the top cover as indicated in the figure below.

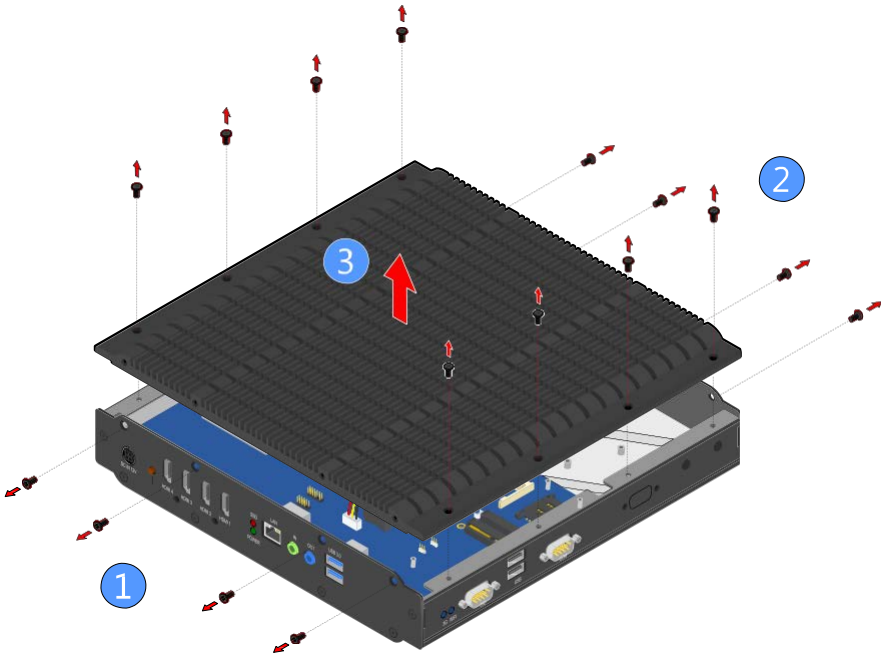

Figure 29: Removing top cover

Step 2

Carefully lift up the top cover.

5.2. How to reinstall the top cover

Step 1

On the inner side of the top cover, spread the thermal grease evenly on the center area of the heat pipe plate before reinstalling the top cover. Using a plastic protector, use your finger to spread the grease.

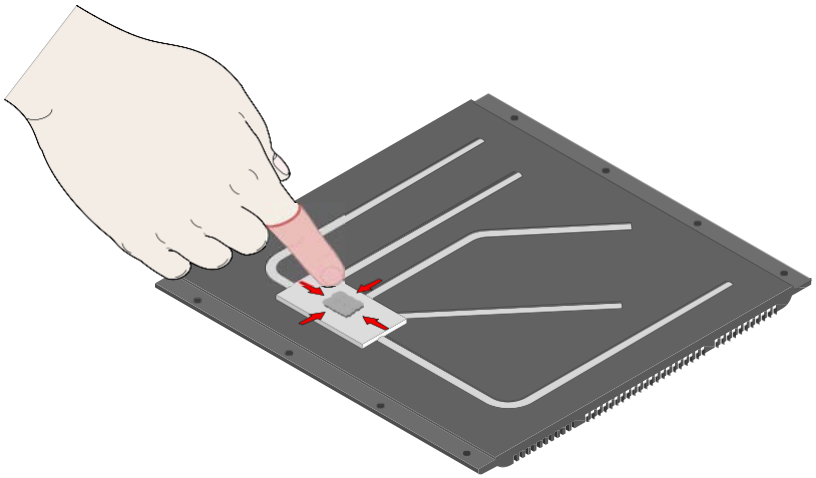

Figure 30: Spreading thermal grease

Reminder
:

Every time the user takes off the top cover, the amount of thermal grease (between the heat pipe plate and CPU heatsink) may decrease. Therefore, adding a small amount of thermal grease is advisable. Use the thermal grease (in tube syringe) provided in the package.

Step 2

Align the top cover over the mounting holes on the chassis.

Figure 31: Aligning the top cover

Step 3

Secure the top cover with sixteen mounting screws as indicated in the figure below.

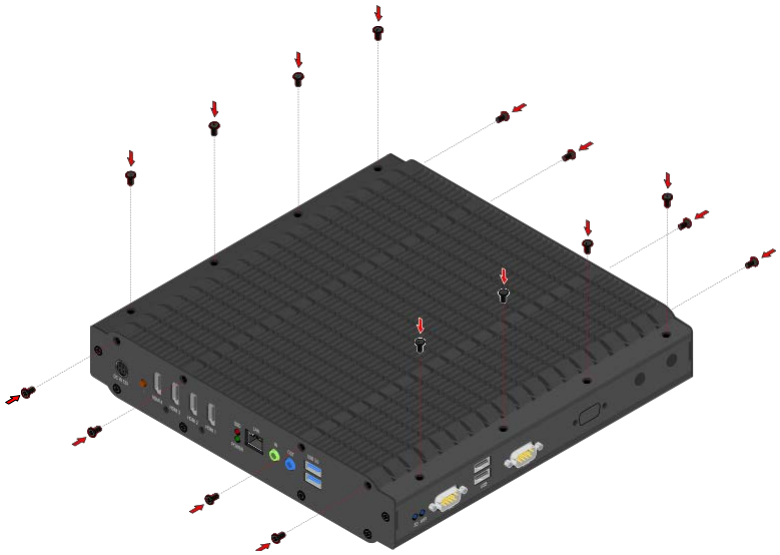

Figure 32: Securing the top cover

5.3. How to install the DDR3 SODIMM memory

Step 1

Locate the DDR3 SODIMM memory socket. Align the notch on the memory module with the notch on the SODIMM socket.

Step 2

Gently insert the DDR3 memory module into the SODIMM socket at a 30° angle.

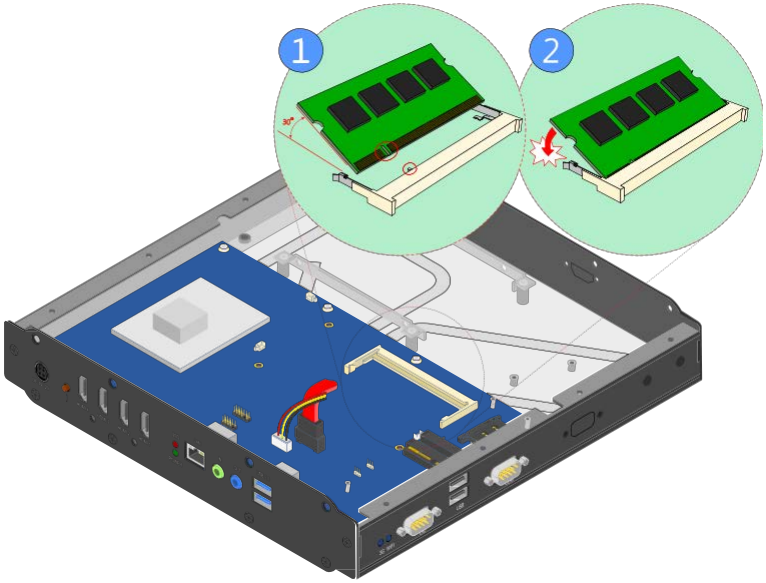

Figure 33: Installing DDR3 SODIMM module

Step 3

Push down the memory module until it snaps into place.

5.4. How to remove the DDR3 SODIMM memory

Step 1

To disengage the locking clips, push the locking clips horizontally outward away from the SODIMM memory module.

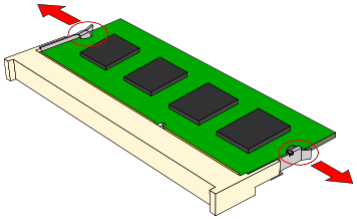

Figure 34: Disengaging the SODIMM locking clips

Step 2

When the locking clips have cleared, the SODIMM memory module will automatically pop up to the 30 degree angle. Remove the memory module.

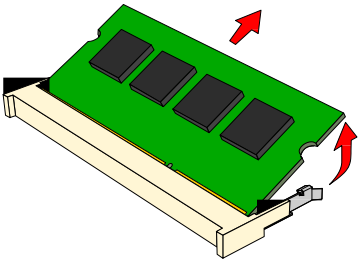

Figure 35: Removing the memory module

5.5. How to install the 2.5-inch SATA SSD

Step 1

Remove four screws and pull up hard drive bay.

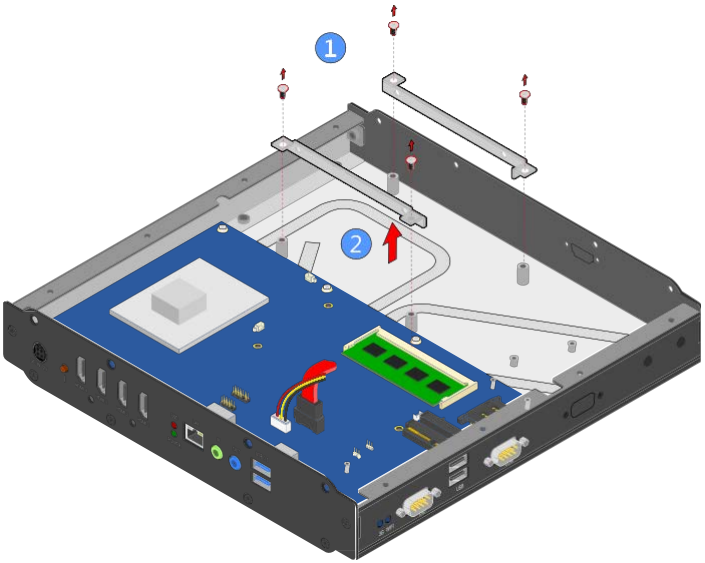

Figure 36: Removing SATA SSD bay

Step 2

Attach the hard drive bay to the 2.5-inch SATA SSD.

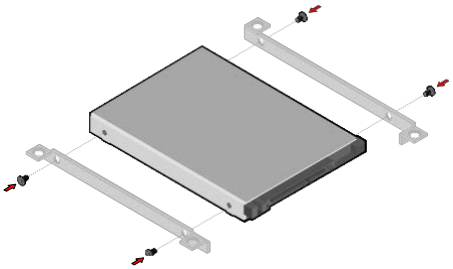

Figure 37: Installing hard drive bay to 2.5-inch SATA SSD

Step 3

Reinstall the hard drive bay with the 2.5-inch SATA SSD, and secure it with screws. Connect the other end of SATA data and power cable into the SATA SSD.

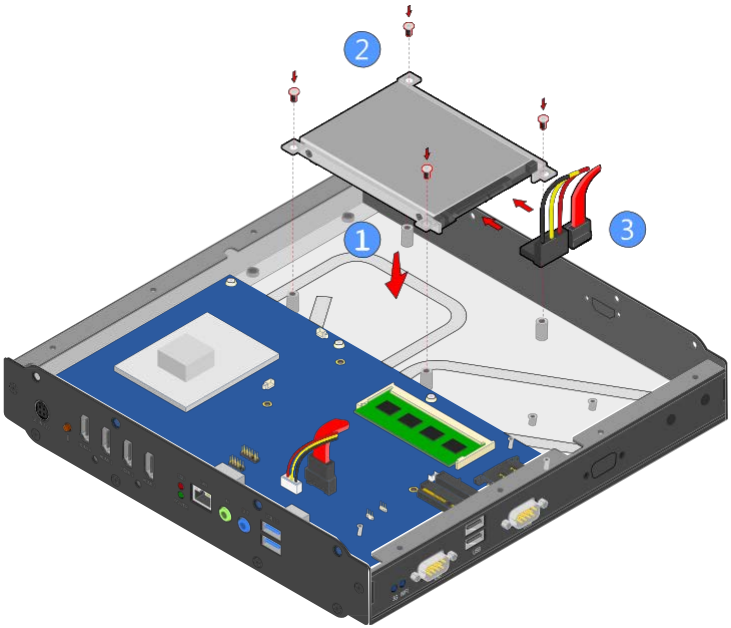

Figure 38: Installing SATA SSD and connecting SATA cables

5.6. How to install the mSATA module

Step 1
Align the notch on the mSATA module with the notch on the mini PCIe slot then insert the module at a 30° angle.

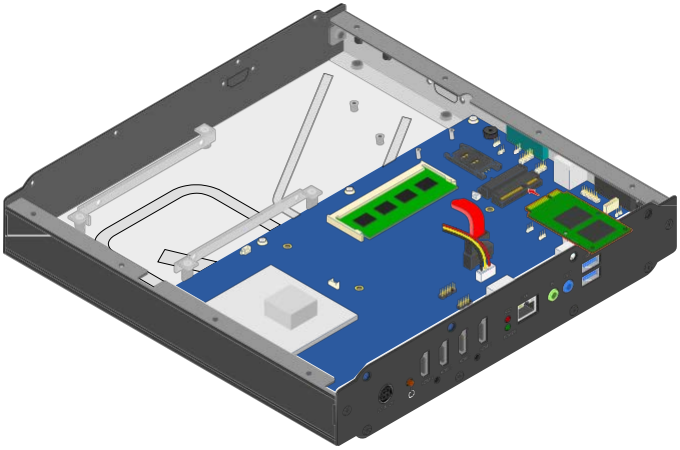

Figure 39: Inserting mSATA module

Step 2 : Once the mSATA module has been fully inserted, push down the module until the screw hole aligns with the standoff hole then secure it with two screws.

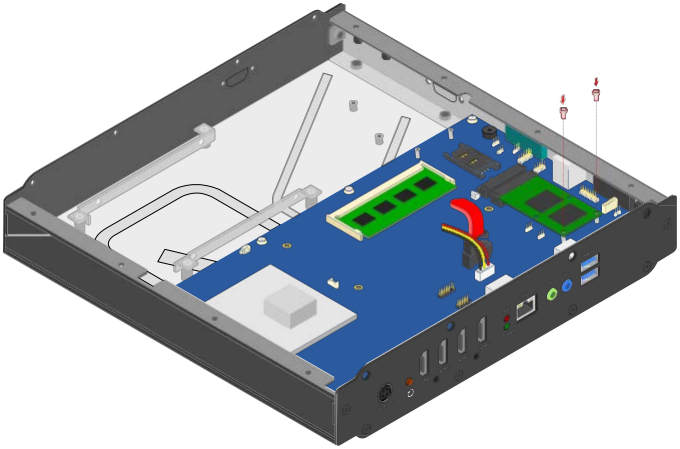

Figure 40: Securing mSATA module

5.7. How to insert SIM card

Step 1

Push back firmly the SIM card socket to unlock and open. Pull up the socket and place in the SIM card.

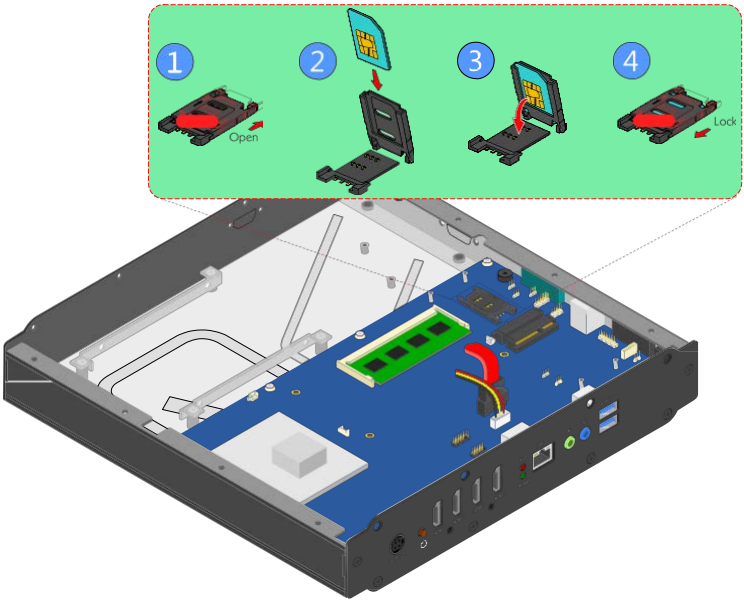

Figure 41: Inserting 3G/3.5G SIM card

Note:
Ensure the angled corner of the SIM card is placed in the correct way before closing the socket.

Step 2

Gently close the socket by pulling down the SIM socket that contains the SIM card then carefully lock the SIM socket.

5.8. How to install 3G/3.5G module and antenna

Step 1

Align the notch on the 3G/3.5G module (EMIO-1541-00A1) with the notch on the mini PCIe card slot then insert the module at a 30° angle.

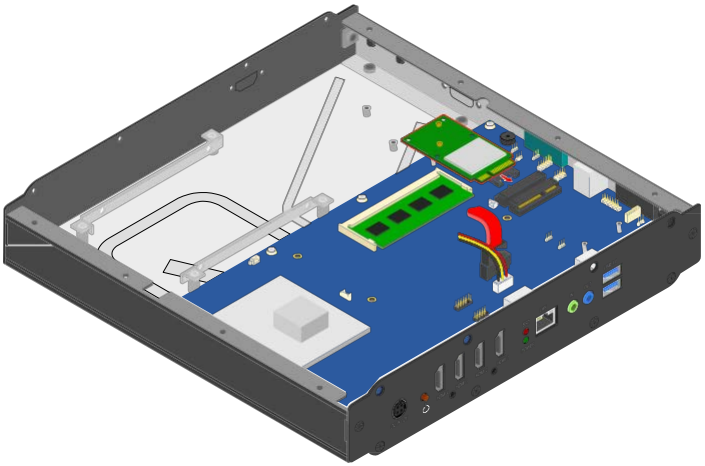

Figure 42: Inserting 3G/3.5G module

Step 2

Once the 3G/3.5G module has been fully inserted, push down the module until the screw holes align with the standoff holes. Then secure the module with screw.

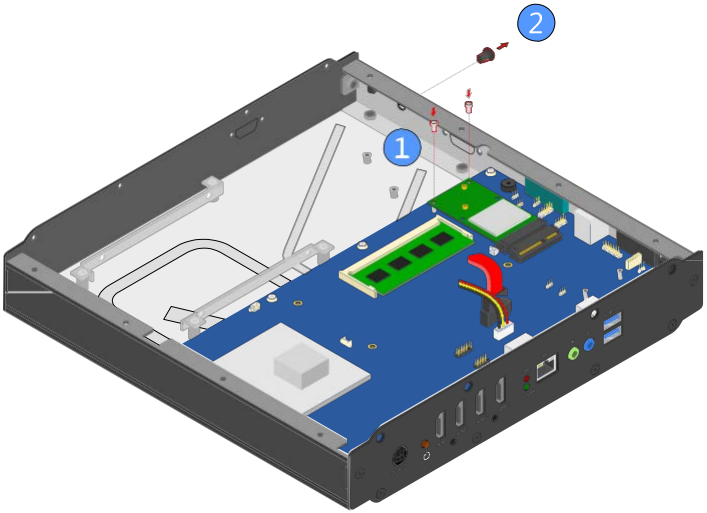

Figure 43: Securing 3G/3.5G module

Step 3

Remove the 3G/3.5G antenna hole cover from the right side panel of the chassis.

Step 4

Insert the 3G/3.5G port connector into the antenna hole from the inside of the chassis. Insert the washer and fasten it with the nut then install the external antenna. Gently connect the mini coaxial cable of the 3G/3.5G port connector to the mini RF connector on the 3G/3.5G module.

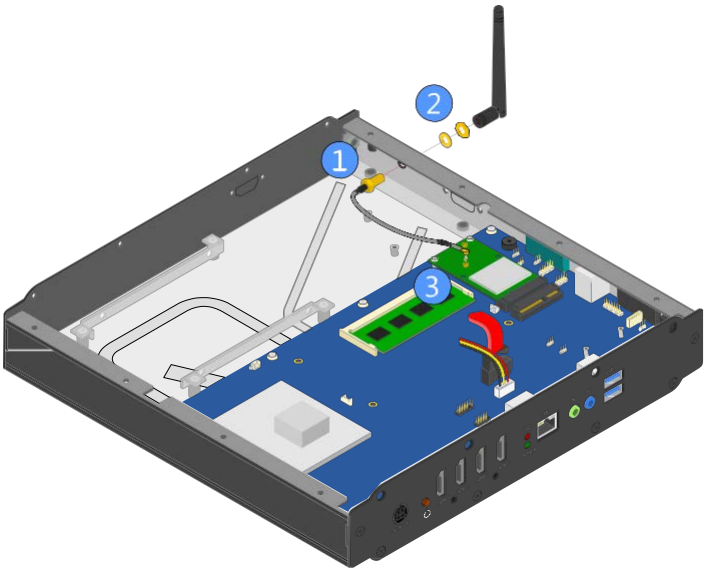

Figure 44: Installing 3G/3.5G antenna

5.9. How to install WLAN USB module and antenna

Step 1

Install the WLAN USB module (EMIO-1533-00A2) and secure it with two screws. Then remove the antenna WLAN hole cover from the right side I/O panel of the chassis.

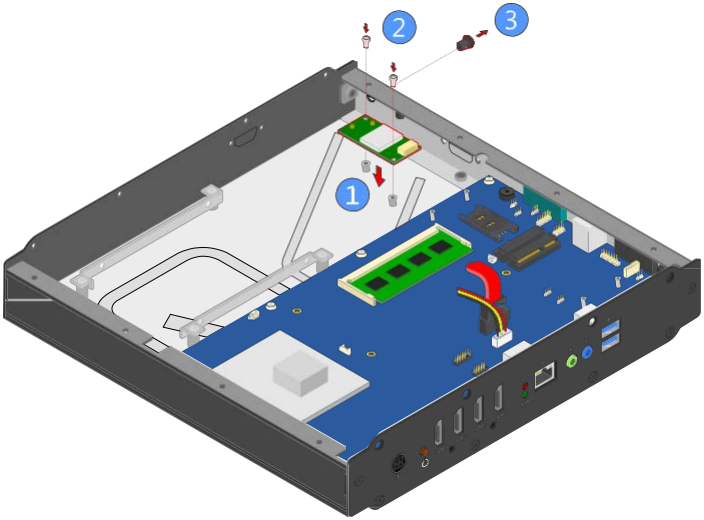

Figure 45: Installing WLAN USB module

Step 2

Insert the WLAN port connector into the antenna hole from the inside of the chassis. Insert the washer, fasten it with the nut and install the external antenna. Gently connect the mini coaxial cable of the WLAN port connector to the
mini RF connector on the WLAN USB module.

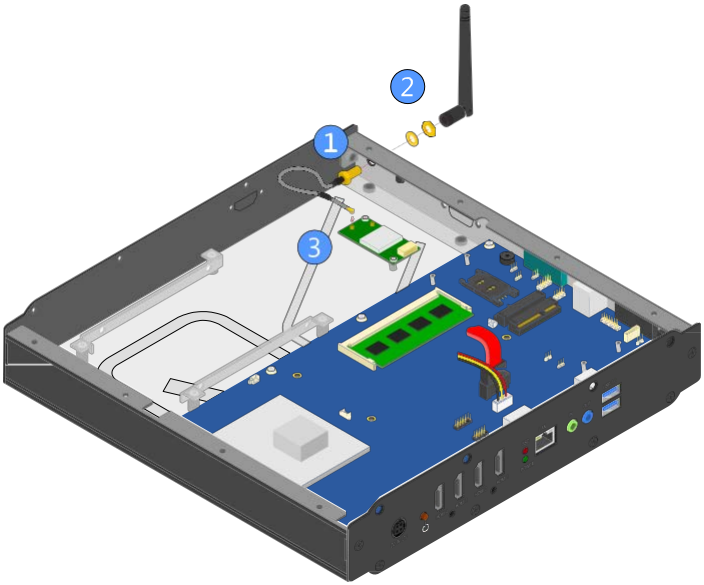

Figure 46: Installing WLAN antenna

Step 3

Attach the WLAN board to board cable to the WLAN USB module. Then attach the other end of the cable to the “JUSB2_3” pin header of the mainboard.

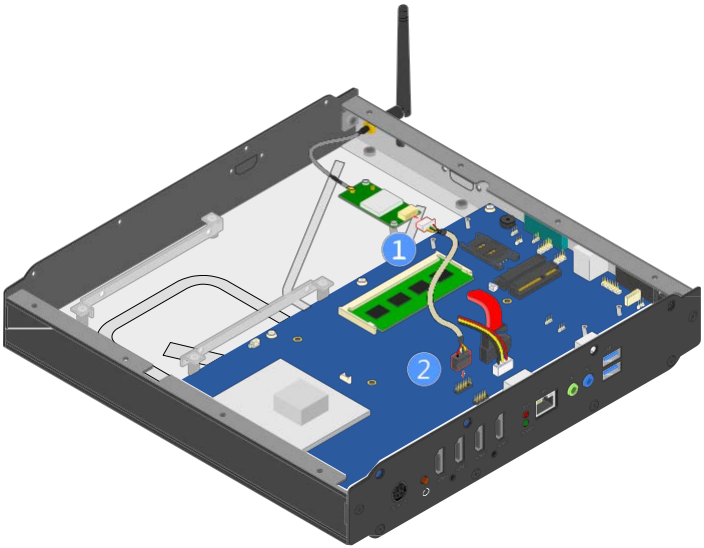

Figure 47: Connecting WLAN board to board cable

6. BIOS Setup Utility

6.1. Entering the BIOS Setup Utility

Power on the computer and press Delete during the beginning of the boot sequence to enter the BIOS Setup Utility. If the entry point has passed, restart the system and try again.

6.2. Control Keys

Up	Move up one row
Down	Move down one row
Left	Move to the left in the navigation bar
Right	Move to the right in the navigation bar
Enter	Access the highlighted item / Select the item
Esc	Jumps to the Exit screen or returns to the previous screen
+[1]	Increase the numeric value
-[1]	Decrease the numeric value
F1	General help[2]
F2	Previous value
F3	Load optimized defaults
F4	Save all the changes and exit

Notes:

1. Must be pressed using the 10-key pad.
2. The General help contents are only for the Status Page and Option Page setup menus.

6.3. Getting Help

The BIOS Setup Utility provides a “General Help” screen. This screen can be accessed at any time by pressing F1. The help screen displays the keys for using and navigating the BIOS Setup Utility. Press Esc to exit the help screen.

6.4. System Overview

The System Overview screen is the default screen that is shown when the BIOS Setup Utility is launched. This screen can be accessed by traversing the navigation bar to the “Main” label.

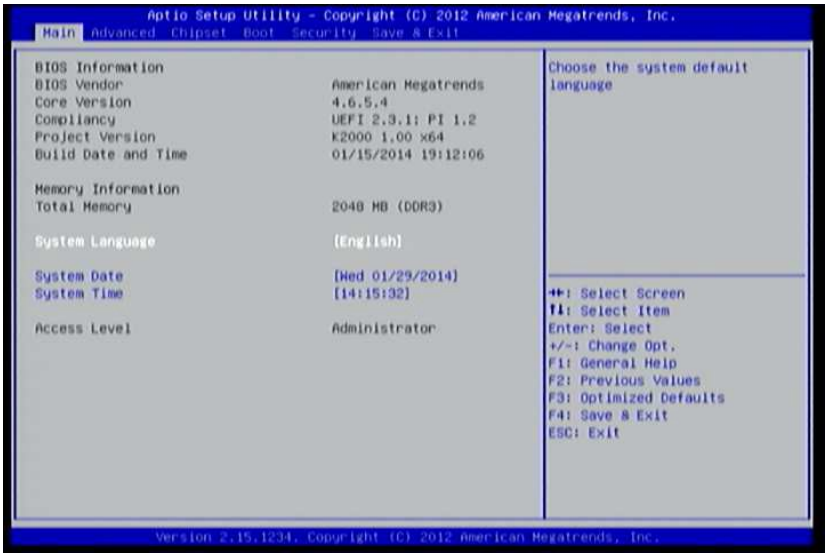

Figure 48: Illustration of the Main menu screen

6.4.1. BIOS Information

The content in this section of the screen shows the information about the vendor, the Core version, UEFI specification version, the project version and date & time of the project build.

6.4.2. Memory Information

This section shows the amount of memory that is installed on the hardware platform.

6.4.3. System Language

This option allows the user to configure the language that the user wants to use.

6.4.4. System Date

This section shows the current system date. Press Tab to traverse right and Shift+Tab to traverse left through the month, day, and year segments. The + and - keys on the number pad can be used to change the values. The weekday name is automatically updated when the date is altered. The date format is [Weekday, Month, Day, Year].

6.4.5. System Time

This section shows the current system time. Press Tab to traverse right and Shift+Tab to traverse left through the hour, minute, and second segments. The + and - keys on the number pad can be used to change the values. The time format is [Hour : Minute : Second].

6.5. Advanced Settings

The Advanced Settings screen shows a list of categories that can provide access to a sub-screen. Sub-screen links can be identified by the preceding right-facing arrowhead.

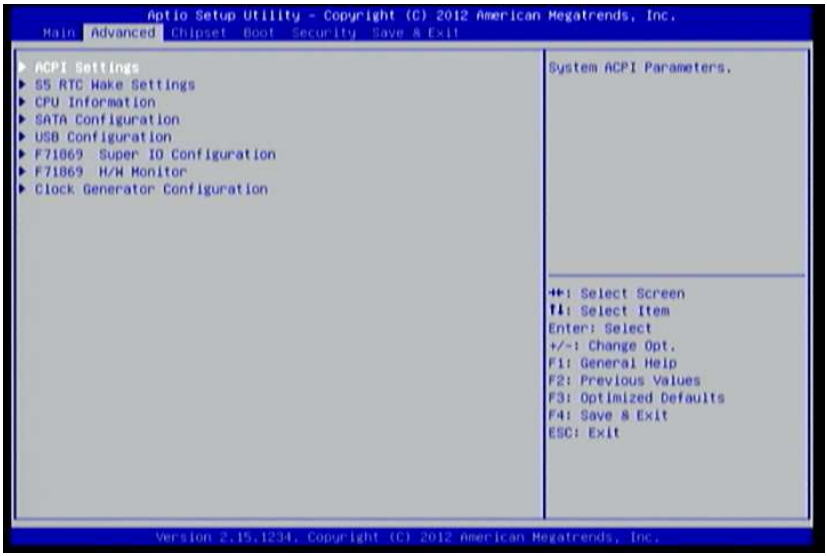

Figure 49: Illustration of the Advanced Settings screen

The Advanced Settings screen contains the following links:

- ACPI Settings
- S5 RTC Wake Settings
- CPU Configuration
- SATA Configuration
- USB Configuration
- F71869 Super IO Configuration
- F71869 H/W Monitor
- Clock Generator Configuration

6.5.1. ACPI Settings

ACPI grants the operating system direct control over system power management. The ACPI Configuration screen can be used to set a number of power management related functions.

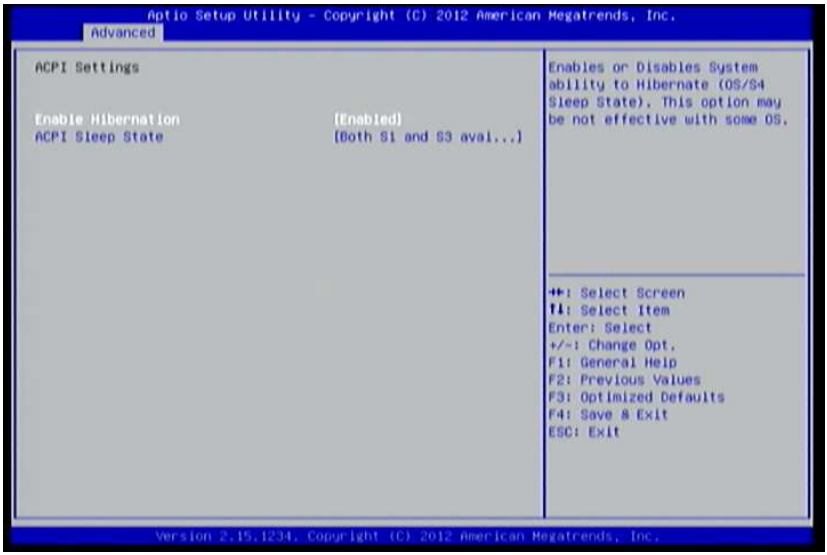

Figure 50: Illustration of the ACPI Settings screen

6.5.1.1. Enable Hibernation

Enable/disable system ability to Hibernate.

6.5.1.2. ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the SUSPEND button is selected. Available options are: Suspend Disabled / S1 only (CPU Stop Clock) /S3 only(Suspend to RAM) / Both S1 and S3 available for OS to choose from.

6.5.2. S5 RTC Wake Settings

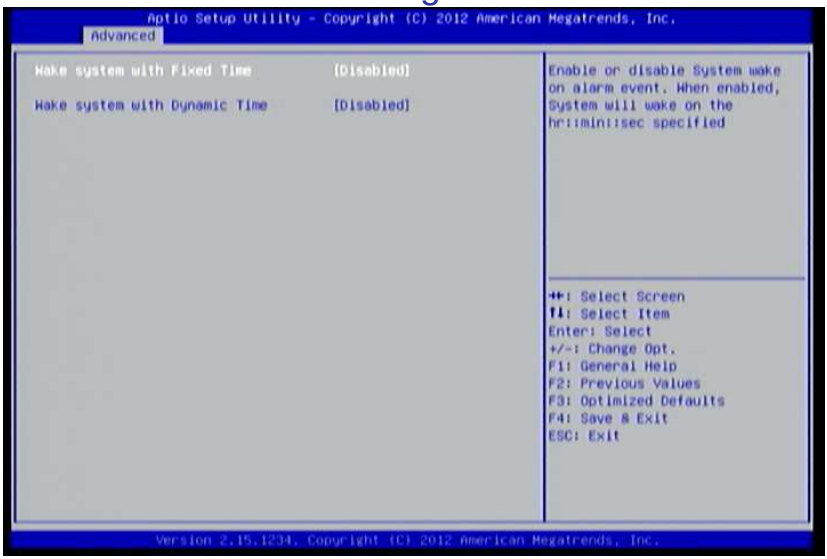

Figure 51: Illustration of the S5 RTC Wake Settings screen

6.5.2.1. Wake system with Fixed Time

Enable or disable system wake on alarm event. When enabled, system will wake on the hr:min:sec specified.

6.5.2.2. Wake system with Dynamic Time

Enable or disable system wake on alarm event. When enabled, system will wake on the current time + Increase minutes. Available options are 1 – 5.

6.5.3. CPU Configuration

The CPU Configuration screen shows detailed information about the built-in processor.

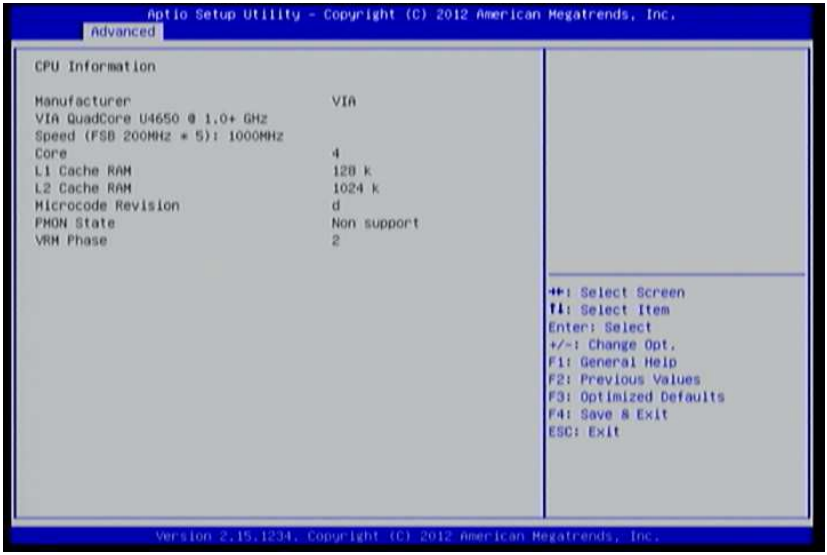

Figure 52: Illustration of CPU Configuration screen

6.5.4. SATA Configuration

The SATA Configuration screen allows the user to view and configure the SATA configuration settings.

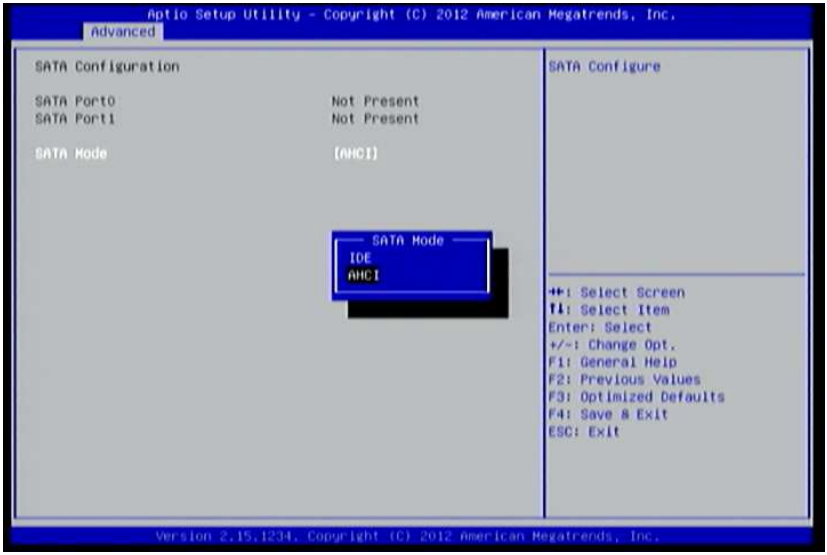

Figure 53: Illustration of SATA Configuration screen

6.5.4.1. SATA Mode

This option allows the user to manually configure SATA controller for a particular mode.

IDE Mode

Set this value to change the SATA to IDE

mode. AHCI Mode

Set this value to change the SATA to AHCI mode.

6.5.5. USB Configuration

The USB Configuration screen shows the number of connected USB devices. Additionally, support for various USB features can be enabled or disabled.

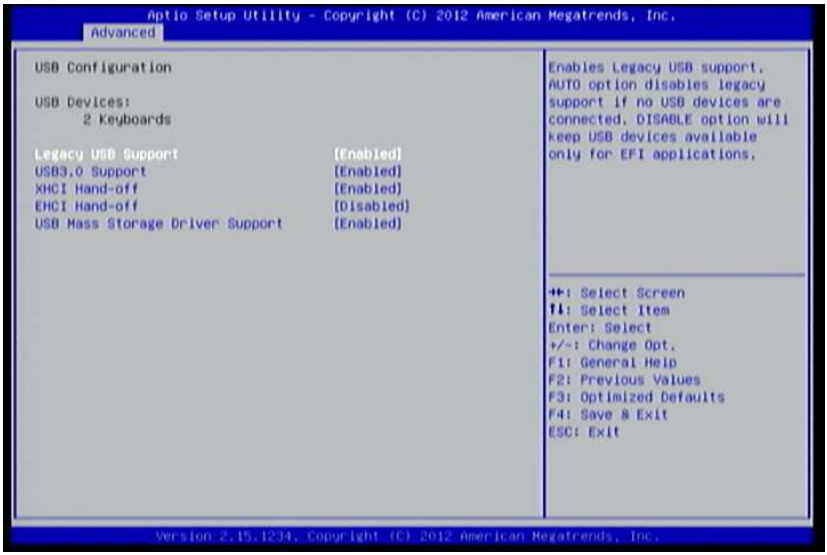

Figure 54: Illustration of USB Configuration

6.5.5.1. Legacy USB Support

The Legacy USB Support feature has three options: Enabled, Disabled and Auto. When set to Enabled, the system enables support for legacy USB devices. When set to Disabled, the system disables support for legacy USB devices. When set to Auto, the system automatically disables legacy support if no USB Devices are connected.

6.5.5.2. USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

6.5.5.3. XHCI Hand-off

This is a workaround for Operating Systems without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Enabled
This option enables XHCI hand-off support.

Disabled
This option disables XHCI hand-off support.

6.5.5.4. EHCI Hand-off

This is a workaround feature for Operating Systems without EHCI hand-off support. The EHCI ownership must be claimed by EHCI Driver.

Enabled
This option enables EHCI hand-off support.

Disabled
This option disables EHCI hand-off support.

6.5.5.5. USB Mass Storage Driver Support

Enable/Disable USB Mass Storage Driver Support.

6.5.6. F71869 Super IO Configuration

The F71869 Super IO Configuration screen allows the user to set system Super IO Chip parameters.

Figure 55: Illustration of F71869 Super IO Configuration screen

6.5.6.1. Serial Port 0 Configuration

Set parameters of Serial Port 0 (COMA).

6.5.6.1.1. UART Mode

Change the serial port mode. This feature has 3 options: RS232/RS422/RS485.

6.5.6.2. Serial Port 1 Configuration

Set parameters of Serial Port 1 (COMB)

6.5.6.2.1. UART Mode

Change the serial port mode. This feature has 3 options: RS232/RS422/RS485.

6.5.7. PC Health Status

The PC Health Status screen displays and monitored aspects of system such as CPU temperature, system temperature, and voltages of the power planes.

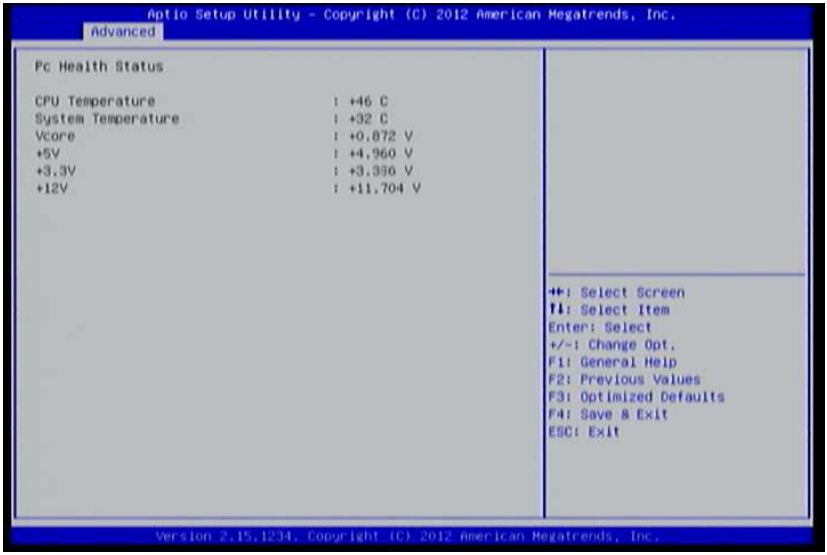

Figure 56: Illustration of PC Health Status screen

6.5.8. Clock Generator Configuration

The Clock Generator Configuration screen enables access to the Spread Spectrum Setting feature.

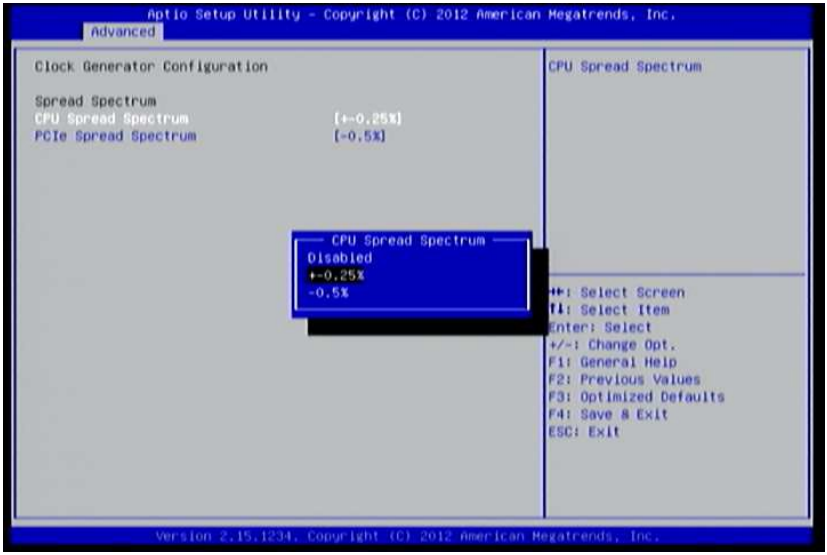

Figure 57: Illustration of Clock Generator Configuration screen

6.5.8.1. CPU Spread Spectrum

The Spread Spectrum Setting feature enables the BIOS to modulate the clock frequencies originating from the mainboard. The settings are in percentages of modulation. Higher percentages result in greater modulation of clock frequencies. This feature has 3 options: Disabled, +-0.25% and -0.5%.

6.5.8.2. PCIe Spread Spectrum

Select PCIe Spread Spectrum. This feature has 2 options: Disabled and -0.5%.

6.6. Chipset Settings

The Chipset Settings screen shows a list of categories that can provide access to a sub-screen. Sub-screen links can be identified by the preceding right- facing arrowhead.

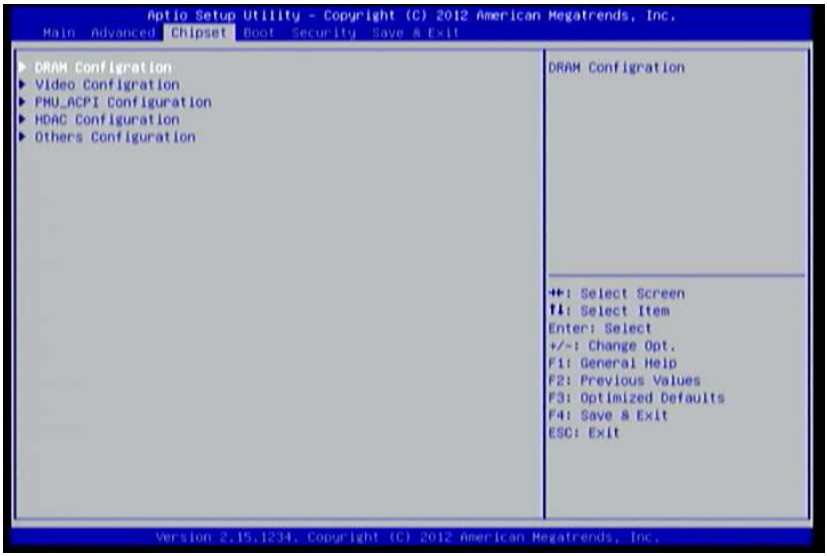

Figure 58: Illustration of Chipset Settings screen

The Chipset Settings screen contains the following links:

- DRAM Configuration
- Video Configuration
- PMU-ACPI Configuration
- HDAC Configuration
- Others Configuration

6.6.1. DRAM Configuration

The DRAM Configuration screen has two features for controlling the system DRAM. All other DRAM features are automated and cannot be accessed.

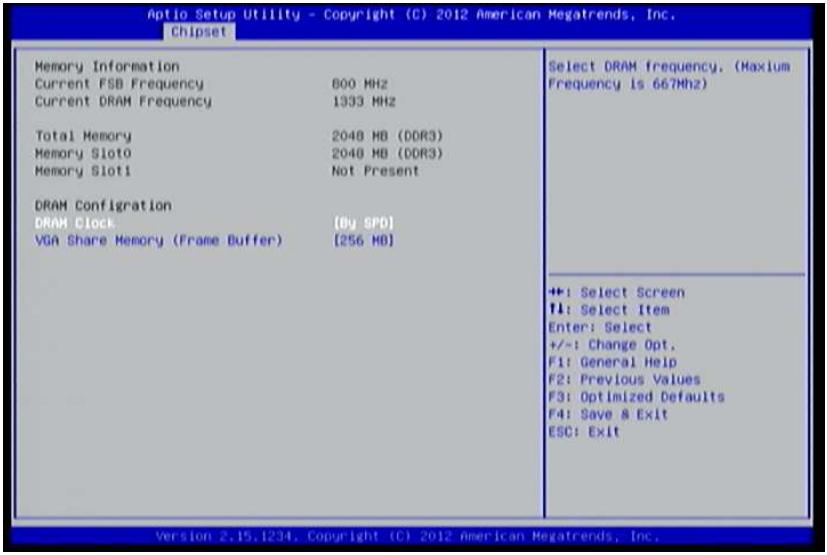

Figure 59: Illustration of DRAM Configuration screen

6.6.1.1. DRAM Clock

The DRAM Clock option enables the user to determine how the BIOS handles the memory clock frequency. The memory clock can either be dynamic or static. This feature has eleven options.

By SPD
By SPD option enables the BIOS to select a compatible clock frequency for the installed memory.

400 MHz
The 400 MHz option forces the BIOS to be fixed at 800 MHz for DDR3 memory modules.

533 MHz
The 533 MHz option forces the BIOS to be fixed at 1066 MHz for DDR3 memory modules.

566 MHz
The 566 MHz option forces the BIOS to be fixed at 1132 MHz for DDR3 memory modules.

600 MHz
The 600 MHz option forces the BIOS to be fixed at 1200 MHz for DDR3 memory modules.

633 MHz
The 633 MHz option forces the BIOS to be fixed at 1266 MHz for DDR3 memory modules.

667 MHz
The 667 MHz option forces the BIOS to be fixed at 1334 MHz for DDR3 memory modules.

6.6.1.2. VGA Share Memory (Frame Buffer)

The VGA Share Memory feature enables the user to choose the amount of the system memory to reserve for use by the integrated graphics controller. The selections of memory amount that can be reserved are 256MB and 512MB.

6.6.2. Video Configuration

The Video Configuration screen has features for controlling the integrated graphics controller in the VX11 chipset.

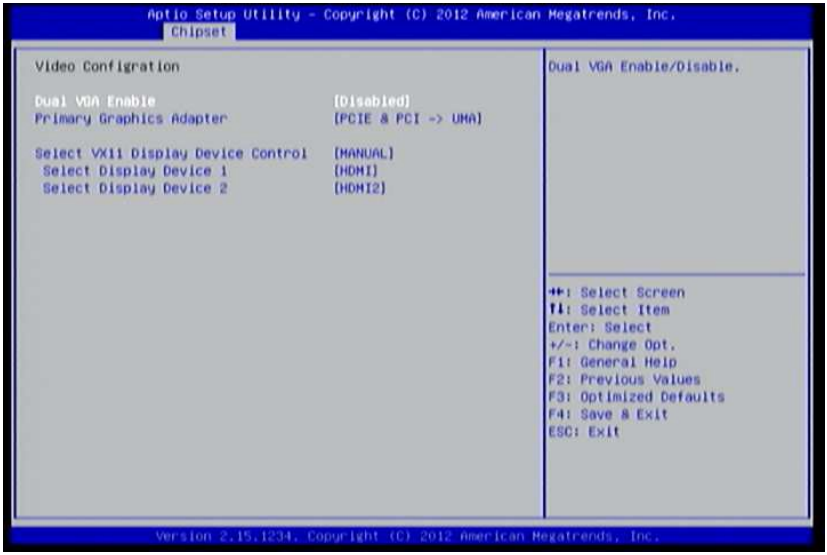

Figure 60: Illustration of Video Configuration screen

6.6.2.1. Dual VGA Enable

The Dual VGA feature enables the user to output display to two display devices. This feature has two options: enabled and disabled. A driver must be installed in the OS in order for this function to function.

6.6.2.2. Primary Graphics Adapter

The Primary Graphics Adapter option enables the user to change the order in which the BIOS seeks for a graphics adapter. There are two paths that can be chosen.

- PCIE & PCI -> UMA
- UMA -> PCIE & PCI

6.6.2.3. Select VX11 Display Device Control

Select VX11 Display Device Control. Available selections are: Auto and Manual.

6.6.2.4. Select Display Device 1 and 2

The Select Display Device feature enables the user to choose a specific display interface. This feature has three options: CRT, HDMI and HDMI2. If both Select Display Device 1 and Select Display Device 2 are set to the same interface, then any display device connected to the other interface will not
function. For example, if both Select Display 1 and 2 are set to HDMI, then no data will be sent to the HDMI2 port.

6.6.3. PMU_ACPI Configuration

The PMU_ACPI Configuration screen can be used to set a number of power management related functions.

Figure 61: Illustration of PMU_ACPI Configuration screen

6.6.3.1. Other Control

Figure 62: Illustration of Other Control screen

6.6.3.1.1. AC Loss Auto-restart

AC Loss Auto-restart defines how the system will respond after AC power has been interrupted while the system is on. There are three options.

Power Off
The Power Off option keeps the system in an off state until the power button is pressed again.

Power On
The Power On option restarts the system when the power has returned.

Last State
The Last State option restores the system to its previous state when the power was interrupted.

6.6.3.1.2. USB S4 WakeUp

The USB S4 WakeUp enables the system to resume through the USB device port from S4 state. There are two options: “Enabled” or “Disabled”.

6.6.4. HDAC Configuration

HDAC Configuration Parameters.

Figure 63: Illustration of HDAC Configuration screen

6.6.4.1.1. OnChip HDAC Device

This feature has two options: Enable or Disable HDAC Control.

6.6.5. Others Configuration

The Others Configuration screen can be used to set Watchdog Timer Configuration.

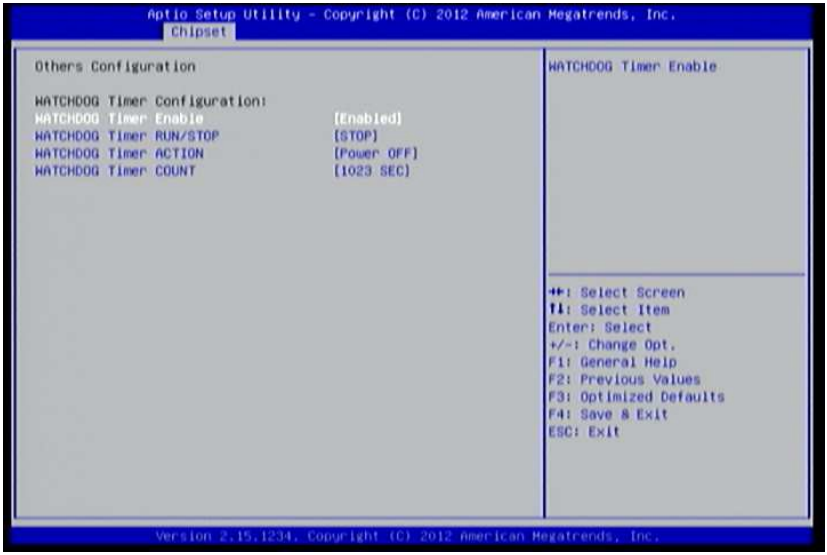

Figure 64: Illustration of Others Configuration screen

6.6.5.1. WATCHDOG Timer Enable

The WATCHDOG Timer Enable feature unlocks three other features that enable the BIOS to monitor the state of the system. This feature has two options: enabled or disabled.

6.6.5.2. WATCHDOG Timer RUN/STOP

The WATCHDOG Timer RUN/STOP feature controls if the WATCHDOG timer is active or dormant. This feature has two options: stop and run.

6.6.5.3. WATCHDOG Timer ACTION

The WATCHDOG Timer ACTION feature determines the action the WATCHDOG timer should take if the timer counts down to zero. This feature has two options: reset and power off.

6.6.5.4. WATCHDOG Timer COUNT

The WATCHDOG Timer COUNT feature determines the length of time the timer should count when the timer is first triggered. This feature has four options: 72, 389, 706, and 1023 seconds.

6.7. Boot Settings

The Boot Settings screen has a single link that goes to the Boot Configuration and Boot Option Priorities screens.

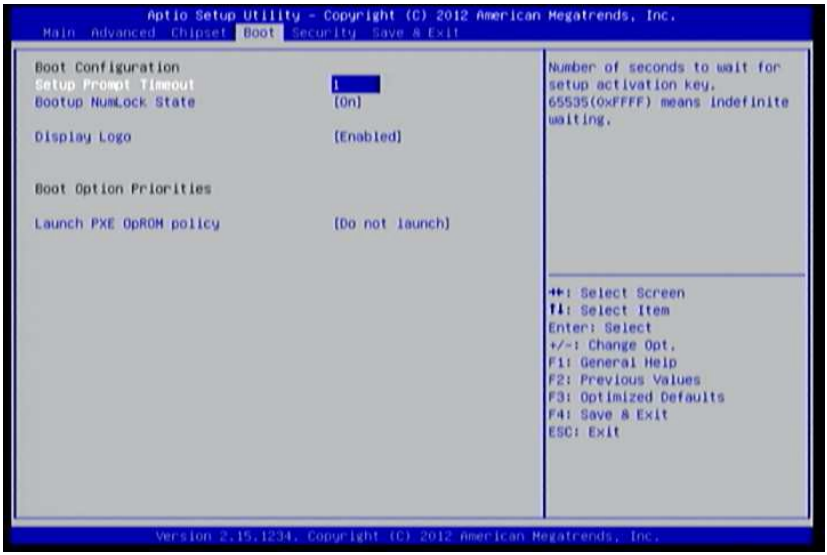

Figure 65: Illustration of Boot Settings screen

6.7.1. Boot Configuration

The Boot Settings Configuration screen has several features that can be run during the system boot sequence.

6.7.1.1. Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

6.7.1.2. BootupNumLock State

Select the keyboard NumLock state from On and Off.

6.7.1.3. Display Logo

The Display Logo feature hides all of the Power-on Self Test (POST) messages during the boot sequence. Instead of the POST messages, the user will see an OEM logo. This feature has two options: enabled and disabled.

6.7.2. Boot Option Priorities

The Boot Option Priorities screen lists all bootable devices.

6.7.2.1. Launch PXE OpROM policy

Do not launch

Prevent the option for Legacy Network

Device. Legacy only

Allow the option for Legacy Network Device.

6.8. Security Settings

The Security Settings screen provides a way to restrict access to the BIOS or even the entire system.

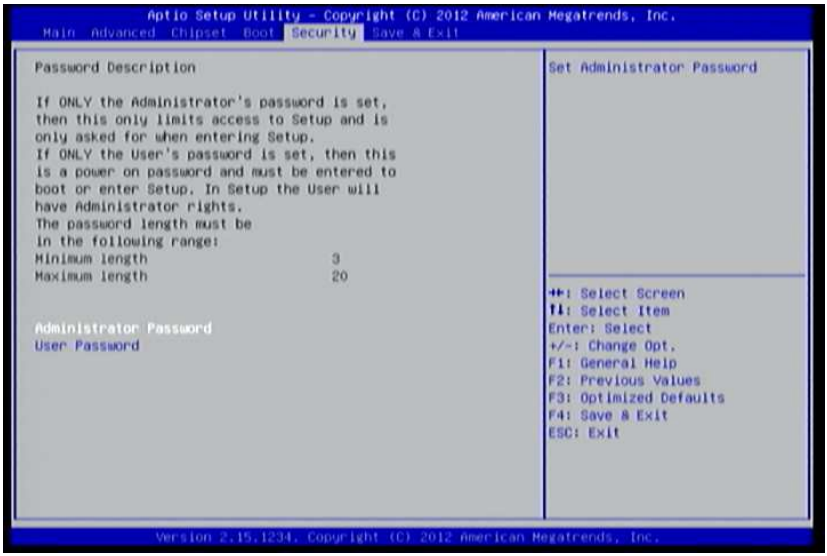

Figure 66: Illustration of Security Settings screen

6.8.1. Security Settings

6.8.1.1. Administrator Password / User Password

This option is for setting a password for accessing the BIOS setup utility. When a password has been set, a password prompt will be displayed whenever the BIOS setup utility is launched. This prevents an unauthorized person from changing any part of the system configuration.

When a supervisor password is set, the Password Check option will be unlocked.

6.9. Save & Exit

The Save & Exit Configuration screen has the following features:

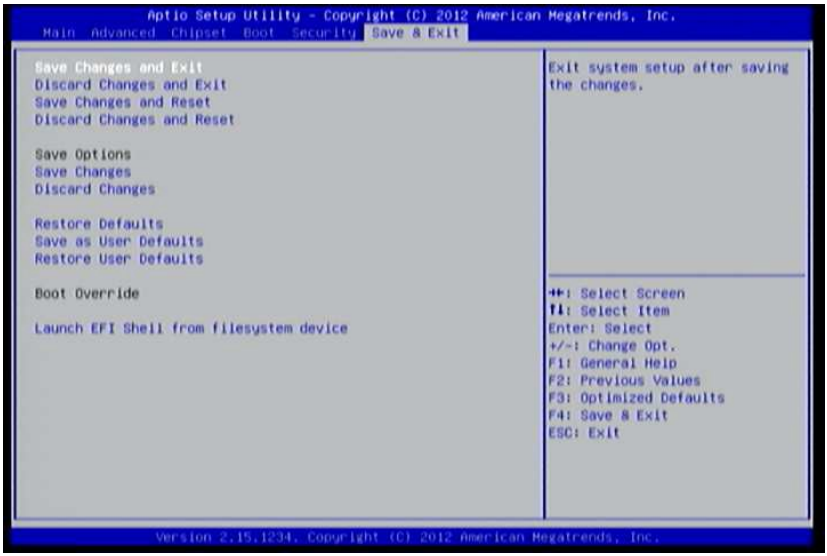

Figure 67: Illustration of Save & Exit screen

6.9.1. Save Changes and Exit

Save all changes to the BIOS and exit the BIOS Setup Utility. The “F10” hotkey can also be used to trigger this command.

6.9.2. Discard Changes and Exit

Exit the BIOS Setup Utility without saving any changes. The “Esc” hotkey can also be used to trigger this command.

6.9.3. Save Changes and Reset

Save all changes to the BIOS and reboot the system. The new system configuration parameters will take effect.

6.9.4. Discard Changes and Reset

This command reverts all changes to the settings that were in place when the BIOS Setup Utility was launched. The “F7” hotkey can also be used to trigger this command.

6.9.5. Save Changes

Save Changes done so far to any of the setup options.

6.9.6. Discard Changes

This command reverts all changes to the settings that were in place when the BIOS Setup Utility was launched.

6.9.7. Save as User Defaults

Save the changes done so far as User Defaults.

6.9.8. Restore User Defaults

Restore the User Defaults to all the setup options.

6.9.9. Launch EFI Shell from file system device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available file system devices

7. Software and Technical Supports

7.1. Microsoft Support

The ViewZ PRO MINI is highly compatible with Microsoft Windows operating systems.

7.1.1. Driver Installation

Microsoft Driver Support

The latest Windows drivers can be downloaded from the Embedded website at http://www.viewzusa.com

7.2. Technical Supports and Assistance

- For utilities downloads, latest documentation and new information about the VZ-PRO-MINI, go to http://www.viewzusa.com
- For technical support and additional assistance, always contact your local sales representative or board distributor, or go to http://www.viewzusa.comto fill up the form request.
- For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. Contact VIA Embedded to submit a request.

Appendix A. Quick Setup Diagram

A setup diagram of Video Wall system using the VZ-PRO-MINI is shown in figure below.

The quick setup diagram is only intended to be used as a reference guide for setting up Video Wall system. It is not required or intended to be a step by step procedure for the setup.

Before the installation setup

Read first this Quick Setup Diagram section before taking any action. Ensure that all items, peripherals, cables and tools needed are present before starting the installation setup.

Make sure the power cord of VZ-PRO-MINI is unplugged before the installation setup.

VZ-PRO-MINI is a little bit heavy. Avoid dropping the system accidentally, handle it tightly directly on its body chassis and avoid holding it on any external I/O connectors.

Do not place the system on unstable surfaces or walls

If you are unfamiliar with the installation process consult qualified personnel

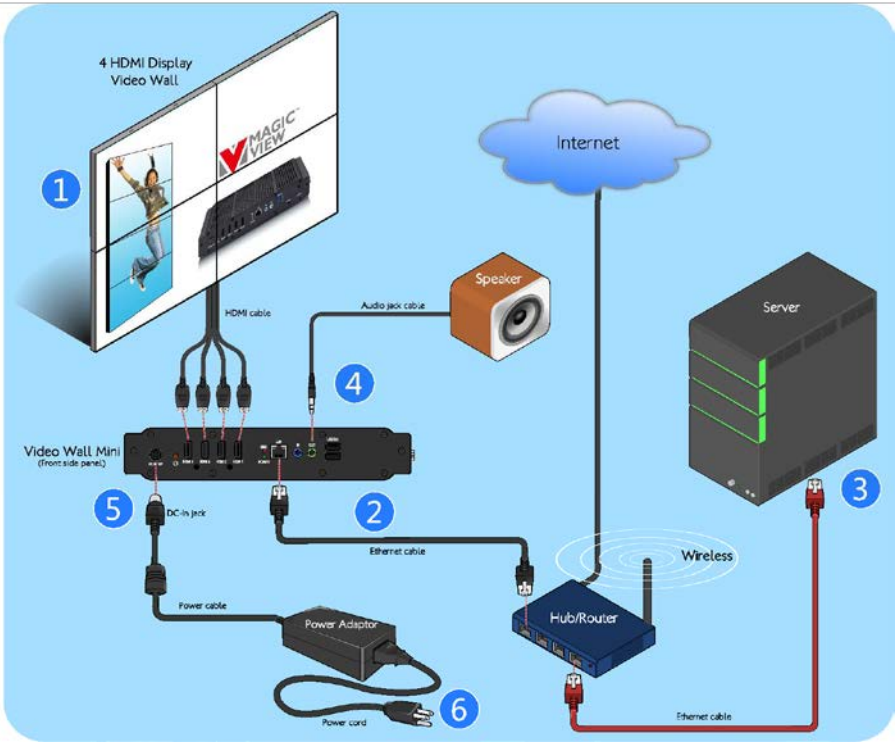

Figure 68: Front side setup diagram

1. Connecting the video wall display

The front side panel of VZ-PRO-MINI has four HDMI ports (HDMI 1 ~ HDMI 4). Connect the HDMI cables of video wall displays to its designated HDMI port numbers on VZ-PRO-MINI (e.g. video wall display number 1 and 2 must be connected to HDMI 1 and HDMI 2 ports respectively).

2. Connecting to the network via cable wire

If using a network, connect the Ethernet cable to the LAN port on Video Wall Mini. Then connect the other end of the cable to the Hub/Router.

3. Connecting the control server

Attach the Ethernet cable from LAN port of the control Server to the LAN port on Hub/Router

4. Connecting the speaker

Plug the audio cable into the Line-out jack on Video Wall Mini

5. Connecting the power cable

Plug the power cable into the DC-In jack on Video Wall Mini.

6. Plug in the power adaptor

Plug the VZ-PRO-MINI power cord into an electrical outlet. Make sure all other connections must be done, all components and network are properly set up and ready before turning on the power of Video Wall Mini.

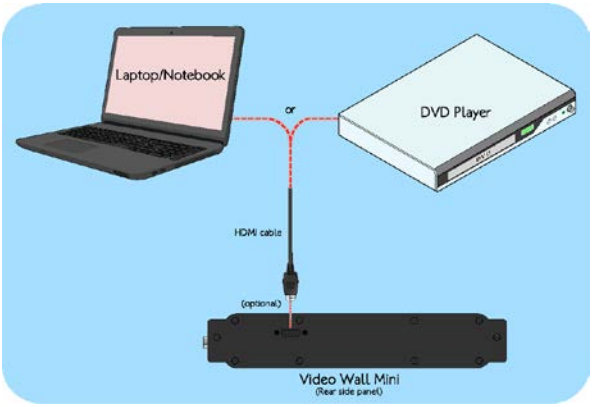

Figure 69: Rear side setup diagram

The VZ-PRO-MINI has a reserved HDMI cutout on the rear side panel for additional HDMI In port on the system. The HDMI In port can be installed via onboard HDMI module controller. The additional HDMI In port can support external digital/video sources such as Notebook PC, DVD player and etc. For more information on this please contact your sales representative.