USER MANUAL

VIPRO VP7910

Fanless quad-core panel PC with 10.4" resistive or projective capacitive touch screen

1.09-09212018-171200

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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, VIA Technologies 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.

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 75°C (167°F). The equipment may be damaged.
- ☐ 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 Contents

- ☐ 1 x VIPRO VP7910 system unit
- ☐ 8 x M4*8mm screws
- ☐ 4 x M3*5mm screws
- ☐ 1 x Panel mounting bracket
- ☐ 1 x Power cable , 2-Pole Phoenix plug to DC-jack

Ordering Information

Part Number	Description
VP-7910-R1Q12A1	1.2GHz VIA Eden® X4 CPU based fanless 10.4" Resistive touch panel system with 800 x 600 LCD, pre-assembled 2GB SDRAM, HDMI, VGA, 2 x USB 3.0, 2 x USB 2.0, 3 COM, DIO, 2 x Gigabit Ethernet, SATA, mSATA, 2 x miniPCIe slots, panel mount bracket, 9~32V DC-in
VP-7910-P1Q12A1	1.2GHz VIA Eden® X4 CPU based fanless 10.4" Projective Capacitive touch panel system with 1024 x 768 LCD, pre-assembled 2GB SDRAM, HDMI, VGA, 2 x USB 3.0, 2 x USB 2.0, 3 x COM, DIO, 2 x Gigabit Ethernet, SATA, mSATA, 2 x miniPCIe slots, panel mount bracket, 9~32V DC-in

Optional Accessories

External AC-to-DC Adapter and Power Cord

Part Number	Description
99G63-020316	AC-to-DC adapter, 2-pole, DC 12V/5A, 60W
99G33-02032C	Power cord, 180cm, USA type
99G33-02034C	Power cord with PSE mark, 180cm for Japan market
99G33-02033C	Power cord, 180cm, Europe type

Wireless Accessories

Part Number	Description
00GO27100BU2B0D0	VNT9271 IEEE 802.11b/g/n USB Wi-Fi dongle
EMIO-1533-00A2	VNT9271 IEEE 802.11 b/g/n USB Wi-Fi module with assembly kit and antenna
EMIO-5531-00A1	VAB-820-W IEEE 802.11b/g/n USB Wi-Fi & Bluetooth module with assembly kit and antenna
EMIO-2531-00A1	VAB-820-W-M IEEE 802.11b/g/n miniPCIe Wi-Fi & Bluetooth module with assembly kit and antenna
EMIO-2550-00A1	3.75G HSPA/UMTS mobile broadband full size miniPCIe module with GPS and SIM card slot

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1. Product Overview

The VIPRO VP7910 Fanless Touch Panel PC is an embedded panel computer with a 10.4" TFT LCD and analog resistive (or projective capacitive) touch screen. The VIPRO VP7910 has a VIA Eden® 1.2GHz quad core processor- making it an ideal solution for applications that require low power consumption, fanless, noise-free operation, and multiple I/O interface.

The VIPRO VP7910 comes with robust housing design that withstands shock and vibration. Its LCD has wide viewing angles; high contrast and high brightness that can operate up to 230 (or 400) cd/m^2 of brightness. The VIPRO VP7910 accepts a wide range of DC power input voltages from DC 9V~32V. It is equipped with one DDR3 1333 SODIMM slot that supports up to 2GB of memory, two Gigabit Ethernet port, two USB 2.0 ports, two USB 3.0 ports, three configurable COM ports (with 5V/12V selector), and one GPIO port.

The VIPRO VP7910 also has an external VGA port and HDMI port that enables dual independent displays and high definition audio ports which makes it ideal for multimedia applications. Storage can be integrated into its internal mSATA flash drive slot and 2.5" internal SATA hard drive bay. It also includes a variety of mounting options that make it a flexible system to install.

These features make the VIPRO VP7910 Fanless Touch Panel PC suitable for a wide variety of embedded, multimedia, and industrial HMI (Human Machine Interface) applications including factory automation systems, precision machinery, production process control, terminal information systems, entertainment management systems, and car park automation systems…etc. The VIPRO VP7910 is a reliable, cost-effective solution that can shorten your application development time.

1.1. Key Features

- ☐ **Fanless and Robust Chassis Design**
  Noise free and fanless operation in a sealed aluminum chassis that does double duty as a thermal solution.
- ☐ **Front Panel IP65 compliant**
  Front panel IP65 compliant against water and dust.
- ☐ **Networking options**
  The VIPRO VP7910 provides two Gigabit Ethernet support for high speed data transmission. Through miniPCIe slots, an optional wireless networking modules can provide the system with the freedom of 3G and Wi-Fi access.
- ☐ **Empowered Multimedia Capabilities**
  Built-in 3D/2D performance graphics engine with MPEG-2, VC1 and H.264 decoding accelerator.
- ☐ **Dual SIM (Stand-by) card slots**
  The VIPRO VP7910 has built-in dual SIM card slots that can support two active 3G SIM card simultaneously from two different/the same mobile phone service providers for 3G communication.
- ☐ **Storage Expansion**
  The mSATA slot and hard disk drive bay enables VIPRO VP7910 to have flexible storage options of either mSATA flash drive or 2.5" SATA HDD. The 2.5" SATA HDD bay has special cushioned design that absorbs vibration to ensure maximum reliability under harsh conditions.

- ☐ **Support for a Wide Range of Power Sources**
  VIPRO VP7910 supports a wide range of input power from 9V~32V DC. The flexibility of power input enables the system to be deployable for various automation environments.

- ☐ **Panel/Wall/VESA Mountable**
  Multiple mounting options make it easy to install anywhere, including Panel, VESA and Wall mount.

- ☐ **Embedded OS ready**
  100% compatible with several operating systems including Microsoft Windows 8/10, Microsoft Windows Embedded Standard 7 and Linux.

1.2. Product Specifications

1.2.1. VP-7910-R1Q12A1

Computing System

- **Processor**
  - 1.2GHz VIA Eden® X4
- **System Chipset**
  - VIA VX11H Media System Processor
- **BIOS**
  - AMI Aptio UEFI BIOS, 32Mbit SPI Flash memory
- **System Power Management**
  - ACPI 3.0 compliant
- **System Monitoring**
  - ACPI Supported, Wake-on LAN, Keyboard power-on, Timer power-on, System power management, AC power failure recovery, Watchdog timer

System Memory

- **Technology**
  - 1 DDR3 SODIMM slot, up to 8GB memory size
- **Maximum Capacity**
  - Pre-assembled 2GB SDRAM

Graphics

- **Controller**
  - Integrated VIA C-640 DX11 3D/2D graphics with MPEG-2, WMV9, VC1 and H.264 video decoding acceleration

LCD Display

- **LCD Type**
  - 10.4" Color TFT LCD panel
- **LCD MTBF**
  - 30,000 hrs
- **Contrast Ratio**
  - 500:1
- **Luminance (cd/m^2)**
  - 230
- **Viewing Angle (H/V°)**
  - 80°(left), 80°(right), 60°(up), 70°(down)
- **Pixel Pitch (mm)**
  - 0.264 x 0.264
- **Max. Colors**
  - 16.2M
- **Max. Resolution**
  - 800 x 600

Touch Screen

- **Type**
  - 5-wire analog resistive
- **Light Transmission**
  - 80% ± 3%
- **Controller**
  - USB interface
- **Driver**
  - Windows, Linux

Ethernet

- **Controller**
  - VIA VT6130 PCIe Gigabit Ethernet controller
  - Realtek RTL8111G PCIe Gigabit Ethernet controller
- **Interface**
  - Supports Wake On LAN (WOL)
  - Support Preboot Execution Environment (PXE)
  - 1 x 6 pin connector reserved to support VIA EMIO-1533 USB Wi-Fi module

Audio

- **Controller**
  - VIA VT2021 High Definition Audio Codec
- **Interface**
  - Supports Line-out, Line-in and Mic-in audio jacks

USB 3.0

- **Interface**
  - Supports two USB 3.0 ports

USB 2.0

- **Interface**
  - Supports two USB 2.0 host ports

Serial

- **Controller**
  - Onboard Fintek Super I/O F81865 controller
- **Interface**
  - 3 x COM ports
    - BIOS selectable to support adjust functionality of RS-232/422/485 mode of COM1, COM2 and COM3 port
    - 5V/12V power selection by BIOS setup for COM1 ~ COM3 port.

GPIO

- General Purpose I/O
  - Support one GPIO port
    - 8-bit GPIO+5V power source (4GPI+4GPO)

MiniPCIe Slot

- Interface
  - Support two onboard MiniPCIe slots
  - Supports 3 external antenna for optional Wi-Fi, 3G, and GPS module

SIM Card Slot

- Interface
  - Support two onboard SIM card slots

mSATA

- Controller
  - Integrated Serial ATA 2.0 Controller built-in VX11 chipset
- Interface
  - Support one onboard mSATA interface

Storage

- Interface
  - 1 x mSATA slot for mSATA flash drive
  - 1 x SATA port onboard for 2.5" of SATA II HDD
    - 1 x SATA onboard power connector

Watchdog Timer

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

Onboard I/O Coastline Connectors

- **Bottom Panel I/O Coastline**
  - 2 x USB 3.0 ports
  - 2 x USB 2.0 ports
  - 1 x Mini HDMI port
  - 1 x VGA port
  - 2 x Gigabit Ethernet ports
  - 3 x 3.5 Ø audio jacks consisting Line-out, Line-in and Mic-in
  - 1 x Power On/Off Button
  - 1 x Green LED indicator (Power on/off status)
  - 1 x Red LED indicator (HDD activities status)
  - 1 x DC-In jack power input (2-pole Phoenix)
- **Right Panel I/O**
  - 3 x COM ports
    - for RS-232/422/485 (powered by selectable 5V/12V)
  - 1 x DIO port for 8-bit GPIO (4 GPI + 4 GPO)
- **Top Panel I/O Coastline**
  - 4 x antenna holes for the optional Wi-Fi, 3G and GPS

Power Supply

- **Power Consumption**
  - Typical 29W
- **Input Voltage**
  - 9V~32V DC
- **Input Power Protection**
  - Support Over Voltage Protection
  - Support Over Current Protection
  - Support Under Voltage Protection
- **Power Adapter**
  - Optional support of external power adapter

Mechanical Characteristics

- **Construction**
  - Aluminum mixed with heavy-duty steel
- **Wall Mounting**
  - Wall mountable
    - Built-in wall mountable bracket on system chassis
- **VESA**
  - Default built-in VESA mounting plate support mountable holes (75mm x 75mm or 100 mm x 100mm)
- **Panel Mount**
  - Default support panel mount bracket
- **Dimensions**
  - 300.4mm(W) x 58.6mm(H) x 205.9mm(D) (11.8" x 2.3" x 8.1")
- **Weight**
  - 3.6Kg. (7.9lbs.)

Environmental Specification

- **Operating Temperature**
  - -10°C ~ 50°C: with qualified industrial grade DRAM, flash disk drive
  - 0°C ~ 50°C: with default built in DRAM
  - 0°C ~ 45°C: with 2.5" hard disk drive
- **Storage Temperature**
  - -10°C ~ 70°C
- **Relative Humidity**
  - 10% ~ 90% @ 45°C, non-condensing
- **Front Panel Protection**
  - IP65 compliant
- **Vibration Loading During Operation**
  - When system equipped with mSATA flash drive:
    - 5Grms, IEC 60068-2-64, random, 5 ~ 500Hz, 1hr/axis
- **Shock During Operation**
  - When system equipped with mSATA flash drive:
    - 50G, IEC 60068-2-27, half size, 11ms duration
- **EMC Approved**
  - CCC/CE/FCC

Software Compatibility

- **Operating System**
  - Microsoft Windows 8/10
  - Microsoft Windows Embedded Standard 7
  - Linux

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LCD Display

- **LCD Type**
  - 10.4" Color TFT LCD panel
- **LCD MTBF**
  - 50,000 hrs
- **Contrast Ratio**
  - 1400:1
- **Luminance (cd/m^2)**
  - 400
- **Viewing Angle (H/V°)**
  - 89°(left), 89°(right), 89°(up), 89°(down)
- **Pixel Pitch (mm)**
  - 0.2055 x 0.2055
- **Max. Colors**
  - 16.2M
- **Max. Resolution**
  - 1024 x 768

Touch Screen

- **Type**
  - Projective Capacitive multi touch
- **Light Transmission**
  - ≥85%
- **Controller**
  - USB interface
- **Driver**
  - Windows, Linux

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    - for RS-232/422/485 (powered by selectable 5V/12V)
  - 1 x DIO port for 8-bit GPIO (4 GPI + 4 GPO)
- **Top Panel I/O**
  - 4 x antenna holes for the optional Wi-Fi, 3G and GPS

Power Supply

- **Power Consumption**
  - Typical 29W
- **Input Voltage**
  - 9V~32V DC
- **Input Power Protection**
  - Support Over Voltage Protection
  - Support Over Current Protection
  - Support Under Voltage Protection
- **Power Adapter**
  - Optional support of external power adapter

Mechanical Characteristics

- **Construction**
  - Aluminum mixed with heavy-duty steel
- **Wall Mounting**
  - Wall mountable
    - Built-in wall mountable bracket on system chassis
- **VESA**
  - Default built-in VESA mounting plate support mountable holes (75mm x 75mm or 100mm x 100mm)
- **Panel Mount**
  - Default support panel mount bracket
- **Dimensions**
  - 300.4mm(W) x 58.6mm(H) x 205.9mm(D) (11.8" x 2.3" x 8.1")
- **Weight**
  - 3.6Kg. (7.9lbs.)

Environmental Specification

- **Operating Temperature**
  - -10°C ~ 50°C: with qualified industrial grade DRAM, flash disk drive
  - 0°C ~ 50°C: with default built in DRAM
  - 0°C ~ 45°C: with 2.5" hard disk drive
- **Storage Temperature**
  - -10°C ~ 70°C
- **Relative Humidity**
  - 10% ~ 90% @ 45°C, non-condensing
- **Front Panel Protection**
  - IP65 compliant

- **Vibration Loading During Operation**
  - When system equipped with mSATA flash drive:
    - 5Grms, IEC 60068-2-64, random, 5 ~ 500Hz,1hr/axis
- **Shock During Operation**
  - When system equipped with mSATA flash drive:
    - 50G, IEC 60068-2-27, half size, 11ms duration
- **EMC Approved**
  - CCC/CE/FCC

Software Compatibility

- **Operating System**
  - Microsoft Windows 8/10
  - Microsoft Windows Embedded Standard 7
  - Linux

Notes:

1. Specifications are subject to change without prior notice.

2. As the operating temperature provided in the specifications is a result of the test performed in VIA'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 program 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. Layout Diagram

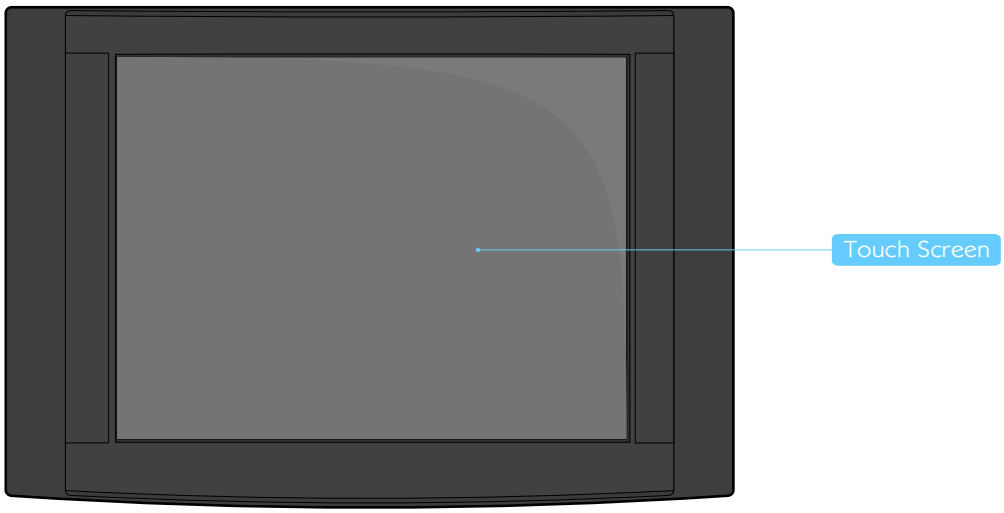

Figure 1: Front panel layout

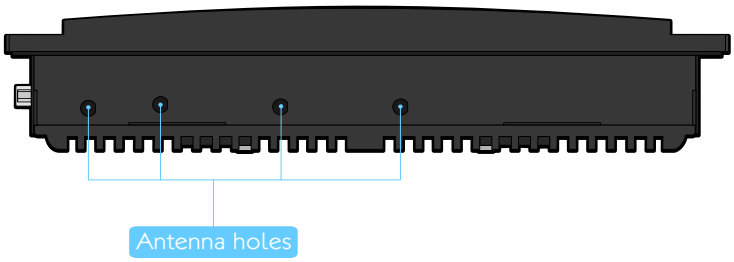

Figure 2: Top panel layout

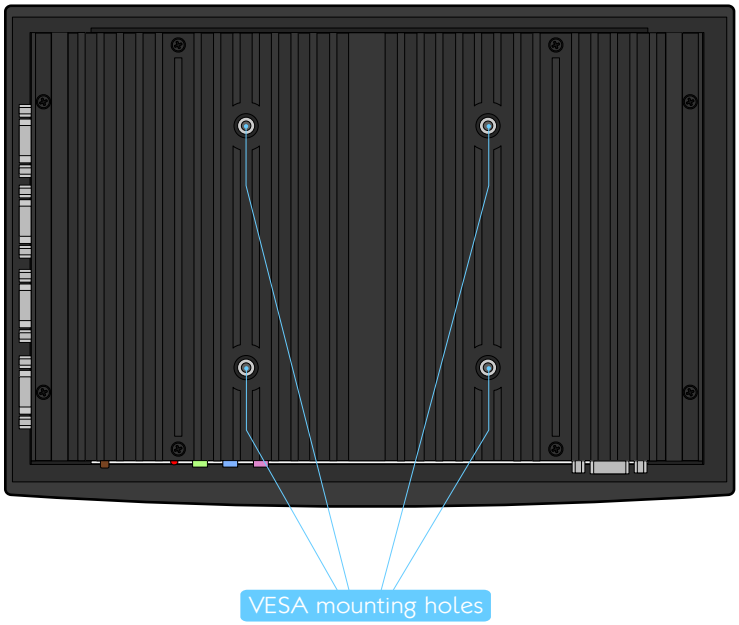

Figure 3: Rear panel layout

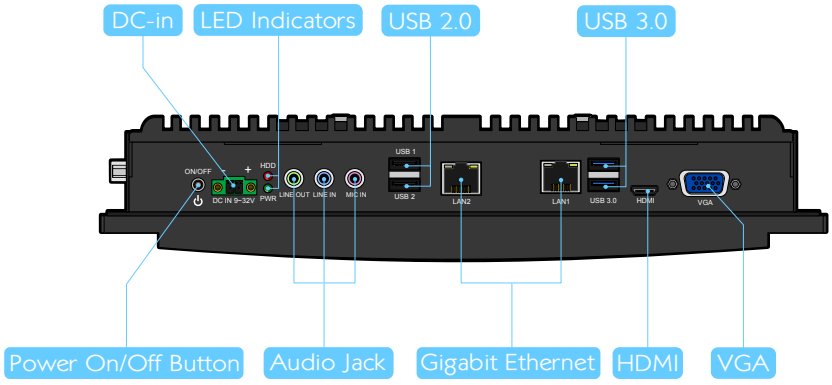

Figure 4: Bottom panel layout

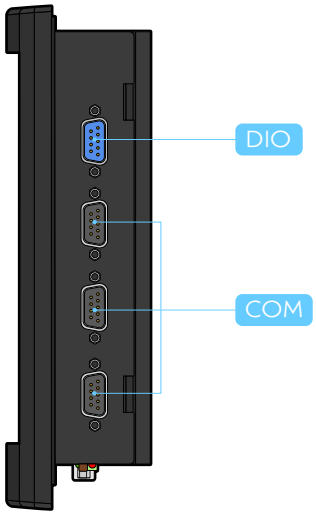

Figure 5: Right panel layout

1.4. Product Dimensions

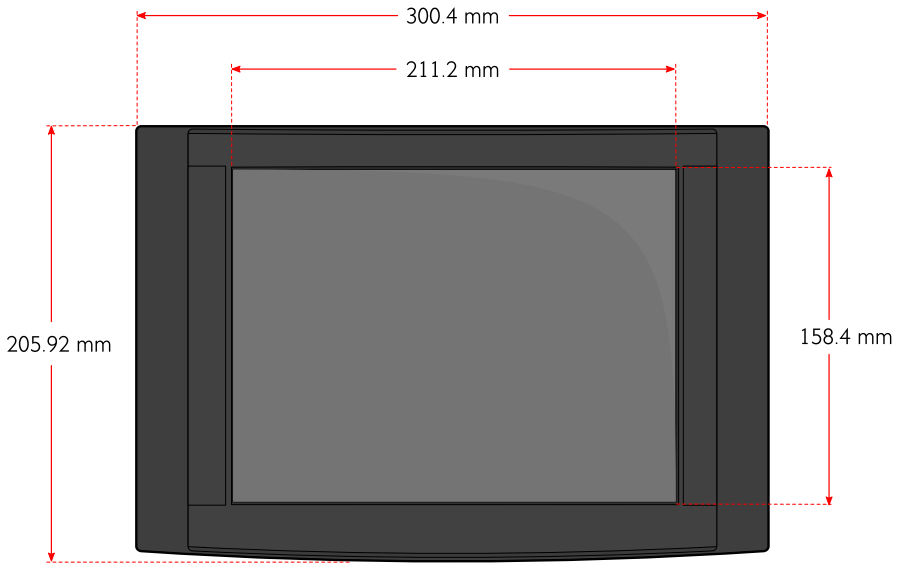

Figure 6: Front side view dimensions

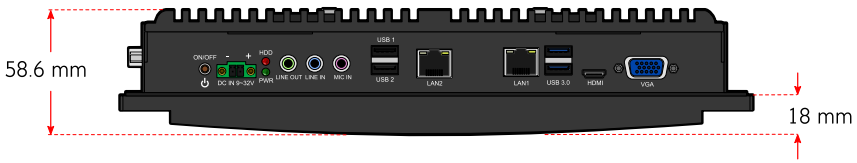

Figure 7: Bottom side view dimensions

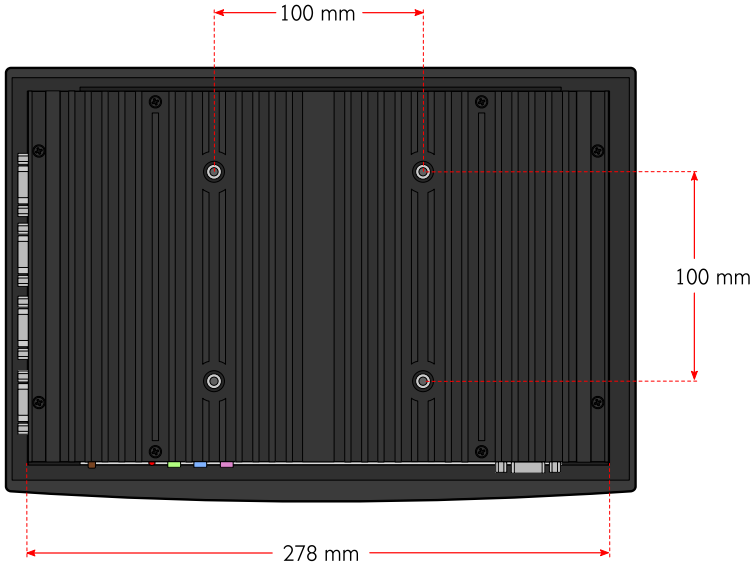

Figure 8: Rear side view dimensions

Figure 9: Right side view dimension

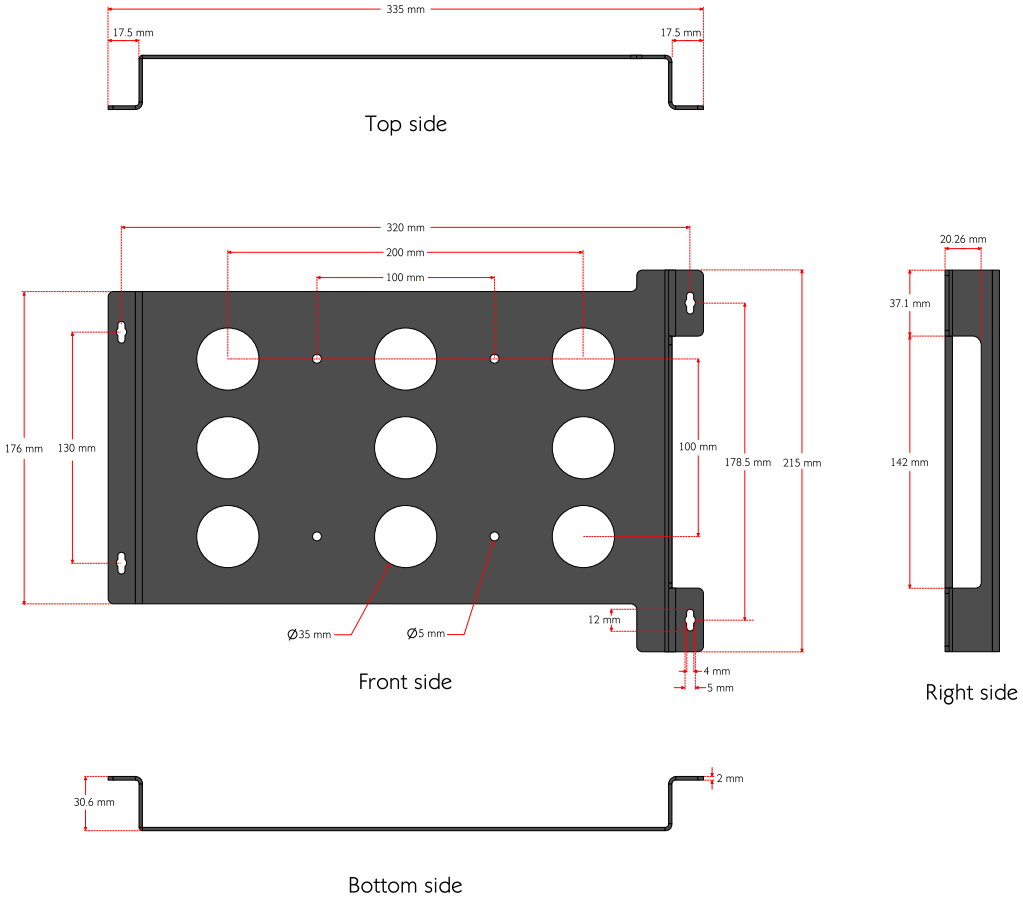

Figure 10: Dimensions of the mounting bracket

2. I/O Interface

The VIPRO VP7910 has a wide selection of frequently used interfaces as part of the external I/O coastline. The external I/O ports are located on top, bottom and right sides of the chassis.

2.1. External I/O Pin Descriptions and Functionality

2.1.1. Power On/Off Button

The VIPRO VP7910 comes with a power button on the top side of the chassis that supports Soft power On/Off (Instant Off or 4 second delay), and Suspend.

Figure 11: Power on/off button diagram

2.1.2. DC-In Jack

The VIPRO VP7910 comes with a Phoenix DC jack on the bottom I/O side that carries 9V~32V DC external power input.

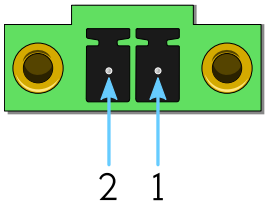

Figure 12: DC-in jack diagram

Pin	Signal
1	GND
2	9V~32V DC

Table 1: DC-in jack pinouts

2.1.3. LED Indicators

There are two LEDs on the top side coastline of the VIPRO VP7910 that indicate the status of the system:

- Power LED is green and indicates the status of the system's power.
- HDD LED is red and indicates any storage activity for the 2.5" SATA hard drive.

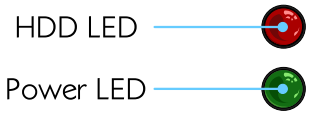

Figure 13: System LED indicators

2.1.4. Audio Jacks

The VIPRO VP7910 offers High Definition Audio through 3.5mm TRS jack connectors at the front panel: Line-out, Line-in and Mic-in.

The Line-out jack is for connecting the external speakers or headphones. The Line-in jack is for connecting the external audio devices such as CD player, tape player, etc. The Mic-in jack is for connecting the microphone.

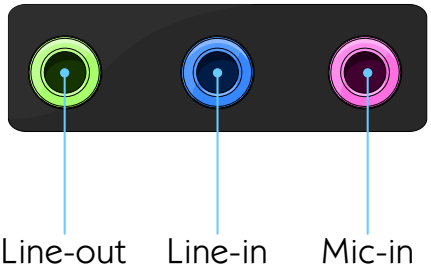

Figure 14: Audio jack receptacle stack diagram

Jack	Description
Line-out	TRS jack, 3.5mm Ø 5P, 90 Degree, Female, shielded
Line-in	TRS jack, 3.5mm Ø 5P, 90 Degree, Female, shielded
Mic-in	TRS jack, 3.5mm Ø 5P, 90 Degree, Female, shielded

Table 2: Audio jack receptacle descriptions

2.1.5. USB 2.0 Ports

The VIPRO VP7910 has two external USB 2.0 ports (USB1 and USB2) on the front panel. Each USB port gives complete Plug and Play and hot swap capability for external devices. The USB interface complies with USB UHCI, Rev. 2.0.

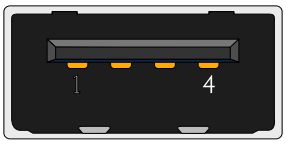

Figure 15: USB 2.0 port diagram

USB2		USB1	
Pin	Signal	Pin	Signal
1	VCC	1	VCC
2	USB data -	2	USB data -
3	USB data +	3	USB data +
4	GND	4	GND

Table 3: USB 2.0 port pinouts

2.1.6. Gigabit Ethernet Port

The VIPRO VP7910 system is equipped with two Gigabit Ethernet ports (LAN1 and LAN2) on the top side of the I/O coastline. Both ports are fully compliant with IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. The pinout of the Gigabit Ethernet ports are shown below.

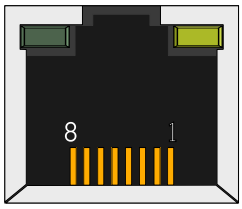

Figure 16: Gigabit Ethernet port diagram

LAN1	
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-

LAN2	
Pin	Signal
1	LAN2_TD0+
2	LAN2_TD0-
3	LAN2_TD1+
4	LAN2_TD1-
5	LAN2_TD2+
6	LAN2_TD3-
7	LAN2_TD3+
8	LAN2_TD3-

Table 4: Gigabit Ethernet port pinouts

Both LAN1 and LAN2 are equipped with two LED indicators to show its Active/Link status and Speed status.

LAN LED Status	Link LED (Left LED on RJ-45 port)	Active LED (Right LED on RJ-45 port)
Active	The LED is always On, different LED colors represent LAN connection speed.	Flash in Orange color
Link	The LED is always On, different LED colors represent LAN connection speed.	LED is off
Speed_10Mbit	The LED is always On in Orange color	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 Red color	Flash in Orange color

2.1.7. USB 3.0 Ports

The VIPRO VP7910 provides two USB 3.0 ports on the bottom side I/O coastline. The USB 3.0 has a maximum data transfer rate up to 5Gbps and offers a backwards compatible with previous USB 2.0 specifications. Each USB port gives complete Plug and Play and hot swap capability for the external devices. The USB 3.0 port uses USB Type-A receptacle connector. The pinouts of the typical USB 3.0 ports are as shown below.

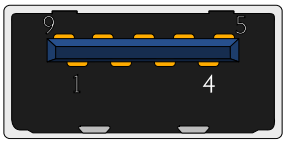

Figure 17: USB 3.0 port diagram

USB 3.0 Port 1		USB 3.0 Port 2	
Pin	Signal	Pin	Signal
1	+5V	1	+5V
2	USB data -	2	USB data -
3	USB data +	3	USB data +
4	GND	4	GND
5	Rx-	5	Rx-
6	Rx+	6	Rx+
7	GND	7	GND
8	Tx-	8	Tx-
9	Tx+	9	Tx+

Table 5: USB 3.0 port pinouts

2.1.8. HDMI® Port

The VIPRO VP7910 has one HDMI® port (19-pin HDMI® Type C connector) as defined in the HDMI® specification. The HDMI® port is for connecting to HDMI® displays. The pinouts of the HDMI® port are shown below.

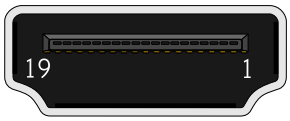

Figure 18: HDMI® port diagram

Pin	Signal	Pin	Signal
1	TMDS Data2 Shield	2	TMDS Data2+
3	TMDS Data2-	4	TMDS Data1 Shield
5	TMDS Data1+	6	TMDS Data1-
7	TMDS Data0 Shield	8	TMDS Data0+
9	TMDS Data0-	10	TMDS Clock Shield
11	TMDS Clock+	12	TMDS Clock-
13	DDC/CEC Ground	14	CEC
15	SCL	16	SDA
17	Reserved	18	+5V Power
19	Hot Plug Detect		

Table 6: HDMI® port pinouts

2.1.9. VGA Port

The VIPRO VP7910 provides a high resolution VGA interface through DE-15 female port on the top side of I/O coastline. It supports resolutions up to 2560 x 1536. The pinouts of the VGA port are shown below.

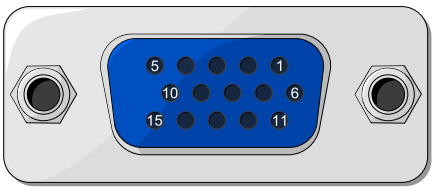

Figure 19: VGA port diagram

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	+5V
10	GND
11	NC
12	DDC_SPD
13	HSync
14	VSync
15	DDC_SCL

Table 7: VGA port pinouts

2.1.10. COM Port

The VIPRO VP7910 has three COM (D-sub 9-pin male) ports on the right side of the chassis. The COM1 to COM3 ports can be configured as RS-232, RS-422, or RS-485. However, the default setting of COM ports are RS-232. To configure the COM ports, user needs to set it up into the BIOS.

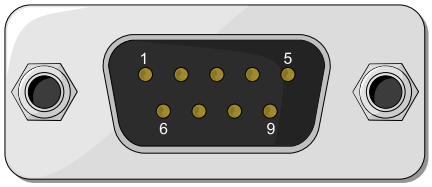

Figure 20: COM port diagram

Pin	RS-232 Signal	RS-422 Signal	RS-485 Signal
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Table 8: COM port pinouts

2.1.11. DIO Port

The VIPRO VP7910 provides a DIO port (D-sub 9-pin female port), which offers Digital I/O communication interface port. The DIO port is located on the right side of the chassis. The pinouts of the DIO port are shown below.

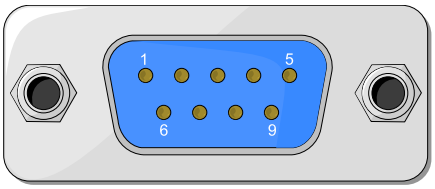

Figure 21: DIO port diagram

Pin	Signal
1	GPIO32
2	GPI9
3	GPIO12
4	GPI7
5	GPIO9
6	GPI5
7	GPIO8
8	GPI4
9	+5V

Table 9: DIO port pinouts

3. Hardware Installation

This chapter provides you with information about hardware installation procedures.

3.1. How to remove the rear cover plate

Step 1

Remove the eight screws on the top of the rear cover plate.

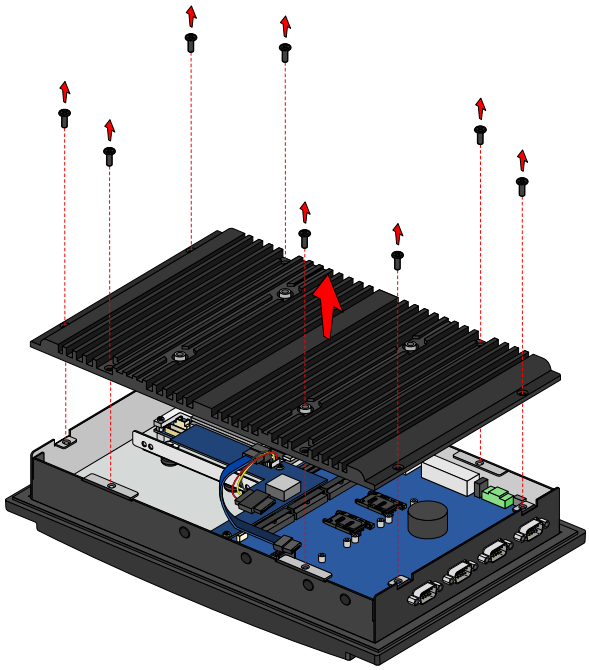

Figure 22: Removing the rear cover plate

Step 2

Carefully lift up the cover plate.

3.2. How to install the 2.5" SATA hard disk drive

Step 1

Remove the SATA cable. To facilitate removing the SATA cable, use the pliers to unplug the cable.

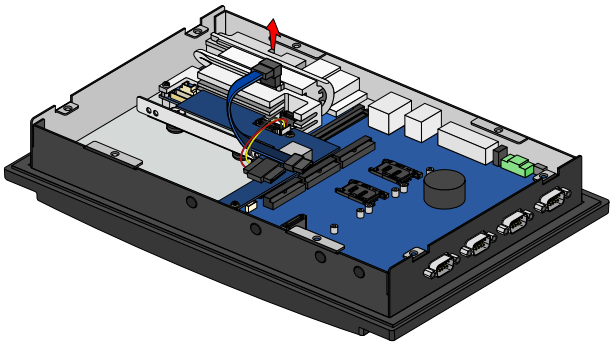

Figure 23: Unplug the SATA cable

Step 2

Remove the P910-F daughter board.

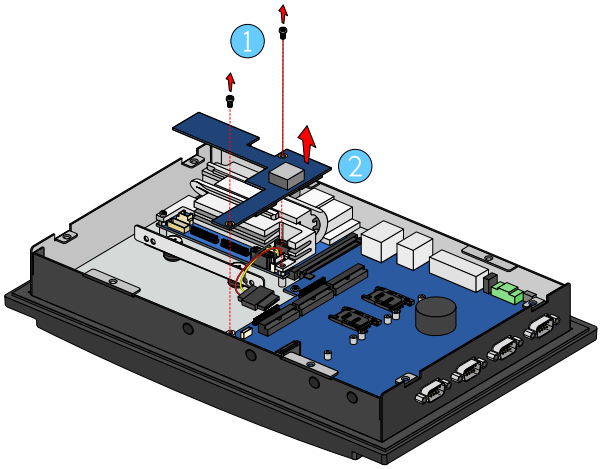

Figure 24: Remove the P910-F daughter board

Step 3

Remove the four flat screws and hard drive mounting brackets.

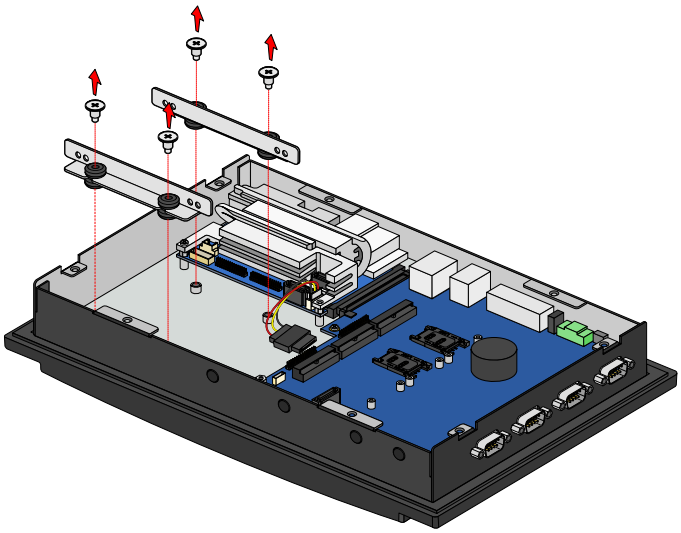

Figure 25: Removing the HDD mounting brackets

Step 4

Attach the 2.5" SATA hard drive to the hard drive mounting brackets.

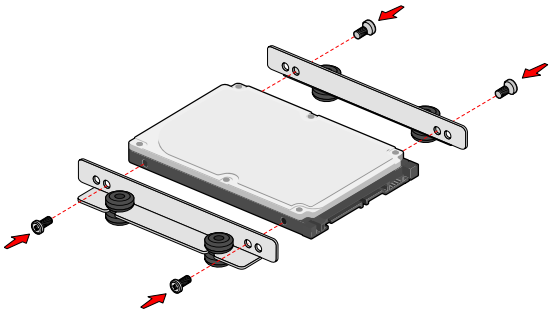

Figure 26: Installing the HDD to the mounting brackets

Step 5

Connect the SATA data and power cables. Then reinstall the mounting brackets with SATA hard drive into the chassis and secure it with four screws.

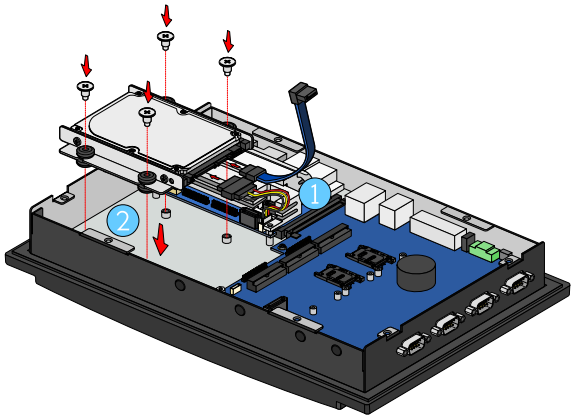

Figure 27: Connecting the SATA cable and installing the hard drive

Step 6

Align the pin connectors on the P910-F daughter board with the pin headers on the system and I/O boards. Then reinstall the P910-F daughter board and secure it with two screws.

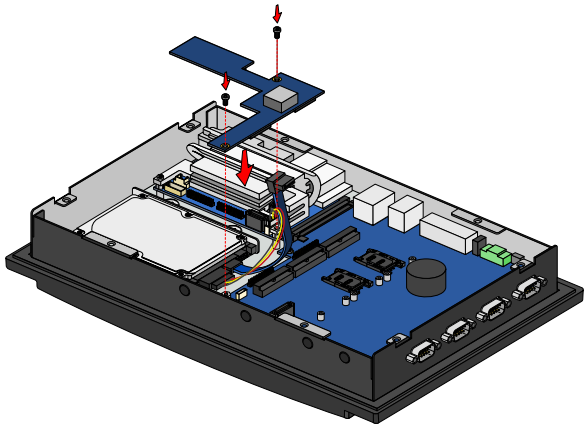

Figure 28: Reinstalling the P910-F daughter board

Step 7

Plug the SATA data cable to the SATA port 1.

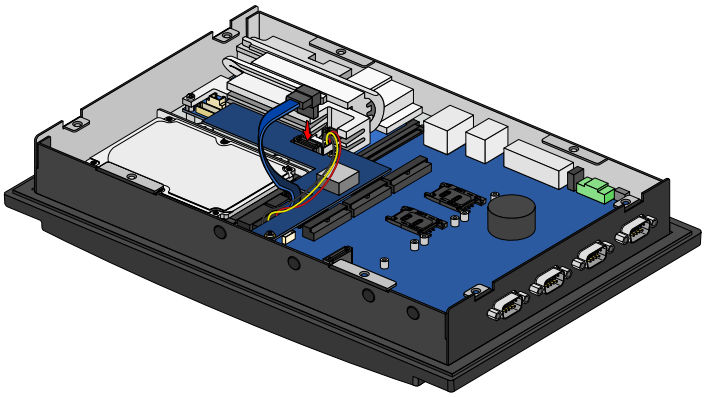

Figure 29: Plugging the SATA cable

Step 8

On the bottom side of the rear cover plate, remove the hard drive thermal pad protective cover (plastic) on the hard drive heatsink before reinstalling the cover plate.

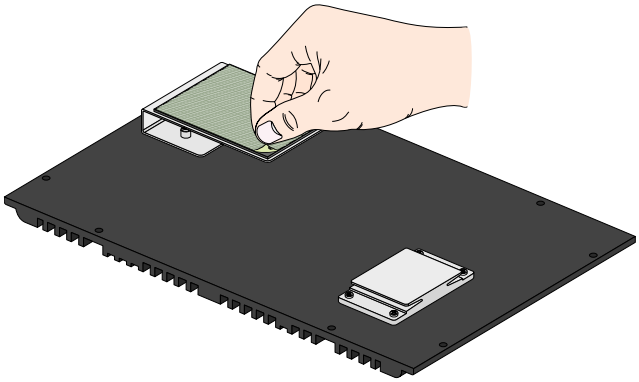

Figure 30: Removing the hard drive thermal pad cover

3.3. How to install the mSATA flash drive

Step 1

Align the notch on the mSATA drive module with the notch on the miniPCIe slot. Then insert the module at 30° angle.

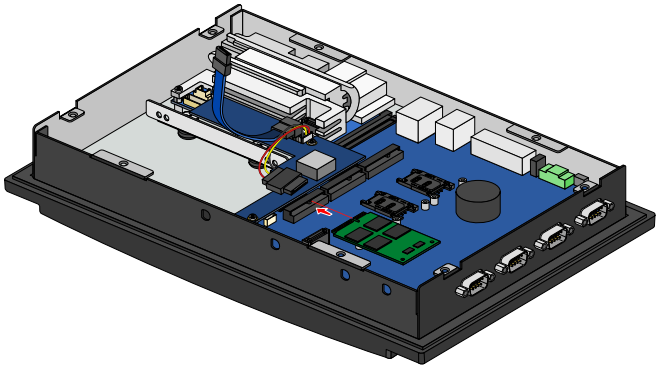

Figure 31: Inserting the mSATA flash drive module

Step 2

Once the module has been fully inserted, push down the mSATA drive module until the screw holes align with the standoff holes. Then secure the module with two screws.

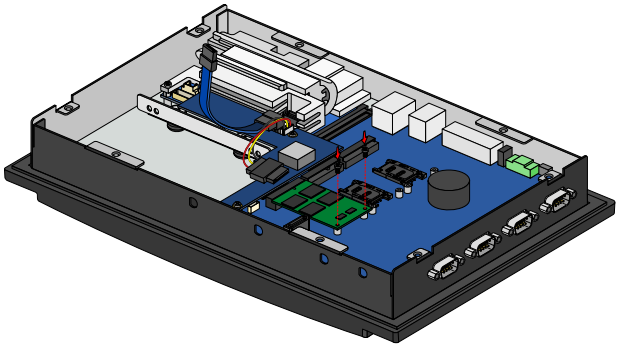

Figure 32: Securing the mSATA flash drive module

Step 3

Connect the SATA data cable into the I/O board and connect the other end of the cable to the SATA port 2 on the system's mainboard.

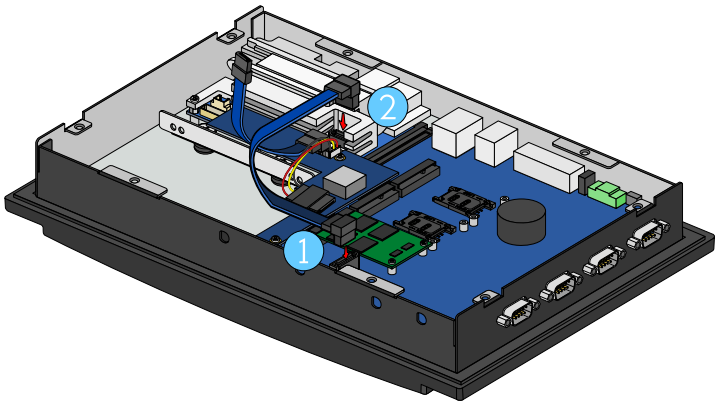

Figure 33: Connecting the mSATA data cable

3.4. How to insert the 3G SIM Card

Step 1

Push back firmly the SIM card slot to unlock the opening.

Step 2

Pull up the slot and place the SIM card inside the slot. Ensure the angled corner of the SIM card is placed in the correct way before closing the slot.

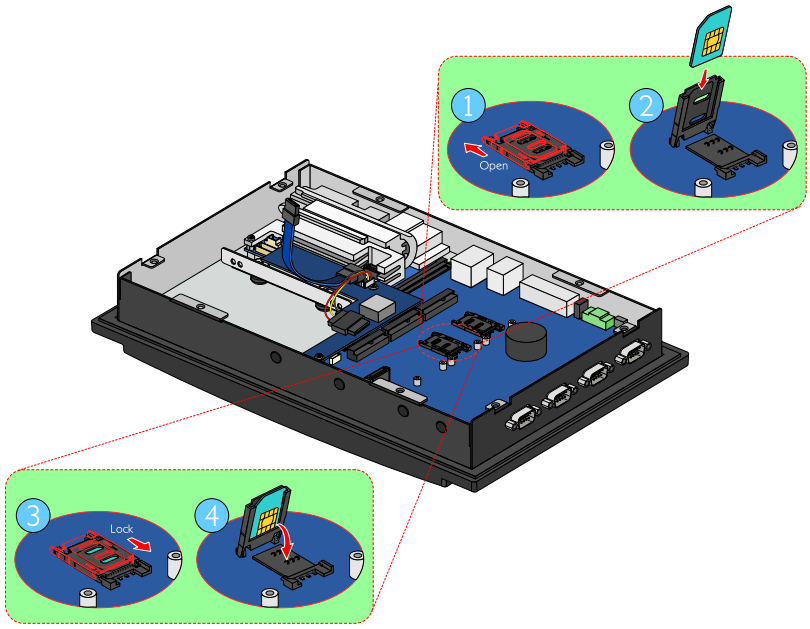

Figure 34: Installing the 3G SIM card

Step 3

Gently close the slot by pulling down the SIM slot.

Step 4

Carefully lock the SIM slot by sliding back the slot.

3.5. How to install the 3G/GPS/Wi-Fi kit

Step 1

Align the notch on the 3G/GPS/Wi-Fi module with the notch on the miniPCIe slot. Then insert the modules at 30° angle.

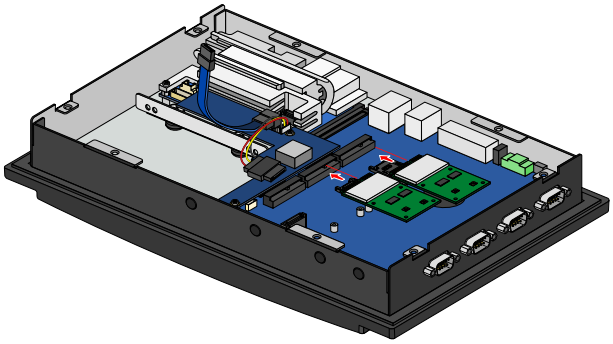

Figure 35: Installing the 3G/GPS/Wi-Fi module

Step 2

Once the module has been fully inserted, push down the 3G/GPS/Wi-Fi module until the screw holes align with the standoff holes. Then secure each module with two screws.

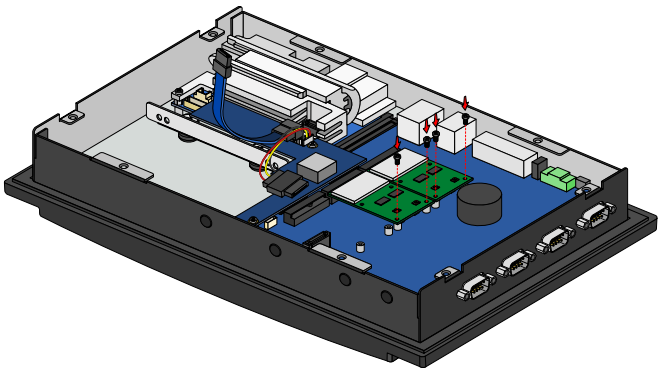

Figure 36: Securing the 3G/GPS/Wi-Fi module

Step 3

Remove the 3G/GPS/Wi-Fi antenna hole cover from the top side of the chassis. To facilitate removing the cover, use a pair of needle-nose pliers to depress both locking clips simultaneously.

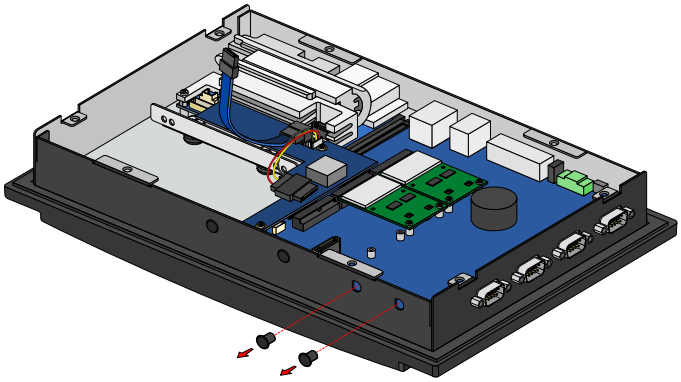

Figure 37: Removing the 3G/GPS/Wi-Fi antenna hole cover

Step 4

Insert the 3G/GPS/Wi-Fi port connectors into the antenna holes 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 3G/GPS/Wi-Fi port connector to the micro-RF connector on the 3G/GPS/Wi-Fi module.

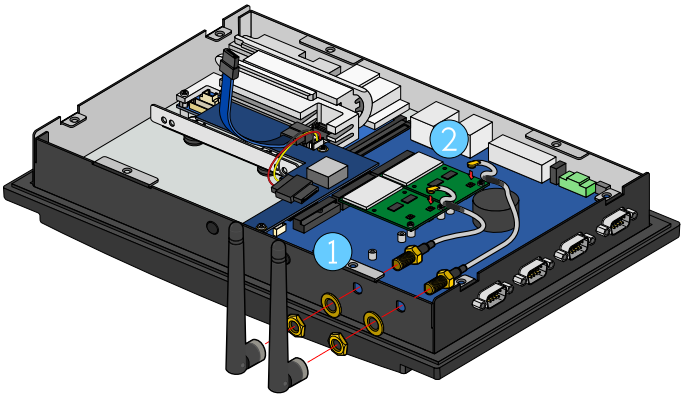

Figure 38: Installing the 3G/GPS/Wi-Fi antenna

3.6. How to install the mounting kit

Panel mounting should be used in situations where only the front bezel of the VIPRO VP7910 will be visible. In order to complete a panel mounting, the wall must have a designated space (cutout) for embedding the VIPRO VP7910.

Step 1

Prepare and cutout a designated space on the wall for embedding the VIPRO 7910. A recommended cutout dimension is shown below.

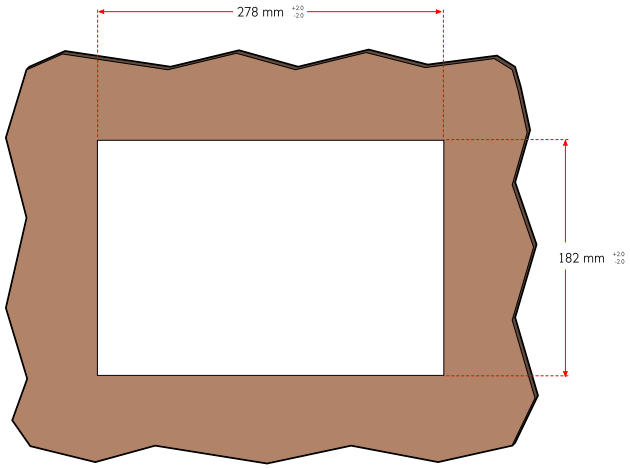

Figure 39: Wall mount cutout (front view)

Note:

The cutout shown above is for embedding the VIPRO VP7910 directly into the wall without an additional chassis. If using a chassis to mount the VIPRO VP7910, ensure the cutout is sufficient for the chassis.

Step 2

Once the cutout has been prepared, slide the VIPRO VP7910 backwards into the panel opening.

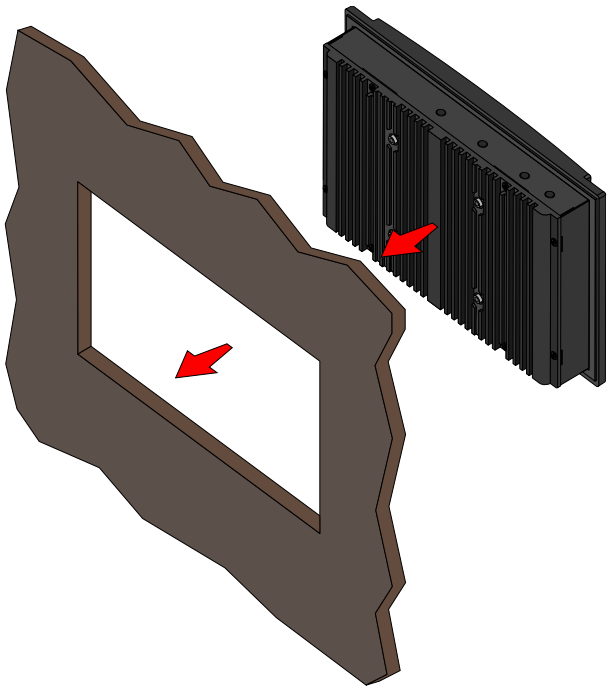

Figure 40: Inserting the VP7910 to the wall cutout

Step 3

From the other side of the panel, align the panel mounting bracket on the rear side of the VIPRO VP7910 and attach the four screws through the mounting bracket into the rear cover plate.

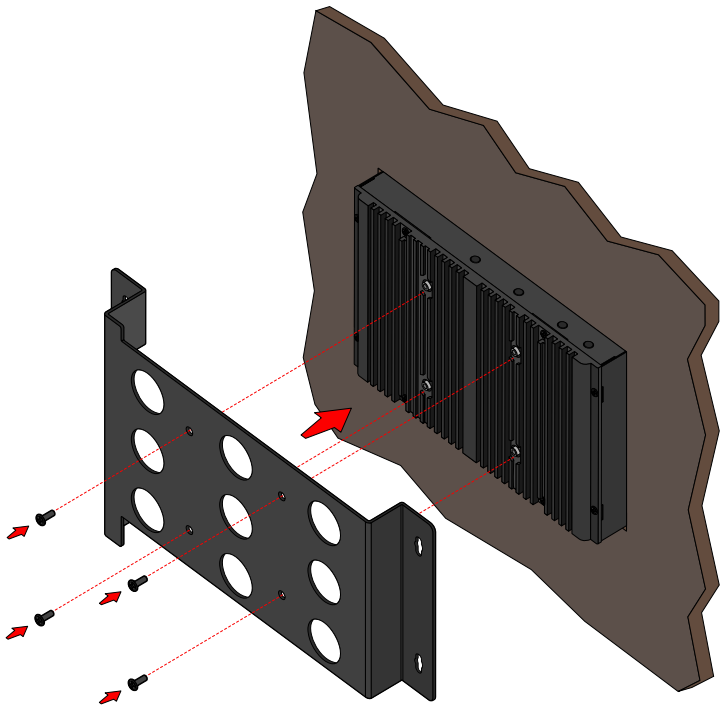

Figure 41: Installing the mounting bracket

Step 4

Secure the mounting bracket to the wall with four screws.

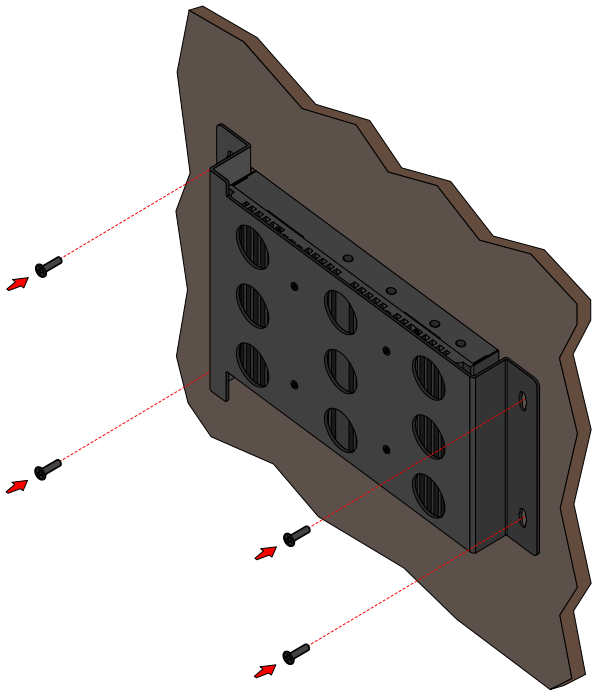

Figure 42: Securing the mounting brackets

4. BIOS Setup

This chapter gives a detailed explanation of the BIOS setup functions.

4.1. 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.

4.2. 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.

4.3. 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.

4.4. 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 43: Illustration of the Main menu screen

4.4.1. 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.

4.4.2. Memory Information

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

4.4.3. System Language

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

4.4.4. 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].

4.4.5. 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].

4.5. 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.

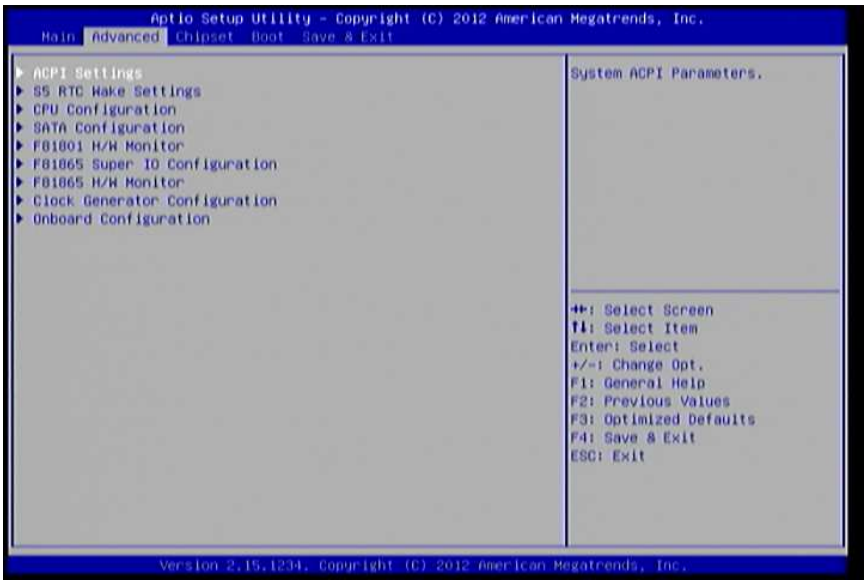

Figure 44: Illustration of the Advanced Settings screen

The Advanced Settings screen contains the following links:

- ACPI Settings
- S5 RTC Wake Settings
- CPU Configuration
- SATA Configuration
- F81801 H/W Monitor
- F81865 Super IO Configuration
- F81865 H/W Monitor
- Clock Generator Configuration
- Onboard Configuration

4.5.1. 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 45: Illustration of the ACPI Settings screen

4.5.1.1. Enable Hibernation

Enable/disable system ability to Hibernate.

4.5.1.2. 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.

4.5.2. S5 RTC Wake Settings

The S5 RTC Wake setting enables system to wake from S5 using RTC alarm.

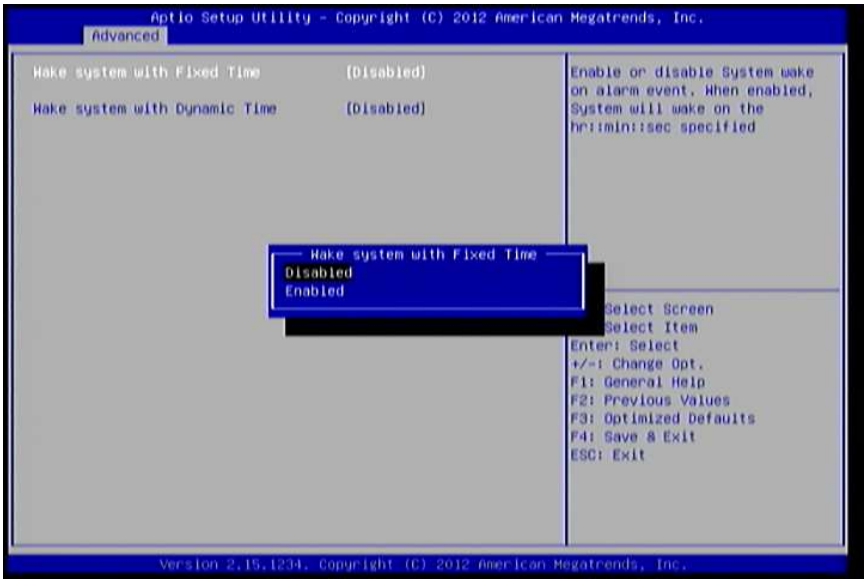

Figure 46: Illustration of the S5 RTC Wake Settings screen

4.5.2.1. Wake system with Fixed Time

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

4.5.2.2. Wake system with Dynamic Time

Enable or disable Wake system with Dynamic Time.

4.5.3. CPU Configuration

The CPU Configuration screen shows detailed information about the built-in processor. In addition to the processor information, the thermal controls can be set.

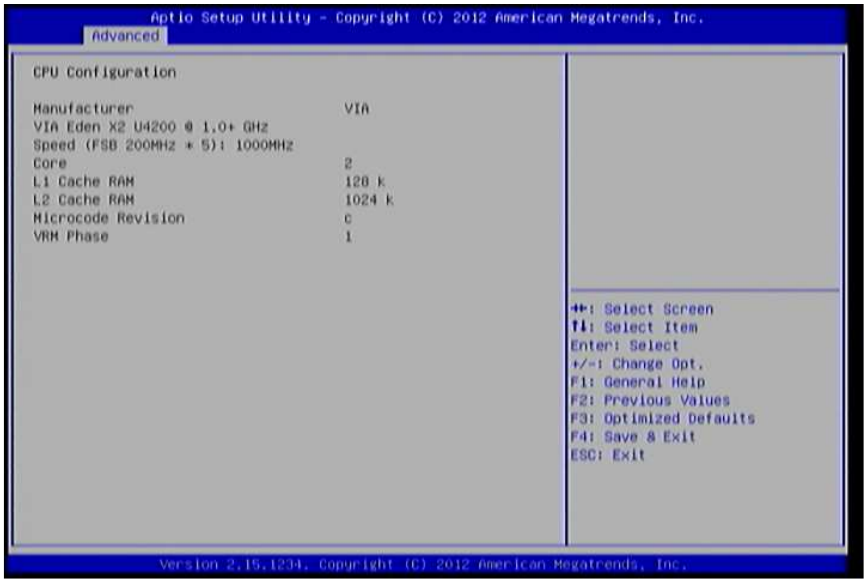

Figure 47: Illustration of CPU Configuration screen

4.5.4. SATA Configuration

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

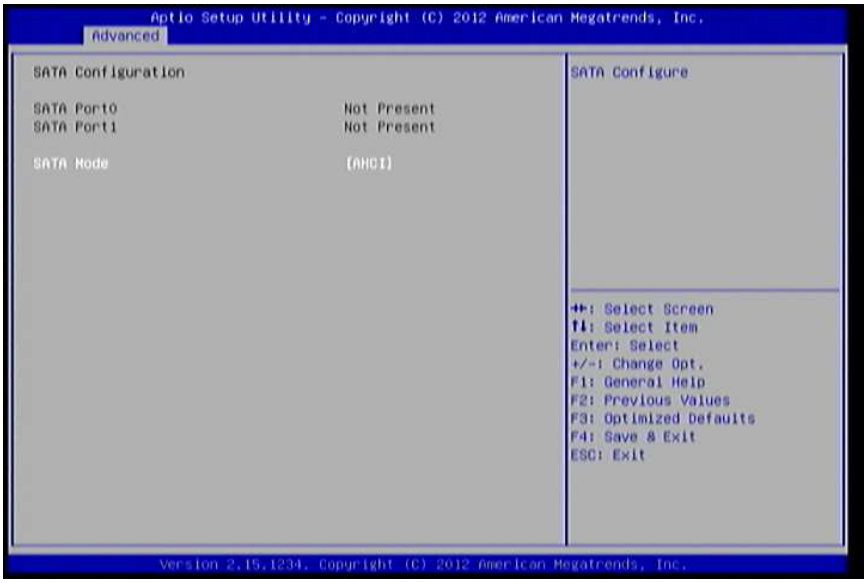

Figure 48: Illustration of SATA Configuration screen

4.5.4.1. 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.

4.5.5. F81801 H/W Monitor

The F81801 H/W Monitor screen shows monitor hardware status.

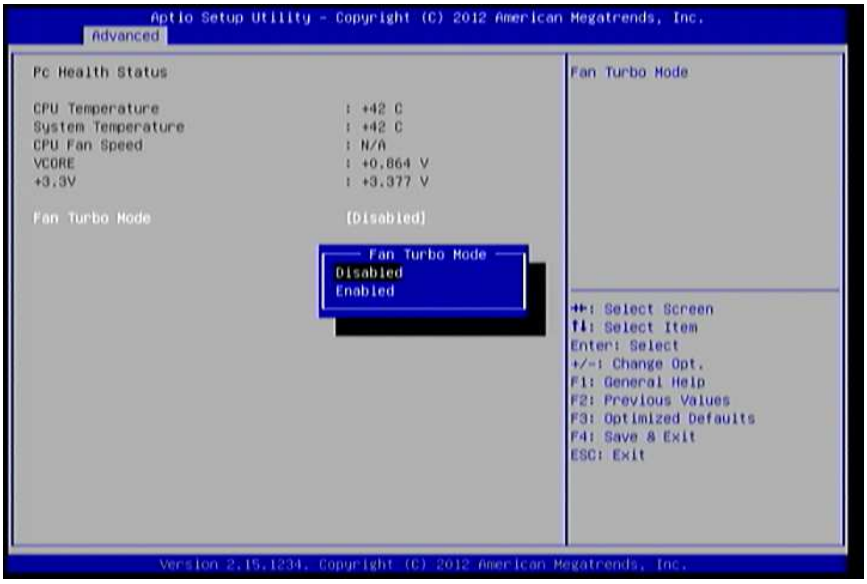

Figure 49: Illustration of F81801 H/W Monitor screen

4.5.5.1. Fan Turbo Mode

Enable or disable Fan Turbo Mode.

4.5.6. F81865 Super IO Configuration

The F81865 Super IO Configuration screen allows the user to set system Super IO Chip parameters.

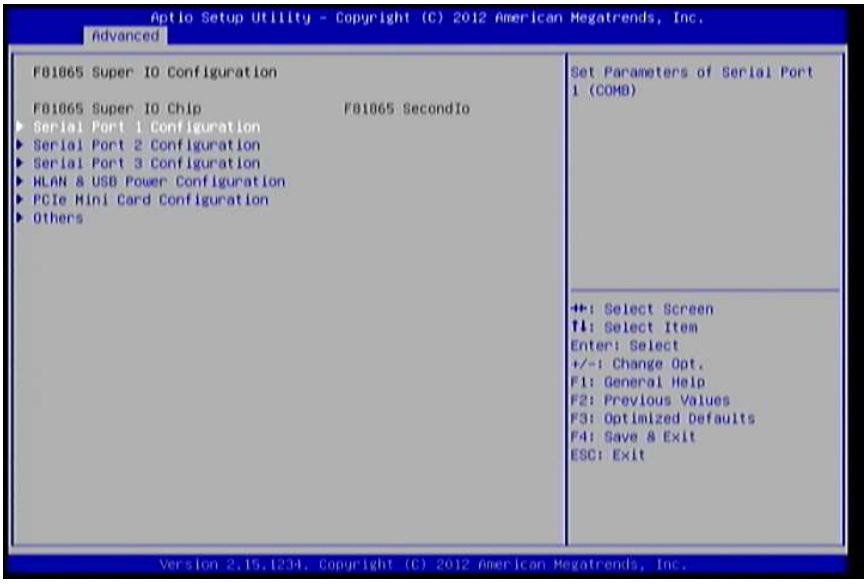

Figure 50: Illustration of F81865 Super IO Configuration screen

4.5.6.1. Serial Port 1 Configuration

Set parameters of Serial Port 1 (COMB).

4.5.6.1.1. Serial Port

This feature has 2 options: Enable or Disable Serial Port (COM)

4.5.6.1.2. Mode

Select mode: RS-232/RS-422/RS-485

4.5.6.1.3. I/O Base

Select the I/O Base

4.5.6.1.4. IRQ

Select the IRQ: 3/4/5/6/7/9/10/11/12

4.5.6.1.5. COM Output Voltage Selection

Select COM Output voltage: Disabled/+5 RI / +12V RI

4.5.6.2. Serial Port 2 Configuration

Set parameters of Serial Port 2 (COM).

4.5.6.2.1. Serial Port

This feature has 2 options: Enable or Disable Serial Port (COM)

4.5.6.2.2. Mode

Select mode: RS-232/RS-422/RS-485

4.5.6.2.3. I/O Base

Select the I/O Base

4.5.6.2.4. IRQ

Select the IRQ: 3/4/5/6/7/9/10/11/12

4.5.6.2.5. COM Output Voltage Selection

Select COM Output voltage: Disabled/+5 RI / +12V RI

4.5.6.3. Serial Port 3 Configuration

Set parameters of Serial Port 3 (COMD).

4.5.6.3.1. Serial Port

This feature has 2 options: Enable or Disable Serial Port (COM)

4.5.6.3.2. Mode

Select mode: RS-232/RS-422/RS-485

4.5.6.3.3. I/O Base

Select the I/O Base

4.5.6.3.4. IRQ

Select the IRQ: 3/4/5/6/7/9/10/11/12

4.5.6.3.5. COM Output Voltage Selection

Select COM Output voltage: Disabled/+5 RI / +12V RI

4.5.6.4. WLAN & USB Power Configuration

WLAN & USB 1/2 power configuration

4.5.6.4.1. WLAN

Select WLAN power: Disabled/+5VSUS/+5V

4.5.6.4.2. USB1

Select USB1 power: Disabled/+5VSUS/+5V

4.5.6.4.3. USB2

Select USB2 power: Disabled/+5VSUS/+5V

4.5.6.5. PCIe Mini Card Configuration

PCIe A/B Mini Card configuration

4.5.6.5.1. PCIe A Mini Card Spec

Select PCIe A Mini Card Spec: 1.2 or 1.1

4.5.6.5.2. PCIe B Mini Card Spec

Select PCIe B Mini Card Spec: 1.2 or 1.1

4.5.6.5.3. Others

Enabled or Disabled DIO

4.5.7. F81865 H/W Monitor

The F81865 H/W Monitor screen shows monitor hardware status.

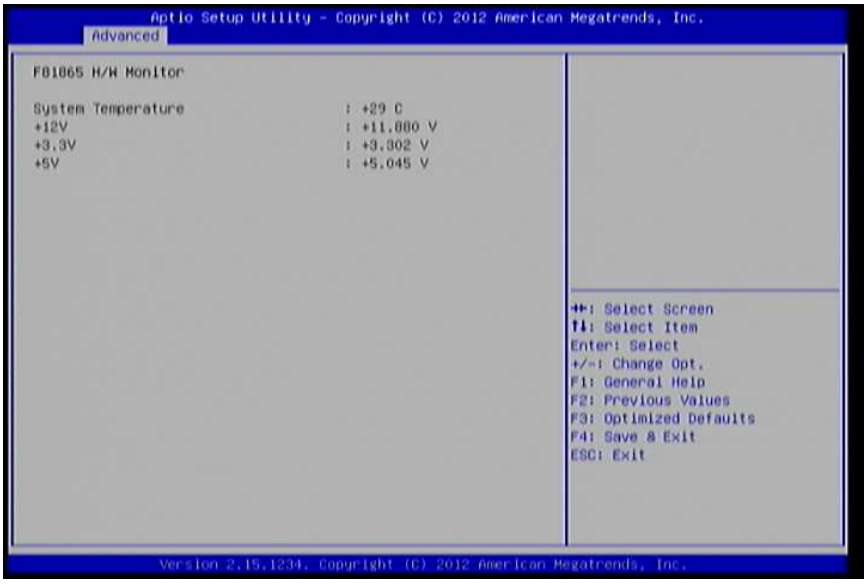

Figure 51: Illustration of F81865 H/W Monitor screen

4.5.8. Clock Generator Configuration

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

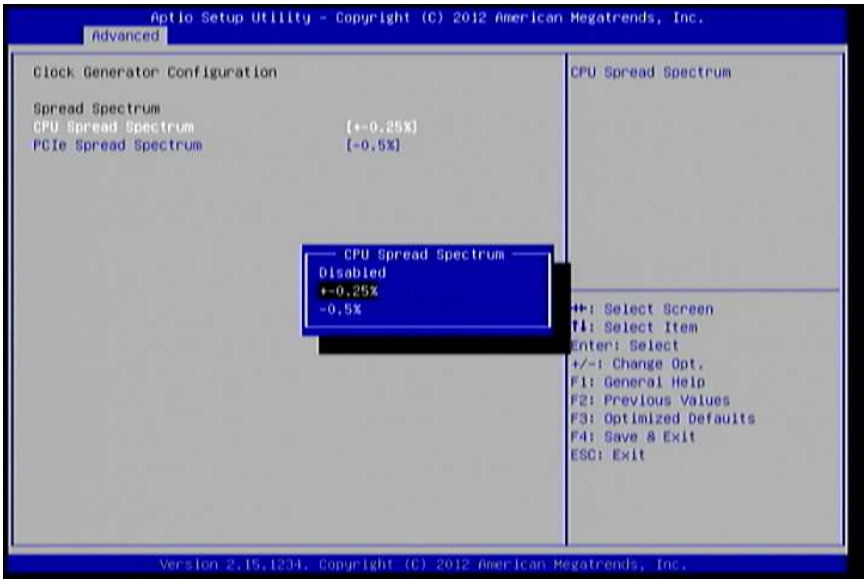

Figure 52: Illustration of Clock Generator Configuration screen

4.5.8.1. 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%.

4.5.8.2. PCIe Spread Spectrum

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

4.5.9. OnBoard Device Configuration

The OnBoard Device Configuration screen has the following features.

Figure 53: Illustration of OnBoard Device Configuration screen

OnBoard Device Configuration:

4.5.9.1. OnBoard LAN Enable

The OnBoard LAN Enable feature determines whether the onboard LAN controller will be used or not.

4.5.9.2. S5 Wakeup On LAN

The S5 Wakeup On LAN feature enables the BIOS to allow remote wake-up from the S5 power off state through the PCI bus.

1CH LVDS Backlight Control:

4.5.9.3. Backlight Control

The Backlight Control feature enables the user to control the brightness of the LVDS backlight. This feature has 2 options: Enabled/Disabled

4.5.9.4. Level

Select Backlight Control level: 0%, 20%, 40%, 60%, 80%, 100%.

4.6. 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 54: Illustration of Chipset Settings screen

The Chipset Settings screen contains the following links:

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

4.6.1. DRAM Configuration

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

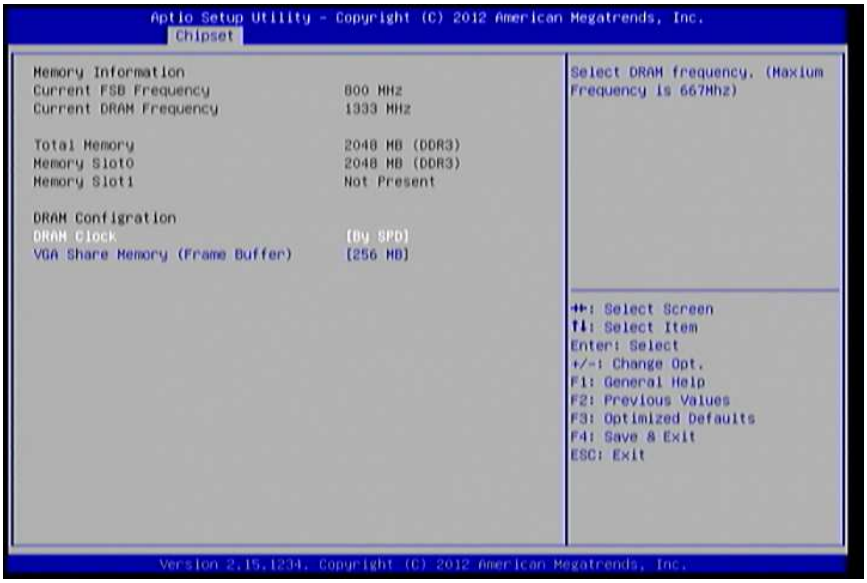

Figure 55: Illustration of DRAM Configuration screen

4.6.1.1. 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 seven 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.

4.6.1.2. 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.

4.6.2. Video Configuration

The Video Configuration screen has features for controlling the integrated graphics controller in the VX11H chipset.

Figure 56: Illustration of Video Configuration screen

4.6.2.1. Select Display Device Control

Available selections are: Auto and Manual.

4.6.2.2. 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, LCD and HDMI. 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 CRT, then no data will be sent to the HDMI port.

4.6.2.3. Panel Type

The Panel Type feature enables the user to specify the resolution of the display being used with the system. The panel types are predefined in the VGA VBIOS.

Panel Type	Resolution		Panel Type	Resolution
00	640 x 480		08	800 x 480
01	800 x 600		09	1024 x 600
02	1024 x 768		10	1366 x 768
03	1280 x 768		11	1600 x 1200
04	1280 x 1024		12	1680 x 1050
05	1400 x 1050		13	1920 x 1200
06	1440 x 900		14	1920 x 1080
07	1280 x 800		15	1024 x 576

4.6.3. PMU_ACPI Configuration

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

Figure 57: Illustration of PMU_ACPI Configuration screen

4.6.3.1. Other Control

Figure 58: Illustration of Other Control screen

4.6.3.1.1. 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.

4.6.3.1.2. 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".

4.6.4. Others Configuration

The Others Configuration screen can be used to set Watchdog Timer Configuration and Keyboard/Mouse Wakeup Configuration.

Figure 59: Illustration of Others Configuration screen

4.6.4.1. WATCHDOG Timer Enable

When this feature is enabled, an embedded timing device automatically prompts corrective action upon system malfunction detection.

4.6.4.2. Keyboard/Mouse Wakeup Control

When this feature is enabled, pressing any key of the keyboard or moving the mouse can wake up the system from suspend.

4.7. Boot Settings

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

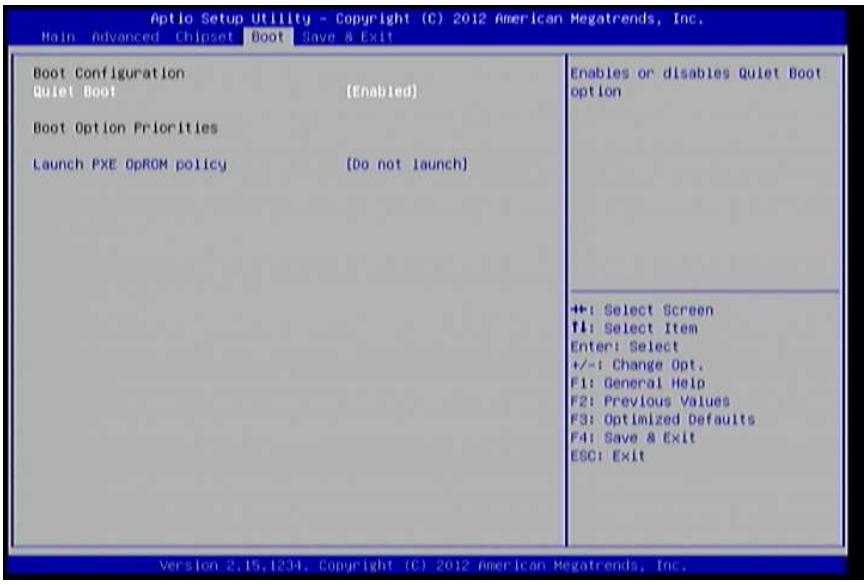

Figure 60: Illustration of Boot Settings screen

4.7.1. Boot Configuration

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

4.7.1.1. Quiet Boot

The Quiet Boot 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.

4.7.2. Boot Option Priorities

The Boot Option Priorities screen lists all bootable devices.

4.7.2.1. Launch PXE OpROM policy

Do not launch

Prevent the option for Legacy Network Device.

Legacy only

Allow the option for Legacy Network Device.

4.8. Save & Exit

The Save & Exit Configuration screen has the following features:

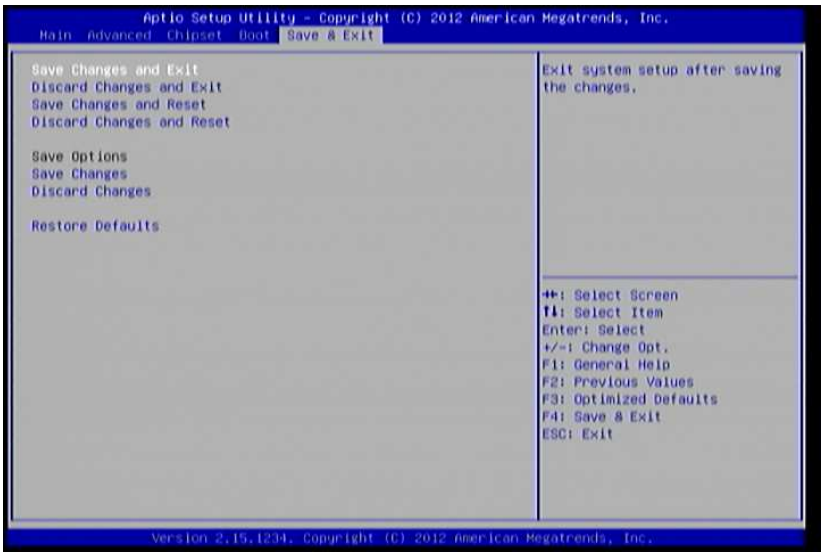

Figure 61: Illustration of Save & Exit screen

4.8.1. Save Changes and Exit

Save all changes to the BIOS and exit the BIOS Setup Utility. The "F4" hotkey can also be used to trigger this command.

4.8.2. Discard Changes and Exit

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

4.8.3. Save Changes and Reset

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

4.8.4. Discard Changes and Reset

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

4.8.5. Save Options

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

4.8.6. Save Changes

Save system configuration and continue. For some of the options it requires to reset the system to take effect.

4.8.7. Discard Changes

Undo the previous changes.

4.8.8. Restore Defaults

Restore default values for all setup options.

5. Driver Installation

5.1. Microsoft Driver Support

The VIPRO VP7910 is compatible with Microsoft operating systems. The latest Windows drivers can be downloaded from the VIA website at www.viatech.com/en/.

For embedded operating systems, the related drivers can be found in the VIA website at www.viatech.com/en/.

5.2. Linux Driver Support

The VIPRO VP7910 is compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Drivers provided by VIA
- Using a driver built into a distribution package
- Visiting www.viatech.com/en/ for the latest updated drivers
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. You can submit a request to your VIA support contact.

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