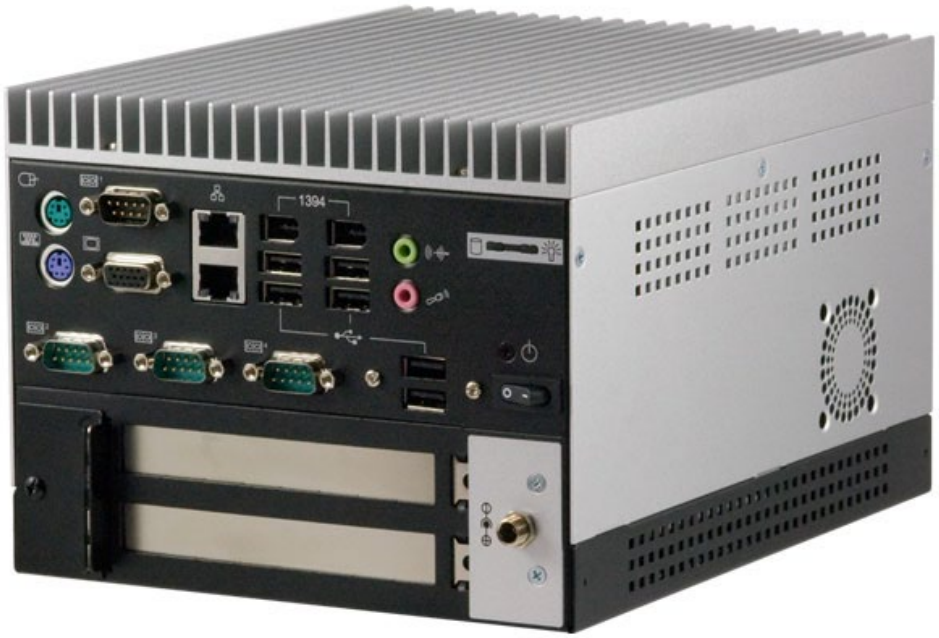
Relio Fanless Core™2 Duo R5200 Series

User Manual | R5220 – 2 GB RAM & R5240 – 4 GB RAM



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Contents

Before You Get Started

What's Included

The Relio R5200 is shipped with the following items. If any of these items is missing or damaged, please contact Sealevel for replacement.

- **Relio R5200 Series Fanless Core 2 Duo Computer**
  - **R5220 includes 2GB RAM**
  - **R5240 includes 4GB RAM**
- **100-240V AC to 24VDC @ 120W Desktop Power Supply**
- **US Power Cord for Desktop Power Supply**

Advisory Conventions

Warning
The highest level of importance used to stress a condition where damage could result to the product, or the user could suffer serious injury.

Important
The middle level of importance used to highlight information that might not seem obvious or a situation that could cause the product to fail.

Note
The lowest level of importance used to provide background information, additional tips, or other non-critical facts that will not affect the use of the product.

Optional Items

Depending upon your application, you are likely to find one or more of the following items useful for interfacing the Relio R5200 to real-world signals. All items can be purchased from our website (www.sealevel.com) or by calling +1 864 843-4343.

Terminal Blocks:

DB9 Female to 9-Screw Terminals (Part# TB05)	
The TB05 terminal block breaks out a DB9 connector to 9 screw terminals to simplify field wiring of serial connections. It is ideal for RS-422 and RS-485 networks, yet it will work with any DB9 serial connection, including RS-232. The TB05 includes holes for board or panel mounting. The TB05 is designed to connect directly to Sealevel DB9 serial cards or any cable with a DB9M connector.	
DB9 Female to RJ45 Modular Adapter (Part# RJ9S8)	
DB9 Female to RJ45 Modular Adapter. Excellent choice for using available infrastructure wiring. Item ships unassembled and can be easily configured without tools.	

Memory Options/Upgrades:

Relio R5200 systems have two 240-pin DIMM slots. The first slot includes 2GB RAM and ordering options allow for a maximum of 4GB. It is recommended to order the R5200 system with memory already integrated. The following memory is recommended for field replacement or upgrades.

1GB DDR2 240-Pin DIMM (Part# RAM1GB-667X240)	
1GB DDR2 240-pin DIMM (667MHz Non-ECC CL5) module.	
2GB DDR2 240-Pin DIMM (Part# RAM2GB-667X240)	
2GB DDR2 240-pin DIMM (667MHz Non-ECC CL5) module (one included in Relio R5220 and two included in Relio R5240).	

SATA Solid-State Disk (SSD) Drives:

Install your operating system and application on 2.5” SSD drives for true solid-state operation resulting in the highest reliability. Integration options are available. Contact your sales representative for details.

16GB SATA Solid-State Disk (Part# SSD-16GSS)	
16GB 2.5” SATA SSD with MLC memory.	
32GB SATA Solid-State Disk (Part# SSD-32GMS)	
32GB 2.5” SATA SSD with MLC memory.	
64GB SATA Solid-State Disk (Part# SSD-32GMS)	
64GB 2.5” SATA SSD with MLC memory.	
128GB SATA Solid-State Disk (Part# SSD-128GMS)	
128GB 2.5” SATA SSD with MLC memory.	

Introduction

The Relio R5200 fanless, dual-core industrial computer is designed for CPU-intensive applications in industrial environments. Available with a fanless 2.2GHz Intel® Core™2 Duo processor and up to 4GB RAM, the R5200 offers first-class performance and reliability. The system offers a wealth of standard I/O features including dual Gigabit Ethernet, six USB 2.0 ports, four serial ports, and VGA video. Expansion options include one full-height PCI slot and one PCI Express x16 slot.

An optional 2.5" solid-state SATA hard drive can be integrated and preloaded with Microsoft Windows or Windows Embedded operating systems. Linux is also supported. With your operating system and application running from solid-state hard drive, the R5200 provides the ultimate in reliability — no moving parts.

The R5200 includes an external power supply and US power cord that accepts 100-240V AC input and outputs 24VDC @ 120W. The metal enclosure allows for versatile mounting to walls, under counters, and on tabletops.

Features

Relio R5200 systems are designed for CPU-intensive applications in industrial environments and include the following features:

Standard System Features

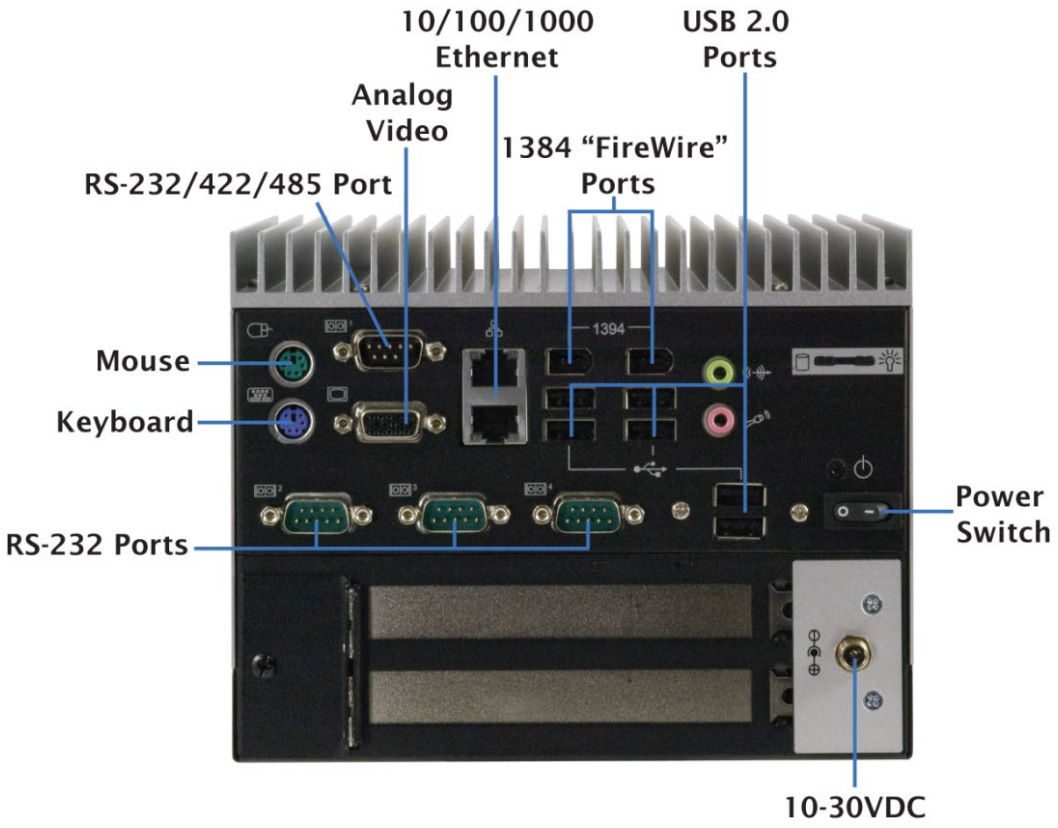
- Compact, rugged enclosure with silver-colored finish
- Solid-state operation with no fans or other moving parts
- Includes 2.2GHz Intel® Core™2 Duo processor and 2GB RAM.
- Mini-ITX motherboard with Intel® 965GME, VGA, and dual Gigabit LAN
- Up to 4GB RAM (DDR2 533/667MHz 240-Pin DIMM, Non-ECC, CL5) via two DIMM slots
- Hardware (965GME GMA X3100) integrated graphics supports QXGA resolution up to 2048x1536 @ 75Hz and 32-bit color.
- 2.5" internal shock-mounted hard drive bay is perfect for optional solid-state disk applications.

System Monitoring and Management

- Battery backed RTC/CMOS
- Watchdog Timer with 255 levels (1-255 Seconds)
- Supports CPU thermal/voltage monitoring and management.
- Supports Wake on Ring and Wake on Alarm functions.
- System power management (OS dependent)

Enclosure Front

- Two expansion slots support one PCI Express X16 and one PCI card.
- Two 10/100/1000BaseT RJ45 (Intel 82566DM, 82573V) Gigabit Ethernet ports with status LEDs
- Four DB9M serial ports (COM1 = RS-232/422/485, COM2,3,4 = RS-232)
- Six USB 2.0 ports
- Two IEEE-1394 “FireWire” ports
- One analog VGA DB15 connector
- Separate PS/2 mouse and keyboard ports
- Audio line out and microphone in
- LED status indicators for power and disk activity
- On/Off power switch



Hardware Installation

Follow proper ESD procedures by grounding yourself and the computer chassis before opening the enclosure. This will help avoid system damage resulting from static electricity discharge.

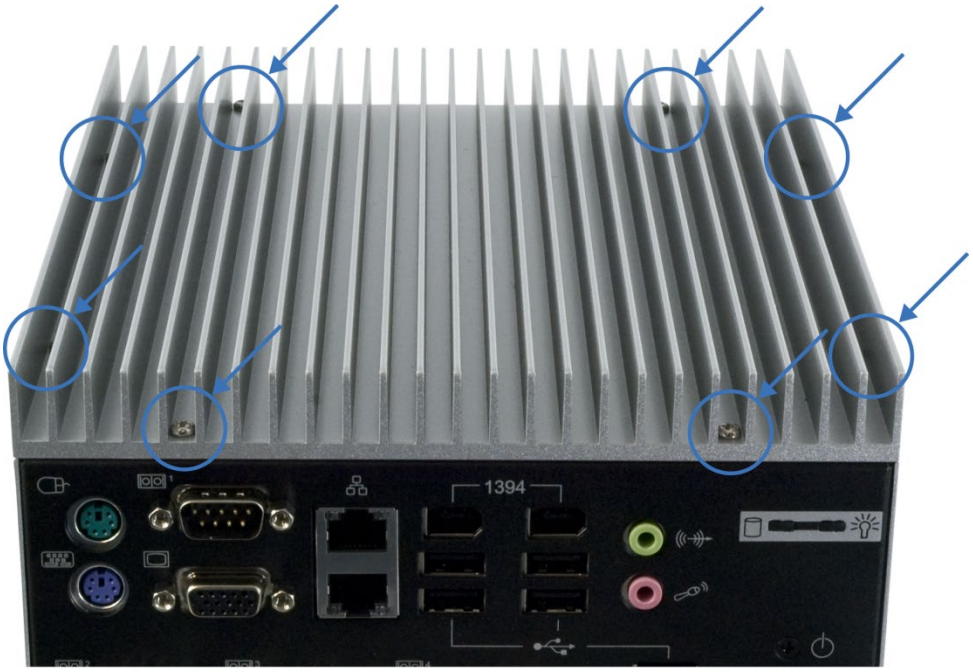
Installing System Memory

The R5200 supports a maximum of 4GB RAM via two 240-Pin DIMM slots. The memory slots accept either 533MHz (CL4) or 667MHz (CL5) Non-ECC DDR2 memory.

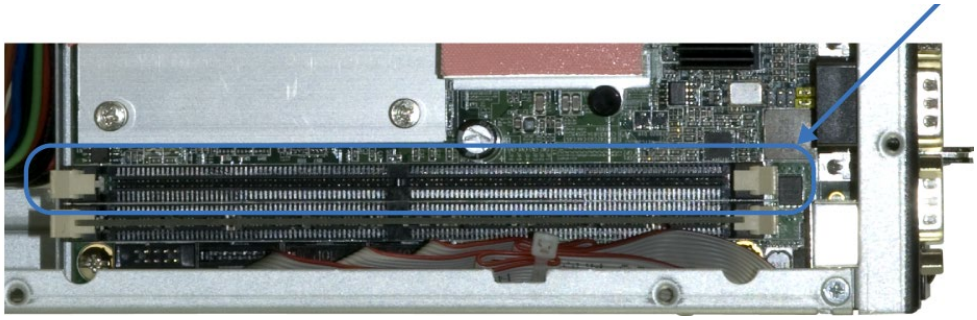
The base system (R5220) includes 2GB 667 MHz RAM in the slot located on the top of the motherboard under the heat sink. The system can be ordered with 4GB 667 MHz RAM (R5240) installed at the factory or an additional 1GB or 2GB can be installed in the field.

To install memory into the second slot, follow these instructions:

1. Turn off the system and disconnect from power source.
2. Loosen the eight (8) screws located on the top of the system.



3. Remove the top cover (heat sink) from the chassis by lifting straight up. Thermal conductive pads between internal heat sinks and the cover will make removal seem difficult. Do not twist or slide the cover while attempting to remove.
4. With the cover removed, the two DIMM slots are located along one side. Locate the empty memory socket.



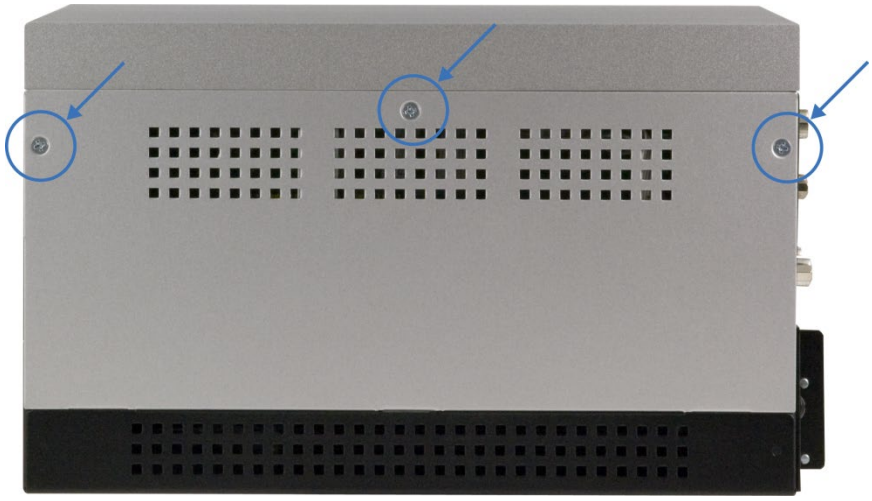
5. Align the memory module with the socket. The socket is keyed so that memory can only be installed one way.
6. Insert the memory module into the socket and push down firmly until seated. The socket latches will clip into the edge of the DIMM module when seated correctly.
7. Replace the top cover and tighten the eight (8) screws.
8. Plug the system into the power source and power up the system.

Installing a Solid-State Disk Drive

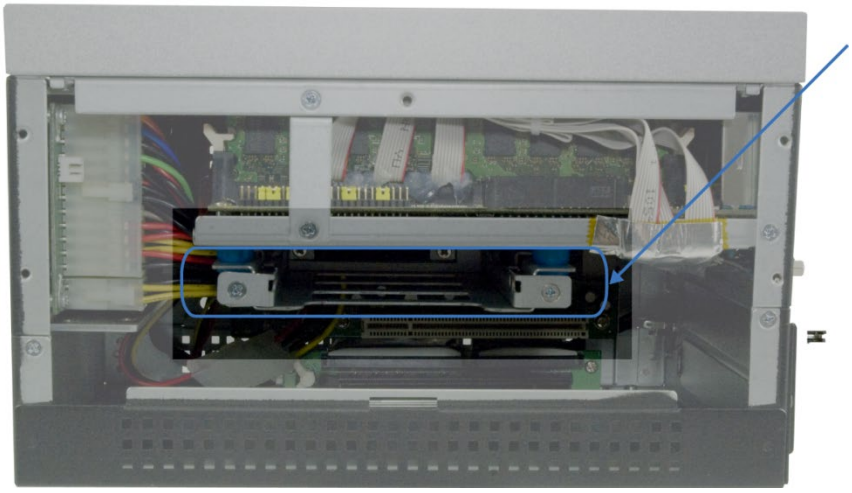
The R5200 offers a convenient shock-mounted drive tray that supports a single 2.5” SATA solid-state disk (SSD) or hard drive. The drive tray is located in the middle of the enclosure and accessed through the side.

To install a 2.5” drive, follow these instructions:

1. Turn off the system and disconnect from power source.
2. Remove the three screws from the side of the enclosure.



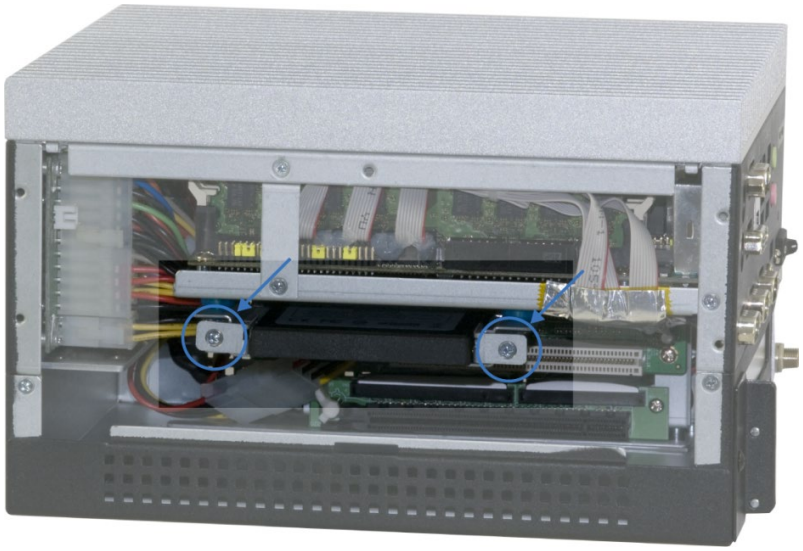
3. Remove the side panel and locate the hard drive tray.



4. Remove the two screws securing the drive tray and then slide the tray out of the enclosure. Keep the same side of the tray up and place it on an ESD safe surface.

5. Place the hard drive, label side down, within the drive tray bracket. The connectors on the drive should face away from the flanges on the tray. Secure the drive to the tray using the screws supplied by the drive manufacturer.

6. Slide the drive tray and drive back into the enclosure.



7. The SATA and power connectors will automatically engage the drive when the tray is inserted correctly. Secure the drive tray using the two screws.

8. Replace the side cover and install the three screws.

9. Plug the system into the power source and power up the system.

Installing Expansion Cards

The R5200 offers two expansion slots that support one PCI Express X16 and one 32-bit PCI card. The cards are held securely in place by a bracket and screw.

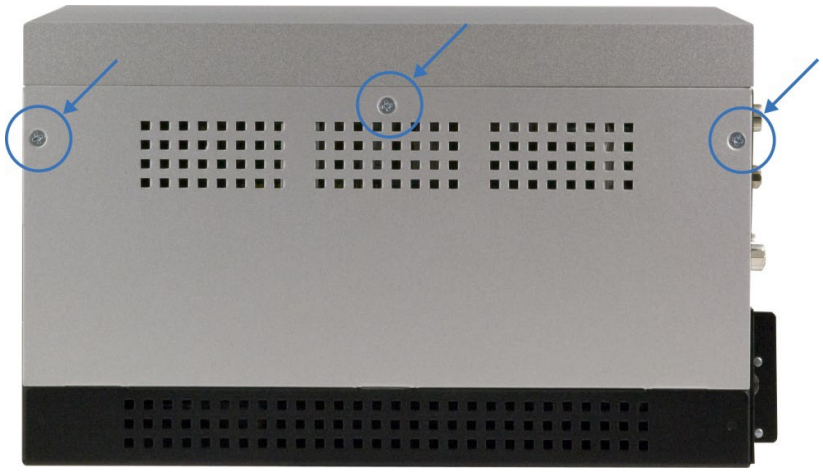
Expansion Card Power Limits

Due to the embedded nature of this system, some power limitations exist that required to ensure fanless operation. The thermal power design of the system limits how much power can be provided by the internal power supply. Because of this power design limit, the PCIe and PCI expansion buses cannot supply the power required by the appropriate PCI Specification. While neither bus can meet the full PCI power specification both busses can supply sufficient power to operate all Sealevel Systems designed expansion cards and many cards from other manufacturers. The actual power limits are listed in the tables below. Verify that any expansion card does not require more power that listed below before installing.

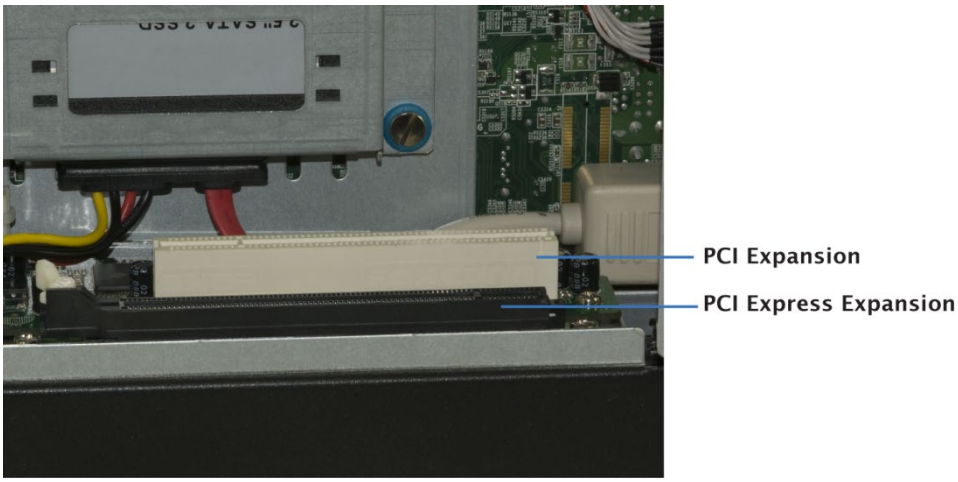
Voltage Rail	PCI Maximum Current	PCIe Maximum Current
-12V	100mA	Not Used by PCIe
12V	500mA	4.48A
5V	2.5A	Not Used by PCIe
3.3V	1.6A	2.74A

To install an expansion card into the R5200, follow these instructions:

1. Turn off the system and disconnect from power source.
2. Remove the three screws from the side of the enclosure and remove the side panel.

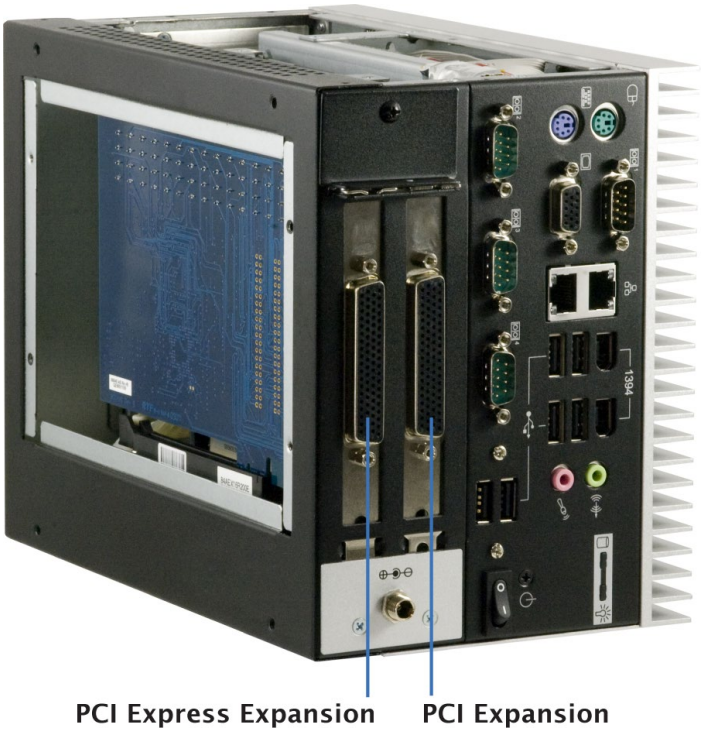


3. Turn the system on its side and remove the four screws securing the bottom cover.



4. On the front of the enclosure, remove the screw and the bracket holding the PC brackets in place. The bracket is keyed and may have to be gently rocked back and forth to remove.
5. If installing multiple expansion cards, install the PCI card first due to the tight confines of the enclosure.
6. Align the expansion card with the proper slot and press the card into the slot until firmly seated.

7. On the outside of the enclosure, replace the bracket and secure with the screw. The image shows two expansion cards properly installed.



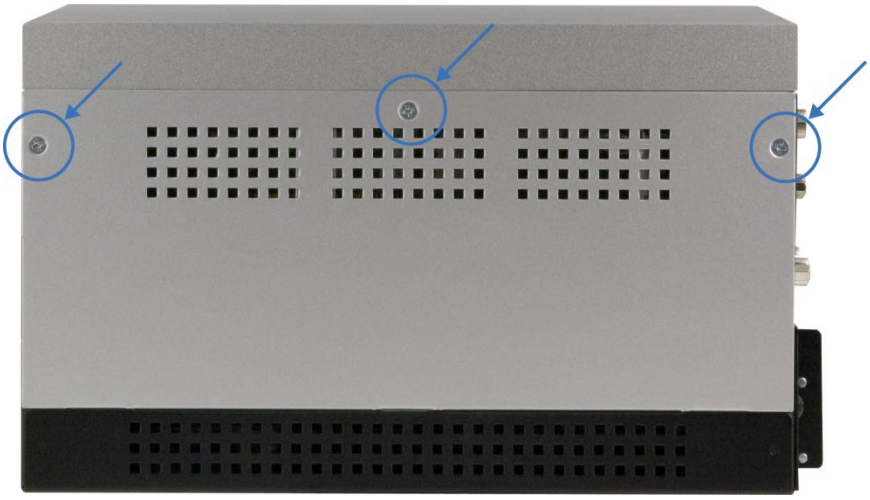
8. Replace the bottom cover and secure with the four screws. Replace the side cover and secure with the three screws. Turn the system back onto its base.
9. Plug the system into the power source and power up the system.

Installing optional cooling fan

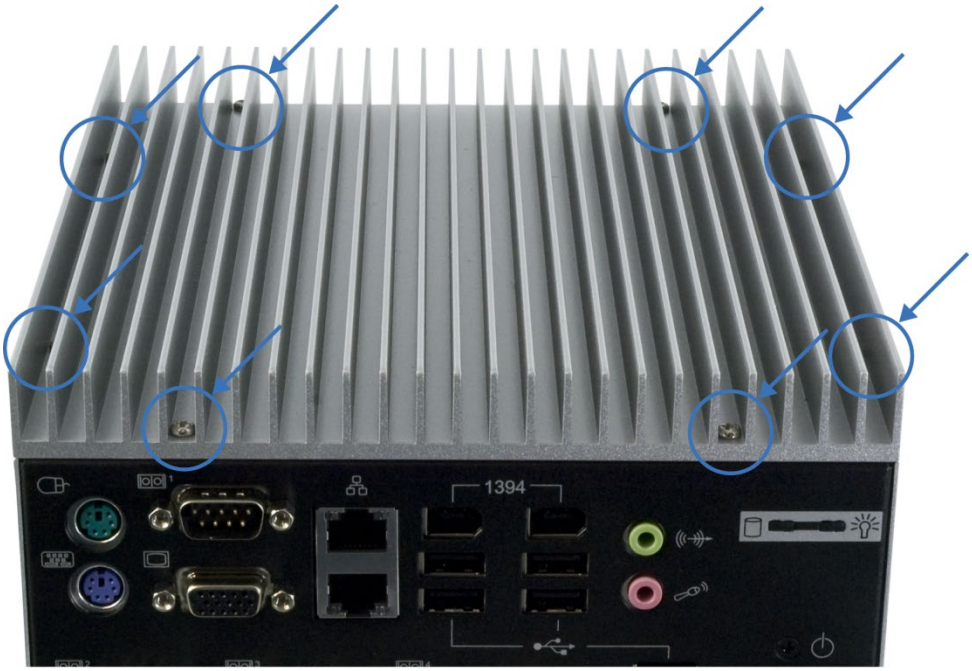
Installation of a high power expansion card may require additional cooling to ensure the system can operate reliably up to 40 degrees Celsius. If a PCIe expansion card dissipates more than 7 Watts inside the computer an optional PCI slot exhaust fan (PN: PCF-5200-5.7) will likely be necessary to remove the extra heat.

To install the exhaust fan into the R5200, follow these instructions:

1. Turn off the system and disconnect from power source.
2. Remove the three screws from the side of the enclosure and remove the side panel.

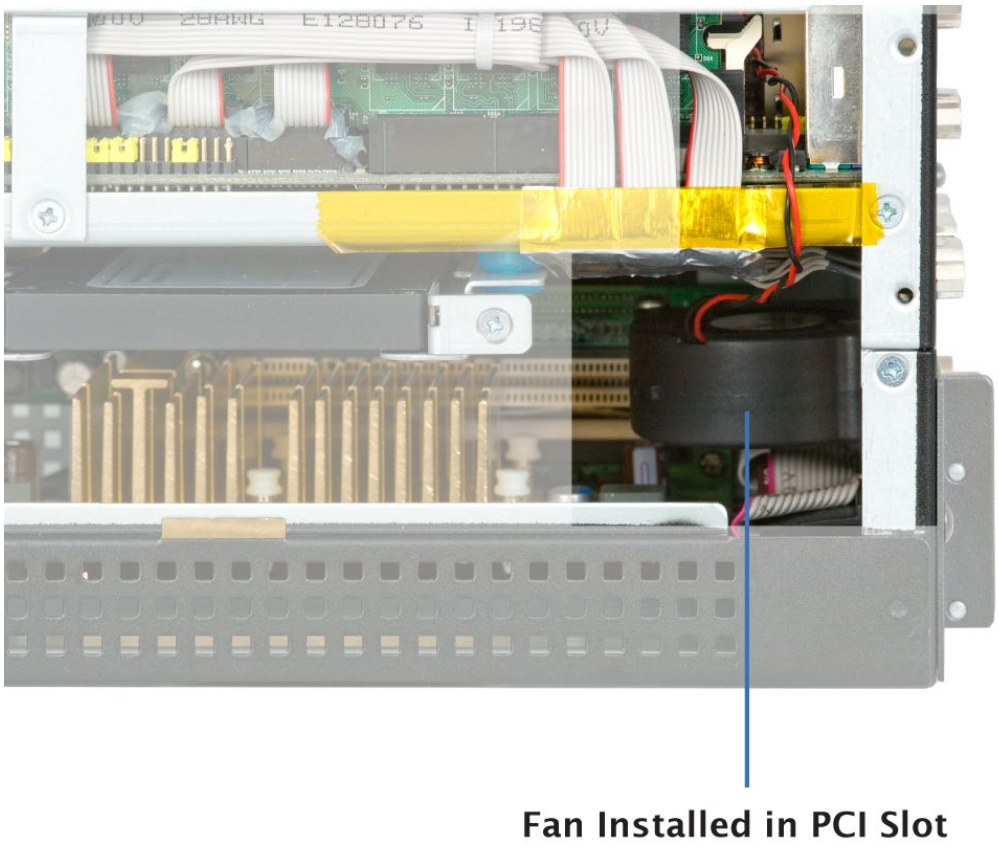


3. Loosen the eight (8) screws located on the top of the system.

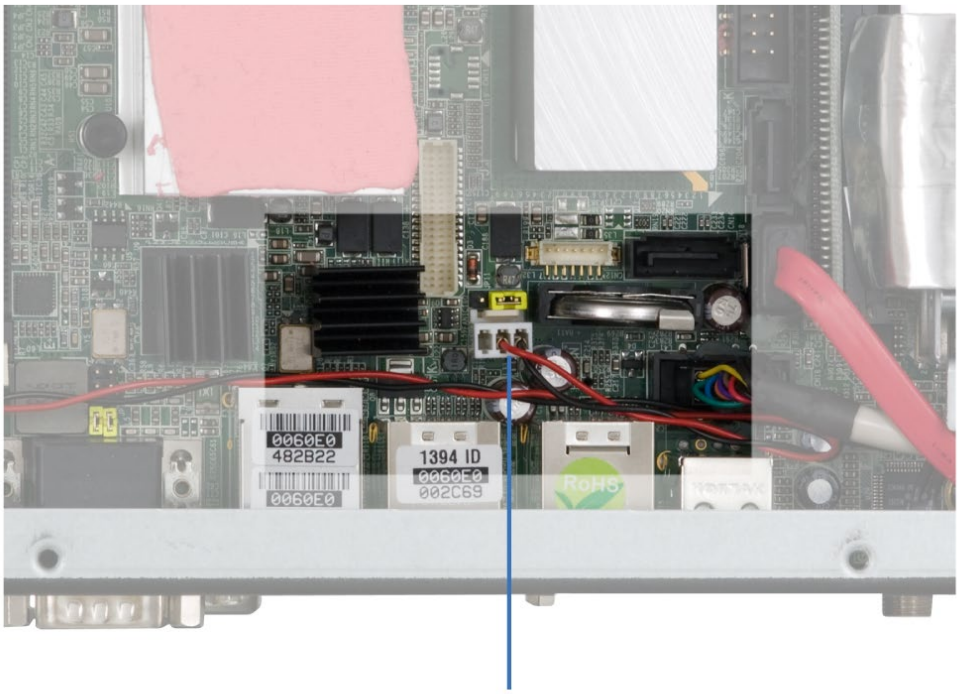


4. Remove the top cover (heat sink) from the chassis by lifting straight up. Thermal conductive pads between internal heat sinks and the cover will make removal seem difficult. Do not twist or slide the cover while attempting to remove.
5. On the front of the enclosure, remove the screw and the bracket holding the PCI brackets in place. The bracket is keyed and may have to be gently rocked back and forth to remove.
6. Remove the blank PCI bracket from the PCI slot.
7. Align the PCI bracket that the exhaust fan is mounted to with the opening in front of the PCI slot and lower the fan into place ensuring the narrow section of the bottom edge of the bracket drops into its landing zone to ensure secure mounting.

8. Route the power wires in the recessed area between the front chassis plate and ribbon cables, as pictured, to ensure the wires are not pinched when the side of the enclosure is reinstalled.



9. Plug the power cable into the fan header on the top side of the motherboards as pictured. The header and connector have a keyed latching mechanism to ensure correct orientation and polarity.
10. Gently pull any excess wire out of the expansion card area and lay it in the area on the top side of the motherboard to ensure it does not interfere with airflow entering the fan.



Locking Fan Power Header

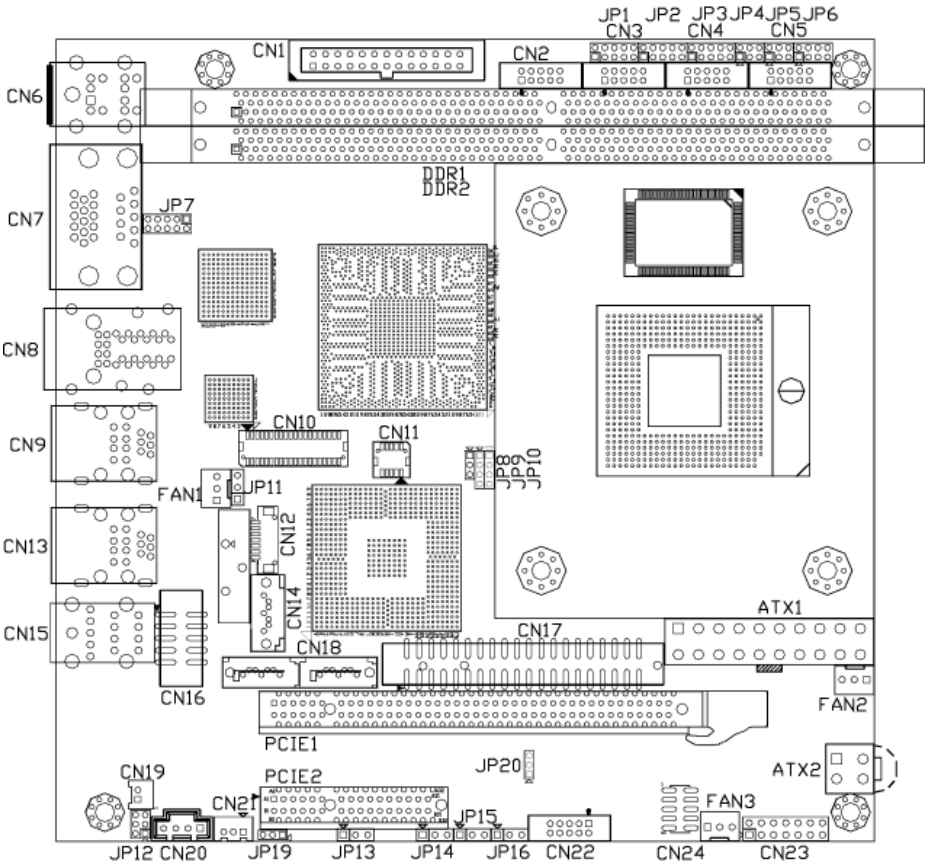
11. On the outside of the enclosure, replace the expansion card locking bracket and secure with the screw.
12. Replace the side cover and secure with the three screws (ensure the fan power cables are not pinched). Turn the system back onto its base.
13. Replace the top cover (heat sink) with the eight screws. The following image shows a high power third party PCI Express expansion card and exhaust fan properly installed.

14. Plug the system into the power source and power up the system.

Technical Description

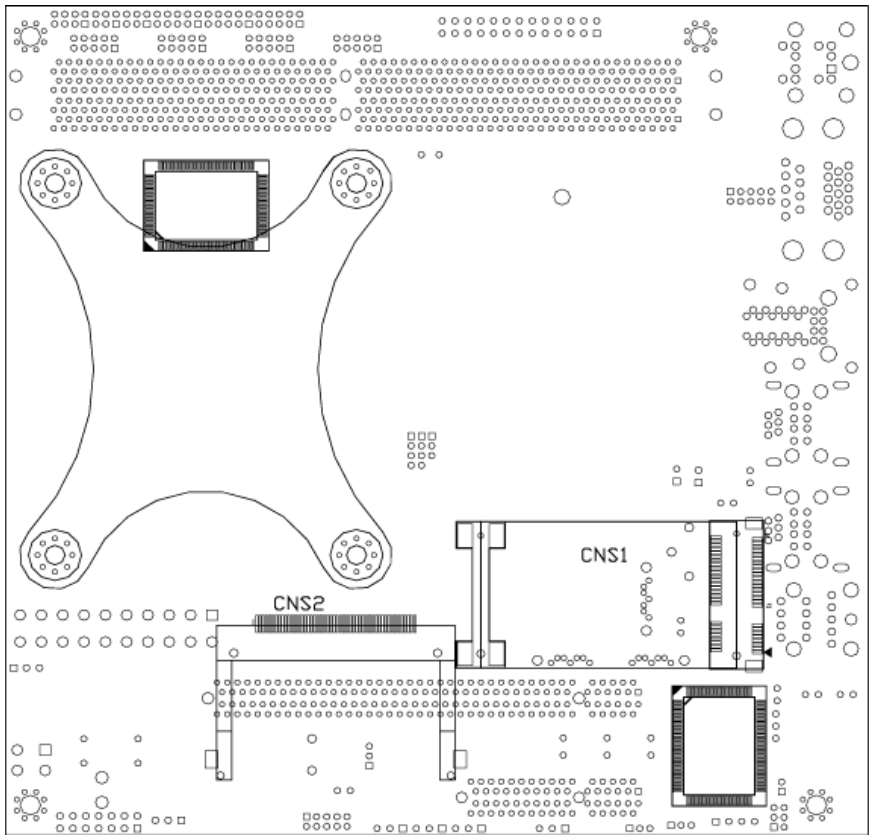
Motherboard Layout – Component Side

The board map below shows the components that are located on the top of the motherboard, underneath the top cover (heat sink). All configurable jumpers are accessible by removing the top cover.



Motherboard Layout – Solder Side

The board map below shows the bottom of the motherboard. The optional connectors shown are not included in this version of the system. Refer to the table on the following page for more information.



Component & Connector Locations

The following table details the components and connectors shown in the board maps on the previous two pages. The connectors on the motherboard are used to interface to various other parts of the system. All interfaces available on the motherboard are not brought out to real world connections. If you need access to a specific interface, please contact technical support for assistance.

Label	Description
CN1	Parallel Port or Floppy Connector (Default: LPT)
CN2	Serial Port2 Connector
CN3	Serial Port3 Connector
CN4	Serial Port4 Connector
CN5	Digital I/O (DIO) Connector (Optional)
CN6	PS/2 Keyboard/Mouse Connector
CN7	VGA & Serial Port1 Connector
CN8	LAN1/LAN2 Connector
CN9	USB Port1/2 & IEEE-1394 Port1 Connector
CN10	LVDS Connector (Optional)
CN11	TV-Out Connector (Optional)
CN12	LVDS Backlight Connector (Optional)
CN13	USB Port3/4 & IEEE-1394 Port2 Connector
CN14	Serial ATA Port2 Connector (Optional)
CN15	Audio Phone Jack Connector
CN16	USB Port5/6 Connector
CN17	Parallel IDE Connector
CN18	Serial ATA Port1/3 Connector
CN19	Audio S/PDIF-Out Connector
CN20	Audio CD-In Connector
CN21	SM Bus Connector
CN22	USB Port7/8 Connector
CN23	Front Panel Bezel Connector

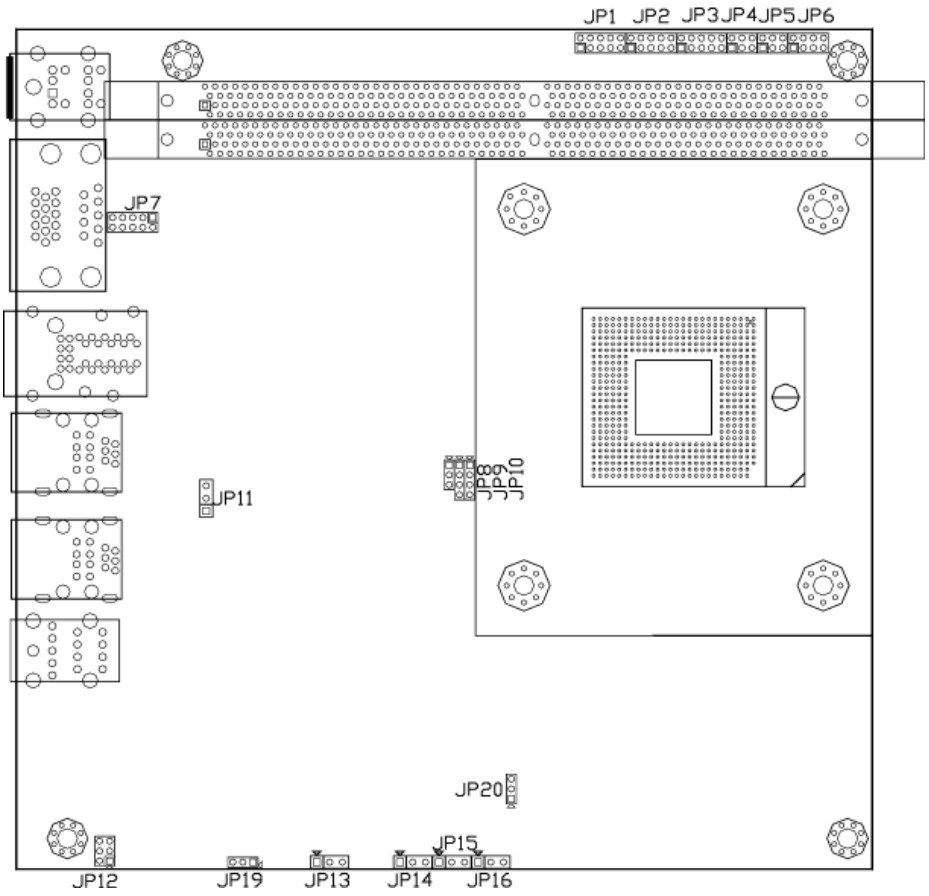
CN24	SPI Flash Record Connector
CNS1	Mini PCI Express Socket (Optional)
CNS2	CompactFlash Connector (Optional)
PCIE1	PCI Express x16 Slot
PCIE2	PCI Express x4 Expansion Slot (Optional)
DDR1	DDRII Long-DIMM 2
DDR2	DDRII Long-DIMM 1
FAN1	NB Fan Connector (Optional)
FAN2	CPU Fan Connector (Optional)
FAN3	System Fan Connector (Optional)
ATX1	ATX 2X10 Power Connector
ATX2	ATX +12V 2X2 Power Connector

Jumper Descriptions & Locations

The R5200 has jumpers on the motherboard for configuring the COM1 serial port and other settings. To clear incorrect settings saved in the Setup Utility, you can use a jumper to clear the CMOS memory. The jumper is located on the top side of the motherboard under the top cover (heat sink).

To access the jumpers, remove the eight (8) screws from the top cover. Remove the heat sink by lifting straight up (it may seem difficult to remove due to the thermal conductive pads connecting internal heat sinks to the external heat sink). Do not twist or slide the cover while attempting to remove. For jumpers located at the edges of the motherboard, removing the side panels and the heat sink will make access to these jumpers easier.

The jumpers can be found in the following locations:



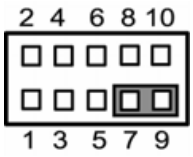
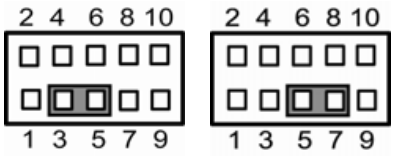
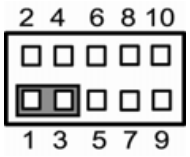
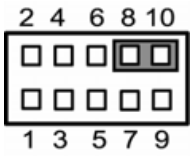
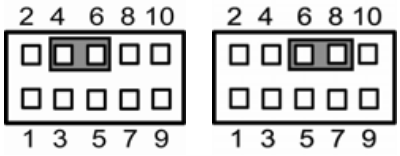
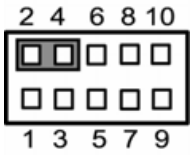
Jumper Descriptions

Label	Description	Default
JP1	COM2 Mode Select	CN2 Pin 1: DCD CN2 Pin 8: RI
JP2	COM3 Mode Select	CN3 Pin 1: DCD CN3 Pin 8: RI
JP3	COM4 Mode Select	CN4 Pin 1: DCD CN4 Pin 8: RI
JP4	COM1 Mode Select	RS-232
JP5	COM1 Mode Select	RS-232
JP6	COM1 Mode Select	RS-232
JP7	COM1 Mode Select	CN7 Pin 1: DCD CN7 Pin 9: RI
JP8	CPU Frequency Select	Auto
JP9	CPU Frequency Select	Auto
JP10	CPU Frequency Select	Auto
JP11	LVDS Voltage Select	3.3V
JP12	Audio Line Out/Speaker Out	Line Out
JP13	Clear CMOS Setting	Normal
JP14	TPM Address Select	4EH (Optional
JP15	CompactFlash Select	Slave (Optional)
JP16	CompactFlash Power Select	3.3V (Optional)
JP19	USB Port5/6 (CN16) Power Select	5V
JP20	USB Port7/8 (CN22) Power Select	5V

Jumpers (JP14), (JP15), and (JP16) are not present on the default build of the R5200 motherboard.

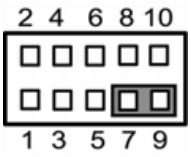
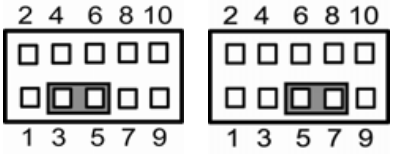
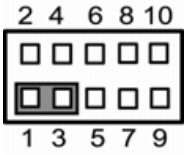
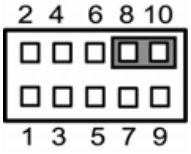
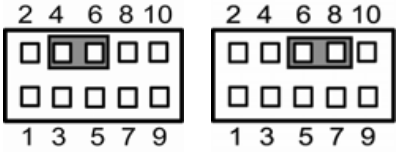
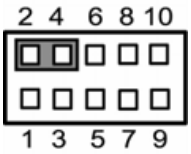
(JP1) COM2 DCD and RI Voltage Selection

Use the jumper (JP1) to configure the COM2 (CN2) voltage for Pin-1 to operate DCD with +5V or +12V power, and Pin-9 to operate RI with +5V or +12V power.

Function	(JP1) Jumper
Pin 1: DCD (Default)	
Pin 1: 5V	
Pin 1: 12V	
Pin 9: RI (Default)	
Pin 9: 5V	
Pin 9: 12V	

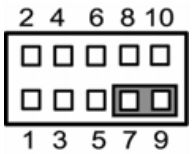
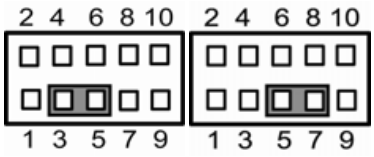
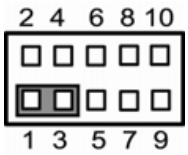
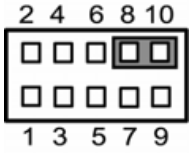
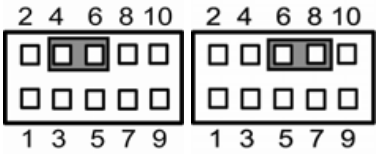
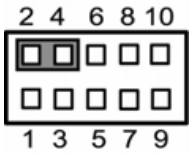
(JP2) COM3 DCD and RI Voltage Selection

Use the jumper (JP2) to configure the COM3 (CN3) voltage for Pin-1 to operate DCD with +5V or +12V power, and Pin-9 to operate RI with +5V or +12V power.

Function	(JP2) Jumper
Pin 1: DCD (Default)	
Pin 1: 5V	
Pin 1: 12V	
Pin 9: RI (Default)	
Pin 9: 5V	
Pin 9: 12V	

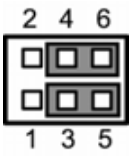
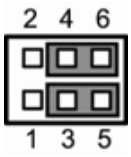
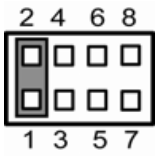
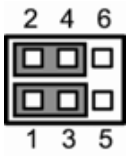
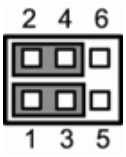
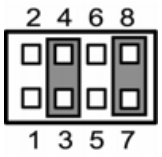
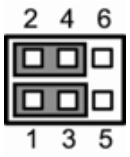
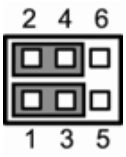
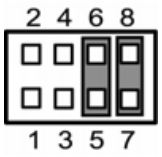
(JP3) COM4 DCD and RI Voltage Selection

Use the jumper (JP3) to configure the COM4 (CN4) voltage for Pin-1 to operate DCD with +5V or +12V power, and Pin-9 to operate RI with +5V or +12V power.

Function	(JP3) Jumper
Pin 1: DCD (Default)	
Pin 1: 5V	
Pin 1: 12V	
Pin 9: RI (Default)	
Pin 9: 5V	
Pin 9: 12V	

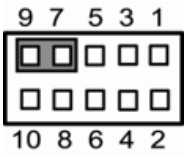
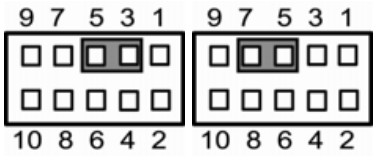
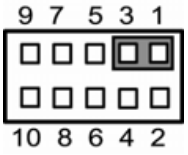
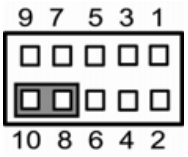
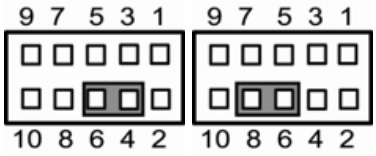
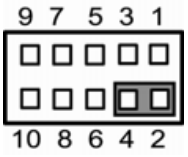
(JP4, JP5, JP6) COM1 Mode Select

Use the jumpers (JP4), (JP5) and (JP6) to set the electrical interface for COM1 from RS-232 to RS-422 or RS-485. All three sets of jumpers must be properly configured.

Function	(JP4) Jumper	(JP5) Jumper	(JP6) Jumper
RS-232 (Default)			
RS-422			
RS-485			

(JP7) COM1 DCD and RI Voltage Selection

Use the jumper (JP7) to configure the COM1 (CN7) voltage for Pin-1 to operate DCD with +5V or +12V power, and Pin-9 to operate RI with +5V or +12V power.

Function	(JP7) Jumper
Pin 1: DCD (Default)	
Pin 1: 5V	
Pin 1: 12V	
Pin 9: RI (Default)	
Pin 9: 5V	
Pin 9: 12V	

(JP8, JP9, JP10) CPU FSB Frequency Select

Use the jumpers (JP8), (JP9) and (JP10) to set the CPU FSB frequency. All three sets of jumpers must be properly configured.

Function	(JP8) Jumper	(JP9) Jumper	(JP10) Jumper
Auto (Default)			
667MHz FSB			
800MHz FSB			

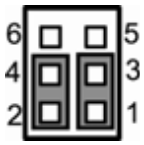
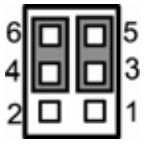
(JP11) LVDS Voltage Selection

Use the jumper (JP11) to select the voltage for the LVDS interface.

Function	(JP11) Jumper
3.3V (Default)	
5V	

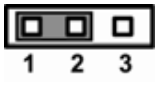
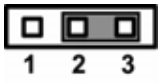
(JP12) Audio Output Selection

Use the jumper (JP12) to change the audio output from line-out to speaker out.

Function	(JP12) Jumper
Line Out (Default)	
Speaker Out	

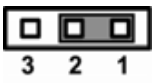
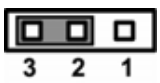
(JP13) Clear CMOS

Use the jumper (JP13) to clear the CMOS memory if incorrect settings are saved in the BIOS Setup Utility. Clearing the CMOS memory will erase all custom settings and revert to factory defaults.

Function	(JP13) Jumper
Normal (Default)	
Clear CMOS	

(JP19, JP20) USB Power Selection

Use jumpers (JP19) and (JP20) to select the voltage for the USB (CN22) interface. Both sets of jumpers must be properly configured.

Function	(JP19) Jumper	(JP20) Jumper
5V (Default)		
5V_Dual		

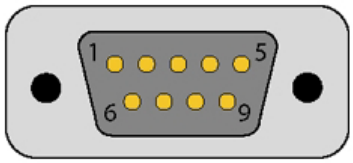
Connector Pinouts

COM1 Serial Port (RS-232/422/485)

COM1 is configured at the factory for RS-232 and is available on a DB9 male connector. DCD and RI can be configured for +5V or +12V, depending on jumper settings. To configure the electrical interface for RS-422/485 or to enable +5V/12V over DCD/RI, refer to the jumper configuration section of this manual or contact your sales rep to have this configured at the factory. For more information, see the Optional Items section of this manual.

COM1 is labeled as "|O|O|" with the number 1 to the right. The pinout for the DB9 serial port is shown in the table below:

PIN#	RS-232	RS-422	RS-485
1	DCD	TX-	DATA -
2	RX	TX+	DATA +
3	TX	RX+	--
4	DTR	RX-	--
5	GND	GND	GND
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

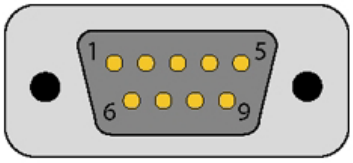


COM2, 3, 4 Serial Ports (RS-232)

COM2, 3, 4 support RS-232 and are available on DB9 male connectors. DCD and RI can be configured for +5V or +12V, depending on jumper settings. To enable +5V/12V over DCD/RI, refer to the jumper configuration section of this manual or contact your sales rep to have this configured at the factory.

The COM ports are labeled as a |O|O| with the number of the port to the right of this symbol. The RS-232 pinout is shown in the table below:

PIN#	RS-232
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



Video Interface (QXGA)

The video interface is provided on a standard 15-pin DB15 connector commonly used for connecting to analog CRT or LCD displays. The R5200 can drive the display with a maximum resolution of 2048 x 1536 @ 75Hz. The pinout for the DB15 connector is shown below.

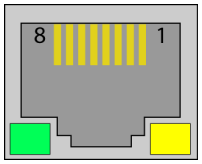
PIN#	SIGNAL	DESCRIPTION
1	RED	This is the Red analog output signal to the display.
2	GREEN	This is the Green analog output signal to the display.
3	BLUE	This is the Blue analog output signal to the display.
4	N/C	Not connected
5	GND	Digital Ground
6	AGND	Analog Ground
7	AGND	Analog Ground
8	AGND	Analog Ground
9	+5V	Digital Display Channel +5V
10	GND	Digital Ground
11	N/C	Not connected
12	DDC DAT	Digital Display Channel Data – Used for identifying the type of connected display.
13	HSYNC	Horizontal Sync – This signal is used for the digital horizontal sync output to the display.
14	VSYNC	Vertical Sync – This signal is used for the digital vertical sync output to the display.
15	DDC CLK	Digital Display Channel Clock – Used for setting the communication clock for DDC.

The shaded area denotes grounds. .

Ethernet Interface

The Relio R5200 provides two high performance 32-bit Ethernet interfaces fully compliant with IEEE 802.3U 10/100BaseT and IEEE 802.3z/ab 1000BaseT standards. The Ethernet interfaces utilize the Intel 82566DM (10/100BaseT) and 82573V (1000BaseT) chipsets and are supported by all major network operating systems. Ethernet network connections are made via the two RJ45 connectors on the front of the enclosure.

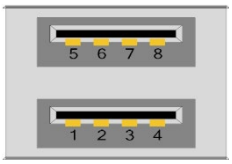
PIN#	Signal
1	MDI Pair 3+
2	MDI Pair 3–
3	MDI Pair 2+
4	MDI Pair 1–
5	MDI Pair 1+
6	MDI Pair 2–
7	MDI Pair 4+
8	MDI Pair 4–
Y	Activity LED
G	10/100BaseT (Green) 1000BaseT (Orange)



USB 2.0 Interfaces

The R5200 is equipped with six high-speed USB 2.0 ports. All six ports are located on the front of the enclosure and can be disabled in the system BIOS, if required. Each USB port can operate at a maximum of 480M bps.

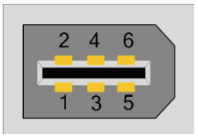
PIN#	RS-232
1	+5V
2	Data –
3	Data +
4	GND
5	+5V
6	Data –
7	Data +
8	GND



IEEE-1394 Interfaces

The R5200 is equipped with two IEEE-1394a-2000 compliant “FireWire” ports. Both ports are available on the front of the enclosure and can be disabled in the system BIOS, if required. Each FireWire port can operate at a maximum of 400M bps.

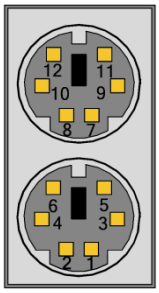
PIN#	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR



PS/2 Keyboard and Mouse Interfaces

The R5200 includes separate keyboard and mouse interfaces via standard miniature DIN connectors. To install a PS/2 mouse, plug it into the upper (green) port. To install a PS/2 keyboard, plug it into the lower (purple) port.

PIN#	Signal
1	Keyboard Data
2	No Connect
3	Ground
4	VCC
5	Keyboard Clock
6	No Connect
7	Mouse Data
8	No Connect
9	Ground
10	VCC
11	Mouse Clock
12	No Connect



Input Power

The power input is located on the front of the enclosure, next to the power switch. The locking Phoenix power connector accepts 10-30VDC.

A desktop power supply is included that accepts input power from 100-240V AC (47/63Hz). The power supply outputs 24VDC @ 120W max.

Specifications

Motherboard

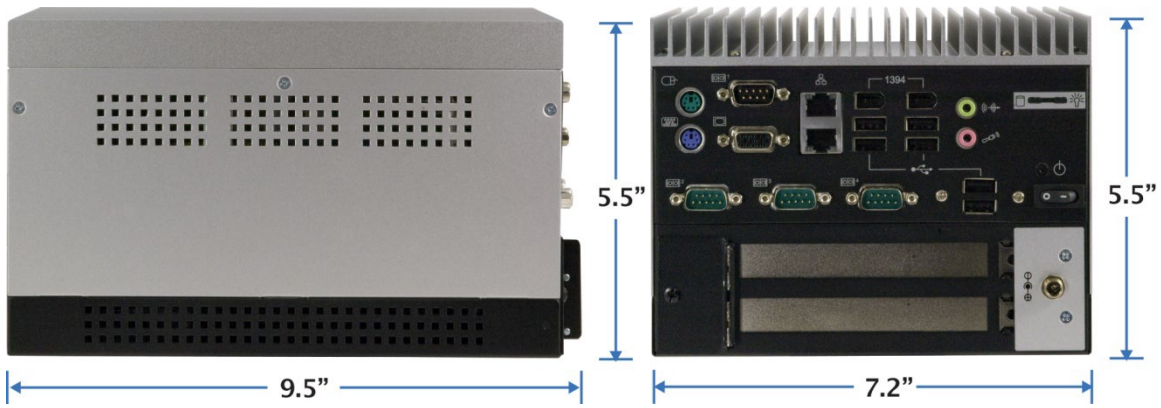
CPU:	Socket P (478) 2.2GHz Intel® Core™2 Duo
Chipset:	Intel® 965GME
BIOS:	Phoenix-Award, 16Mbit with RPL/PXE LAN Boot ROM, SmartView and Customer CMOS Backup
System RAM:	(2) 240-Pin DDR2 533/667MHz DIMM slots Maximum 4GB RAM
Input Power:	System supports 10-30 VDC Includes 100-240V AC Desktop Power Supply, Outputs 24VDC @ 120 W

Environmental

Specification	Operating	Storage
Temperature Range	-10º to 40º C	-20º to 80º C
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Dimensions

Length	Width	Height
9.5” (24.1 cm)	7.2” (18.2 cm)	5.5” (14.0 cm)



Appendix A – Handling Instructions

ESD Warnings

Electrostatic Discharges (ESD)

A sudden electrostatic discharge can destroy sensitive components. Proper packaging and grounding rules must therefore be observed. Always take the following precautions.

- Transport boards and cards in electrostatically secure containers or bags.
- Keep electrostatically sensitive components in their containers, until they arrive at an electrostatically protected workplace.
- Only touch electrostatically sensitive components when you are properly grounded.
- Store electrostatically sensitive components in protective packaging or on anti-static mats.

Grounding Methods

The following measures help to avoid electrostatic damages to the device:

- Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.
- Use antistatic mats, heel straps, or air ionizers for more protection.
- Always handle electrostatically sensitive components by their edge or by their casing.
- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting and removing connectors or connecting test equipment.
- Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
- Use field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.
- Always place drives and boards PCB-assembly-side down on the foam.

Appendix B – Phoenix Award BIOS

Introduction

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

The Award BIOS and motherboard offer features that may not be available in the Relio R5200

Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self-Test):

To Enter Setup Press DEL Key

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

Control Keys

Getting Help

Main Menu

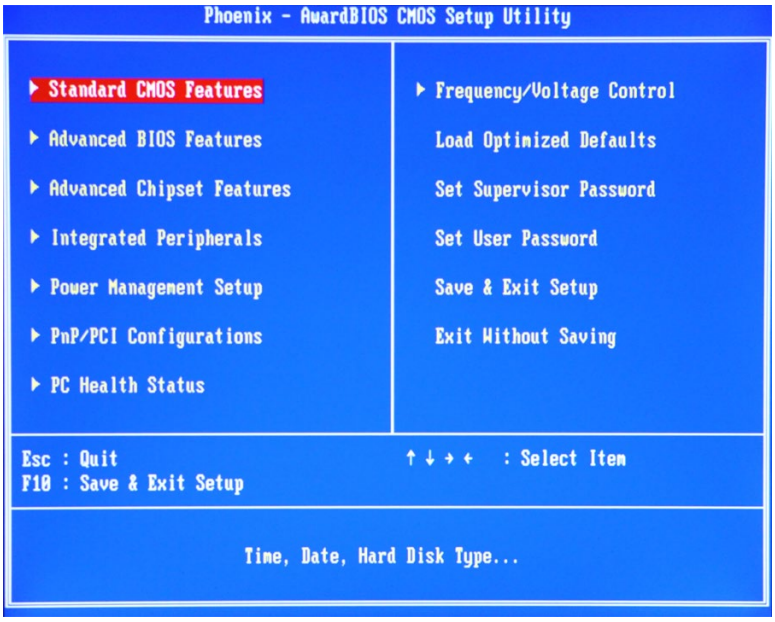
The online description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu appears on the screen. In the Main Menu, there are several Setup functions and a couple of Exit options for your selection. Use arrow keys to select the Setup Page you intend to configure then press <Enter> to accept or enter its sub-menu.

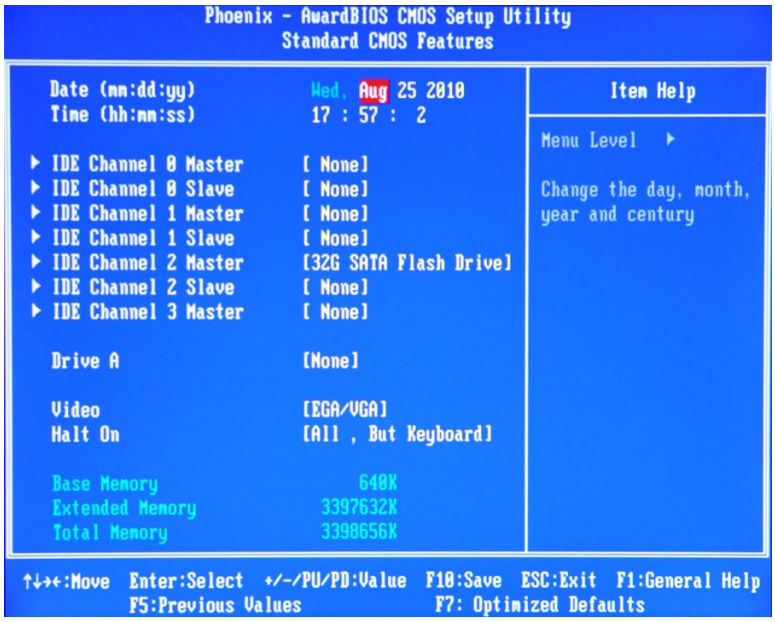


If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.

It is strongly recommended that you should avoid changes to the chipset defaults. Both Award and your system manufacturer have carefully selected the defaults that provide the best performance and reliability.

Standard CMOS Setup Menu

The Standard CMOS Setup Menu displays basic information about your system. Use arrow keys to highlight each item, and then use <PgUp> or <PgDn> keys to select the value for each item.



Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

Day	Read only - displays the day of the week calculated by the BIOS.
Month	Select from January to December.
Date	Select from 1 to 31.
Year	Select the current year.

Time

This item shows current time of your system with the format <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

IDE Channel 0/1/2/3 Master/IDE Channel 0/1/2 Slave

These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<-> to select a numbered hard disk type, or directly type the number and press <Enter>. Your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.

If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the HDD interface controller supports ESDI, select "Type 1".

If the HDD interface controller supports SCSI, select "None".

If the HDD interface controller supports CD-ROM, select "None".

CYLS	Number of cylinders	**LANDZONE**	Landing zone
HEADS	Number of heads	**SECTORS**	Number of sectors
PRECOMP	Write precomp	**MODE**	HDD access mode

If there is no hard disk drive installed, select NONE and press <Enter>.

Drive A

Selects the type of floppy drive installed in your system, and the default is "None".

None	(Default) No floppy drive installed.
360K, 3.5 in.	3.5 inch PC-type standard drive; 360Kb
1.2M, 3.5 in.	3.5 inch AT-type high-density drive; 1.2MB
720K, 3.5 in.	3.5 inch double-side drive; 720Kb
1.44M, 3.5 in.	3.5 inch double-side drive; 1.44MB
2.88M, 3.5 in.	3.5 inch double-side drive; 2.88MB

Video

Select the display adapter type for your system.

Halt On

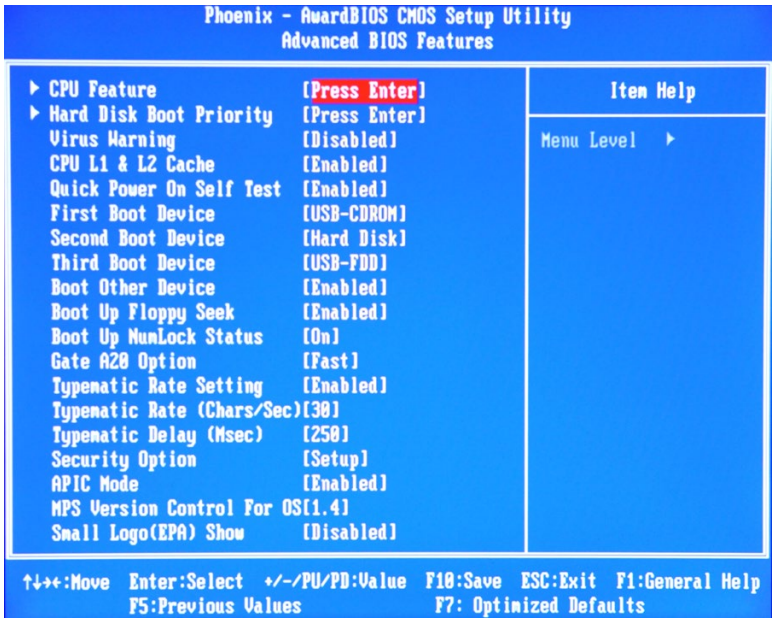
This item determines whether the system will halt or not if an error is detected while powering up.

No errors	(Default) The system booting will halt on any errors detected.
All errors	If the BIOS detects a non-fatal error, the system booting will stop, and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error. It will stop for all other errors.
All, But Diskette	The system booting will not stop for a diskette error. It will stop for all other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error. It will stop for all other errors.

Press <Esc> to return to the Main Menu page.

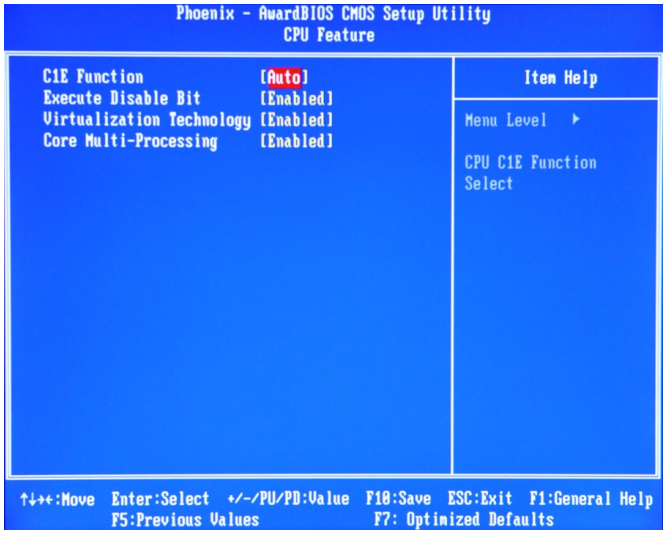
Advanced BIOS Features

This section allows you to configure and improve your system, to set up some system features according to your preference.



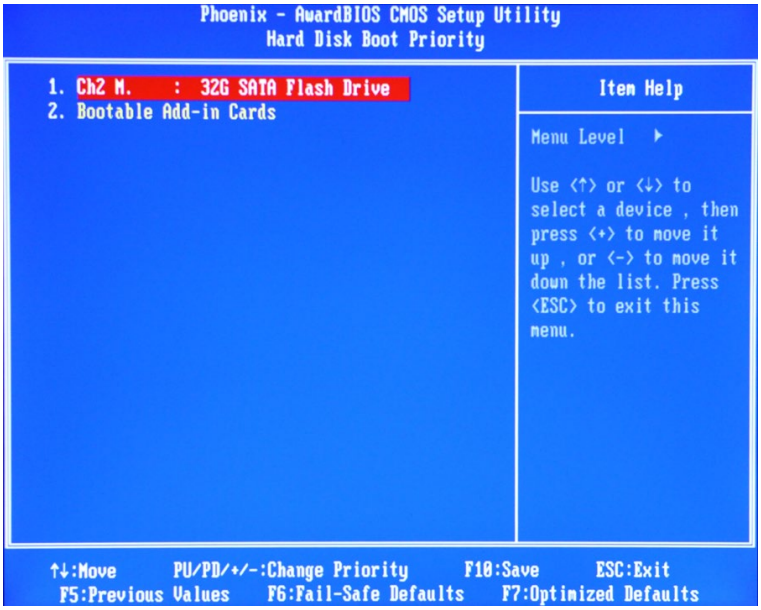
CPU Feature

Scroll to this item and press <Enter> to view the CPU Feature sub menu.



Hard Disk Boot Priority

Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.



Press <Esc> to return to the Advanced BIOS Features page.

Virus Warning

This function allows you to choose the Virus Warning feature for IDF Hard Disk boot sector protection. The default setting is “Disabled”.

Enabled	Automatically activates while the system boots up and a warning message appears for an attempt to access the boot sector or hard disk partition table.
Disabled	No warning message will appear for attempts to access the boot sector or hard disk partition table.

CPU L1 & L2 Cache

These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is “Enabled”. CPUs without built-in internal cache will not provide the “CPU Internal Cache” item on the menu.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self-Test

This option speeds up Power on Self-Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is “Enabled”.

Enabled	Enable Quick POST
Disabled	Normal POST

First/Second/Third Boot Device

These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

Boot Other Device

This item allows users to enable or disable the boot device not listed in the First/Second/Third boot devices option above. The default setting is “Enabled”.

Boot Up Floppy Seek

During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. The 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is “Enabled”.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. The BIOS cannot differentiate 720K, 1.2M or 1.44M drives as they all are 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the installed drive is 360K.

Boot Up NumLock Status

Set the Num Lock status when the system is powered on. The default value is “On”.

Gate A20 Option

The default value is “Fast”.

Normal	The A20 signal is controlled by the keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

Typematic Rate Setting

This item determines the typematic rate of the keyboard. The default value is “Disabled”.

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these two items, controlled by keyboard.

Typematic Rate (Chars/Sec)

This option refers to character numbers typed per second by the keyboard. The default value is “6”.

6	6 characters per second.
8	8 characters per second.
10	10 characters per second.
12	12 characters per second.
15	15 characters per second.
20	20 characters per second.
24	24 characters per second.
30	30 characters per second.

Typematic Delay (Msec)

This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters. The default value is “250”.

250	250 msec.
500	500 msec.
750	750 msec.
1000	1000 msec.

Security Option

This item allows you to limit access to the system and Setup, or just to Setup. The default value is “Setup”.

System	If a wrong password is entered at the prompt, the system will not boot and the access to Setup will be denied.
Setup	If a wrong password is entered at the prompt, the system will boot, but access to Setup will be denied.

To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <ENTER> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.

APIC Mode

Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.

MPS Version Control For OS

This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.

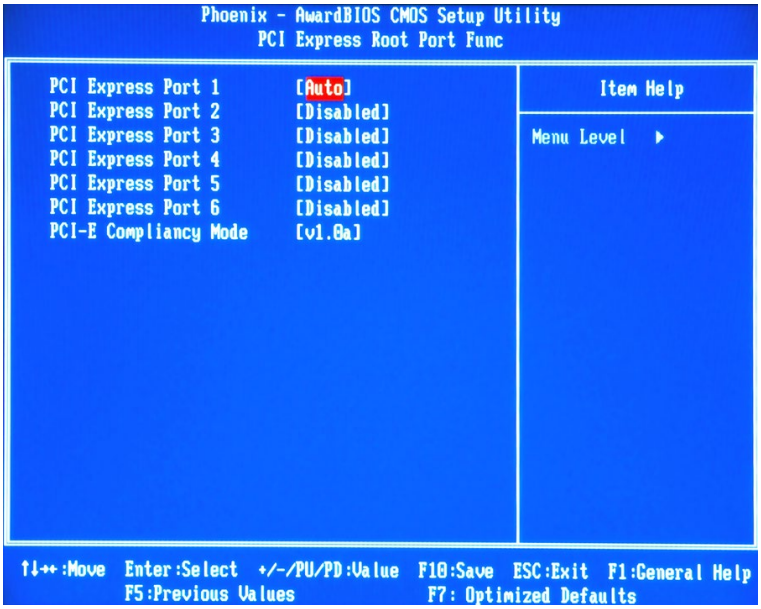
Small Logo <EPA> Show

If enabled, the EPA logo will appear during system boot; if disabled, the EPA logo will not appear.

Press <Esc> to return to the Main Menu page.

PCI Express Root Port Func

Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.



Press <Esc> to return to the Advanced Chipset Features page, and press it again, to return to the Main Menu page.

*** VGA Setting ***

PEG/Onchip VGA Control

This setting allows you to select whether to use the onchip graphics processor or the PCI Express card. When set to [Auto], the BIOS will check if a PCI Express graphics card is installed or not. If a PCI Express graphics card is detected, the system will boot up using that card. Otherwise, it is defaulted to the onchip graphics processor.

PEG Force X1

This BIOS feature allows you to convert a PCI Express X16 slot into a PCI Express X1 slot. When this item is enabled, the PCI Express X16 slot will be forced to run in the PCI Express X1 mode. When this item is disabled, the PCI Express X16 slot will be allowed to run its normal PCI Express X16 mode.

On-Chip Frame Buffer Size

Use this item to set the VGA frame buffer size.

DVMT Mode

DVMT (Dynamic Video Memory Technology) helps you select the video mode.

DVMT/Fixed Memory Size

DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.

Boot Display

This item is to select Display Device that the screen will be shown.

Panel Scaling

This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.

Panel Number

This item is to select panel resolution that you want.

TV Standard

This item is to select the output mode of TV Standard.

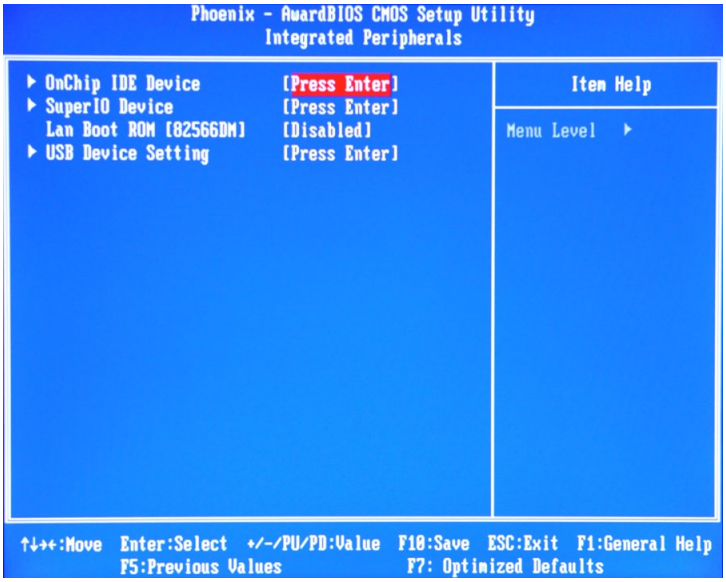
TV Connector

This item is to select the type of TV display connector.

Press <Esc> to return to the Main Menu page.

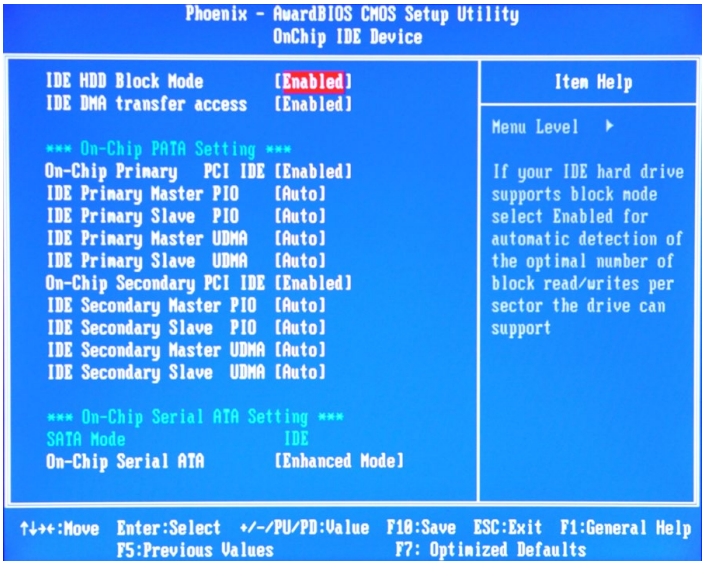
Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.



OnChip IDE Device

Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.



IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sectors read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

IDE DMA Transfer Access

Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.

Legacy Mode Support

Legacy mode support allows devices to function in an operating environment that is not USB-aware.

*** On-Chip PATA Setting ***

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is “Enabled”.

Choosing Disabled for these options will automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 to 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

IDE Primary/Secondary Master/Slave UDMA

Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

*** On-Chip Serial ATA Setting ***

SATA Mode

These options are for you to set up SATA mode: IDE, RAID or AHCI.

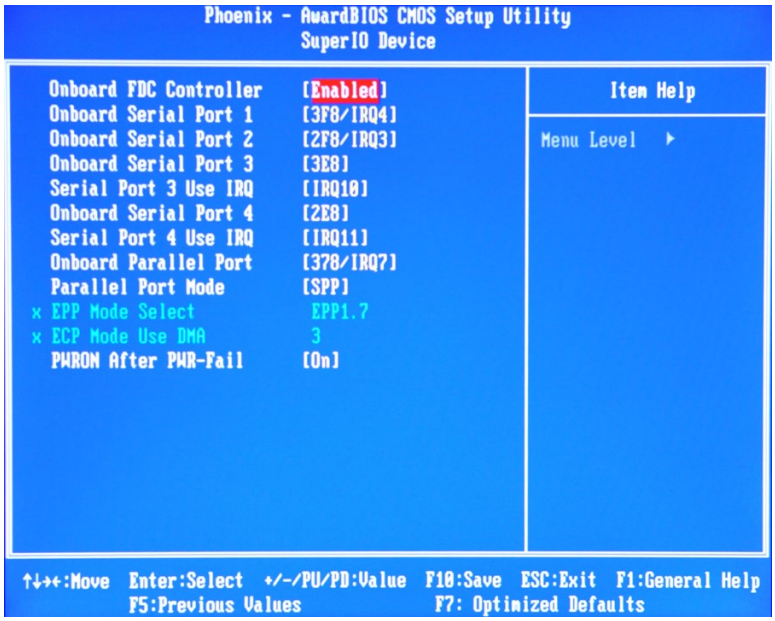
On-Chip Serial ATA

Use this item to enable or disable the built-in on-chip serial ATA.

Press <Esc> to return to the Integrated Peripherals page.

Super IO Device

Scroll to this item and press <Enter> to view the sub menu Super IO Device.



Onboard FDC Controller

Select Enabled, if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Options: Enabled and Disabled.

Onboard Serial Port 1 / 2

Select an address and corresponding interrupt for the serial port.

Onboard Serial Port 3

This item assigns which I/O address to access onboard serial port 3.

Serial Port 3 Use IRQ

This item selects a corresponding interrupt for the third serial port.

Onboard Serial Port 4

This item assigns which I/O address to access onboard serial port 4.

Serial Port 4 Use IRQ

This item selects a corresponding interrupt for the fourth serial port.

Onboard Parallel Port

This item allows you to determine the I/O address for onboard parallel port. Options: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7 and Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require another mode in this field. Options: EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.

EPP Mode Select

Select EPP port type 1.7 or 1.9.

ECP Mode Use DMA

Select a DMA channel for the parallel port while using the ECP mode.

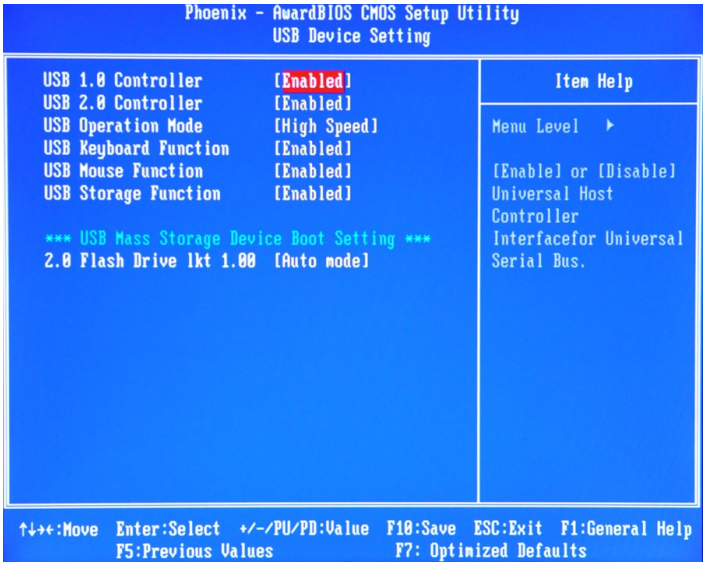
PWRON After PWR-Fail

Select whether or not the computer boots up after power has been interrupted and reasserted.

Press <Esc> to return to the Integrated Peripherals page.

USB Device Setting

Scroll to this item and press <Enter> to view the sub menu USB Device Setting.



USB 1.0 Controller

Enable this item if you are using the USB 1.0 controller in the system. You should disable this item if a higher level controller is added.

USB 2.0 Controller

Enable this item if you are using the EHCI (USB2.0) controller in the system.

USB Keyboard Function

Enable this item if the system has a Universal Serial Bus (USB) controller and you have a USB keyboard.

USB Mouse Function

Enable this item to boot the hard drive by a USB mouse.

USB Storage Function

Use this item to enable or disable Legacy support of USB Mass Storage.

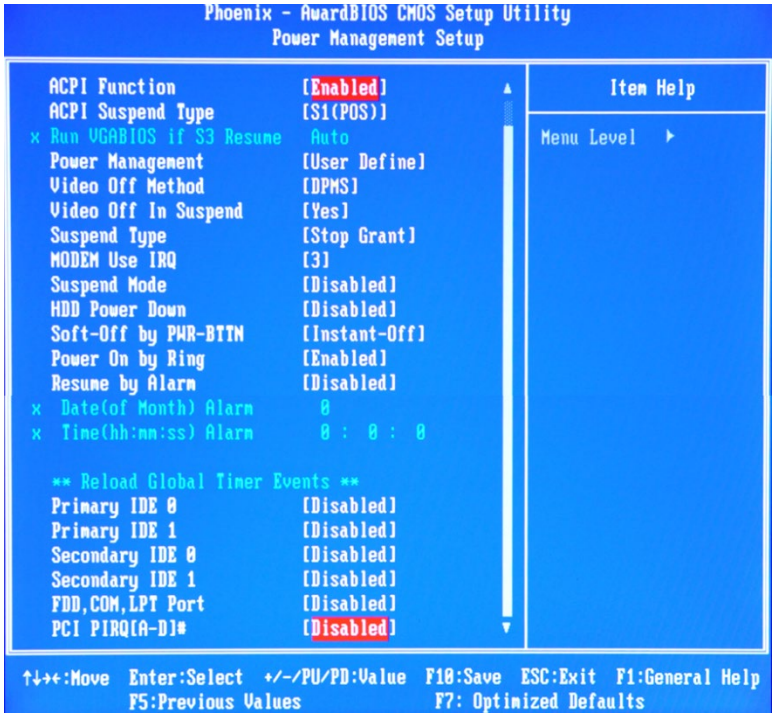
Press <Esc> to return to the Main Menu page.

*** USB Mass Storage device boot setting ***

See Appendix C for details.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.



ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always “Enabled”.

ACPI Suspend Type

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1 (POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts.

[S3 (STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	Provides maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	Allows user to set each mode. Select time-out periods in the PM Timers section.
Min Saving	Provides minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	(Default) Provides no power saving features.

Video Off Method

This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

Video Off In Suspend

This item defines if the video is powered down when the system is put into suspend mode.

Suspend Type

If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

Modem Use IRQ

If you want an incoming call on a modem to automatically resume the system from a power saving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for this feature to work.

Suspend Mode

After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is “Disabled”.

Disabled	(Default) The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/ 30/40 Min/1 Hr	It defines continuous idle time before the system enters SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

HDD Power Down

If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

Soft-Off by PWR-BTTN

This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is “Instant-Off”.

Instant-Off	This option follows the conventional manner of system performance when turning the power OFF. Instant-Off is a software power OFF sequence requiring the power supply button to be switched OFF.
Delay 4 Sec.	After turning the system power switch to OFF, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

Power On by Ring

This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is “Enabled”.

Resume by Alarm

If enable this item, the system can automatically resume after a fixed time in accordance with the system’s RTC (real-time clock).

** Reload Global Timer Events **

Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

Primary/Secondary IDE 0/1

Use this item to configure the IDE devices monitored by the system.

COM Port

Use this item to configure the COM ports monitored by the system.

FDD, COM, LPT Port

Use this item to configure the FDD, COM and LPT ports monitored by the system.

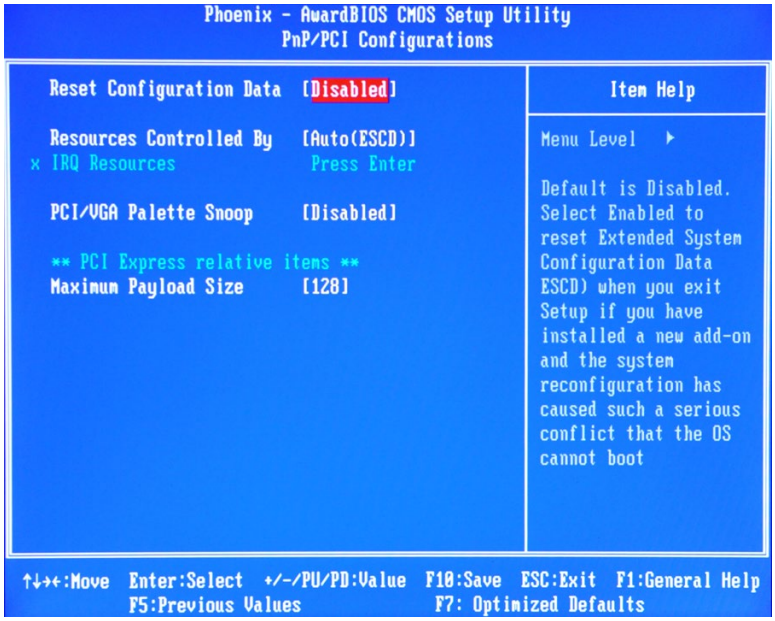
PCI PIRQ[A-D]#

This item can be used to detect PCI device activities; if no activity, the system will enter the sleep mode.

Press <Esc> to return to the Main Menu page.

PnP/PCI Configuration Setup

This section describes the configuration of PCI (Personal Computer Interconnect) bus system, which allows I/O devices to operate at speeds close to the CPU speed while communicating with other important components. This section covers very technical items that only experienced users could change default settings.



Reset Configuration Data

Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system cannot boot. Options: Enabled, Disabled.

Resources Controlled By

The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is “Manual”.

IRQ Resources

When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:

1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is “PCI/ISA PnP”.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

** PCI Express relative items **

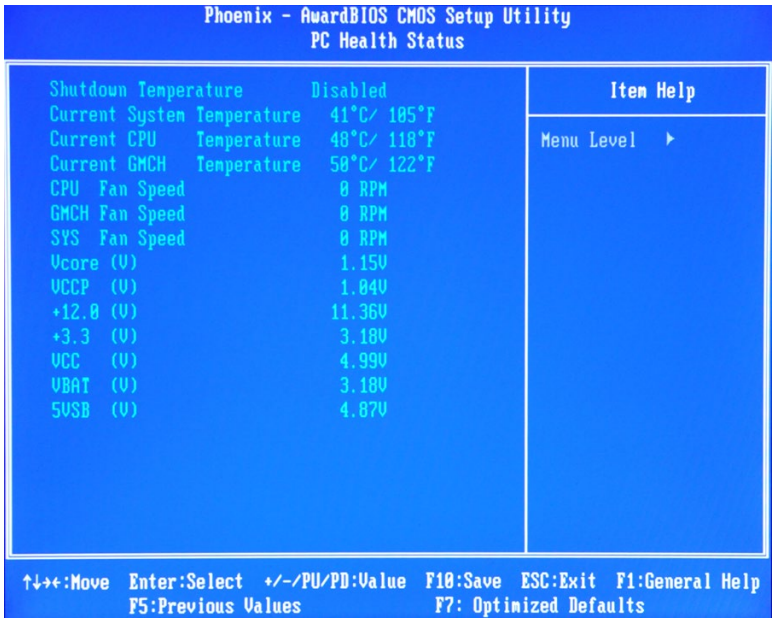
Maximum Payload Size

When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

PC Health Status

This section supports hardware monitoring that lets you monitor those parameters for critical voltages, temperatures, and fan speed of the board.



Shutdown Temperature

It helps set the maximum temperature the system can reach before powering down.

Current System Temperature

Show you the current system temperature.

Current CPU Temperature

The current system CPU temperature will be automatically detected by the system.

Current GMCH Temperature

The current GMCH temperature will be automatically detected by the system.

Current CPU FAN Speed

These optional and read-only items show current speeds in RPM (Revolutions Per Minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

Current Sys FAN Speed

Show you the current system fan1 temperature.

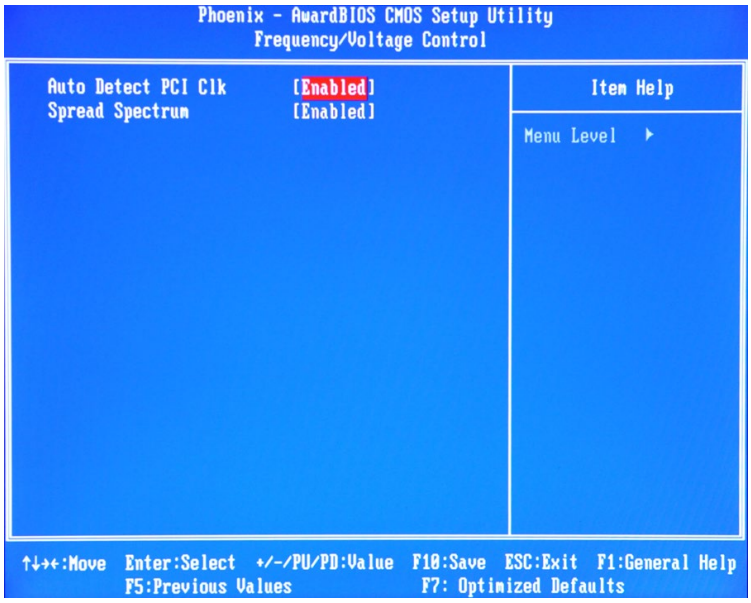
Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB

Shows you the voltage of +3.3V/+5V/+12V.

Press <Esc> to return to the Main Menu page.

Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.



Auto Detect PCI Clk

This item enables or disables the auto detection of the PCI clock.

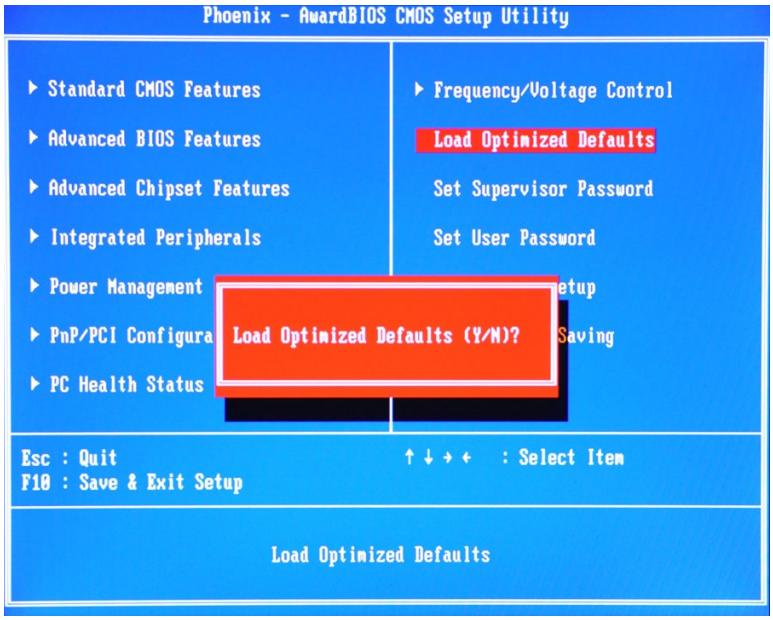
Spread Spectrum

This item is to adjust extreme values of the pulse for EMI test.

Press <Esc> to return to the Main Menu page.

Load Optimized Defaults

This option allows you to load your system configuration with default values. These default settings are optimized to enable high performance features.



To load SETUP default values to CMOS SRAM, enter “Y”. If not, please enter “N”.

Set Supervisor/User Password

You can set a supervisor or user password, or both of them. The differences between them are:

1. Supervisor password: You can enter and change the options on the setup menu.
2. User password: You can just enter but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Enter Password

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot, and you can enter Setup freely.

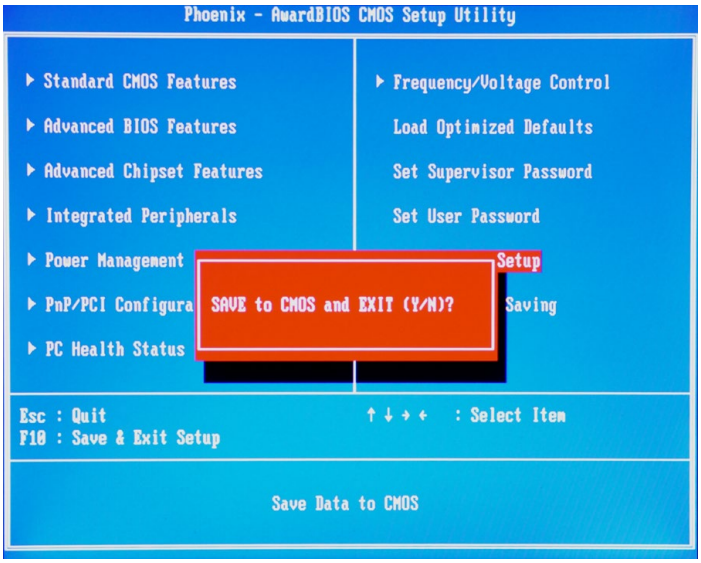
Password Disabled

When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration. Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password is required during booting up and entry into the Setup; if it is set as “Setup”, a prompt will only appear before entering the Setup.

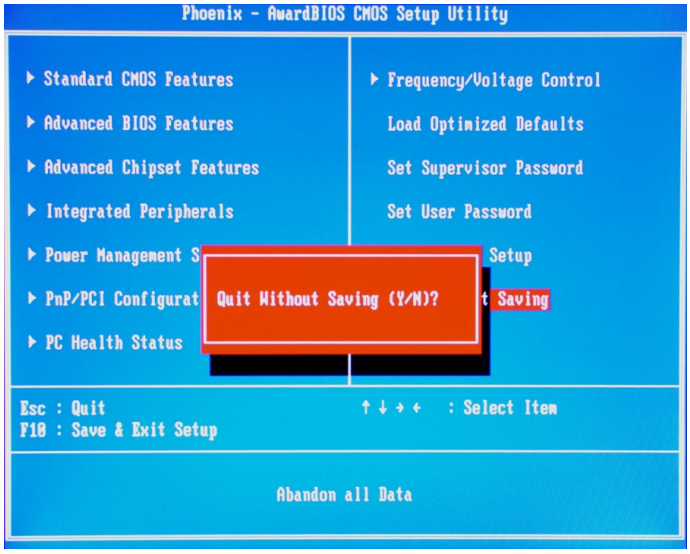
Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type “Y” to quit the setup utility and save all changes into the CMOS memory. Type “N” to bring you back to the Setup utility.



Exit Without Saving

Select this option to exit the Setup utility without saving changes you have made in this session. Type “Y”, and it will quit the Setup utility without saving your modifications. Type “N” to return to the Setup utility.



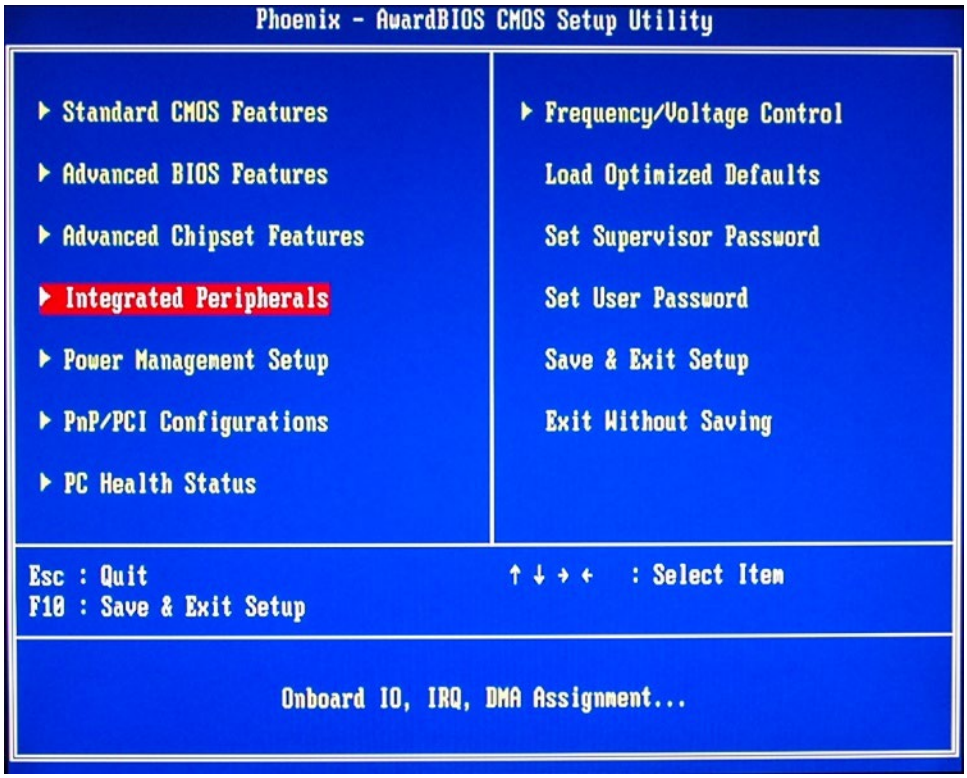
Appendix C – Booting from a USB Drive

USB drive boot capability

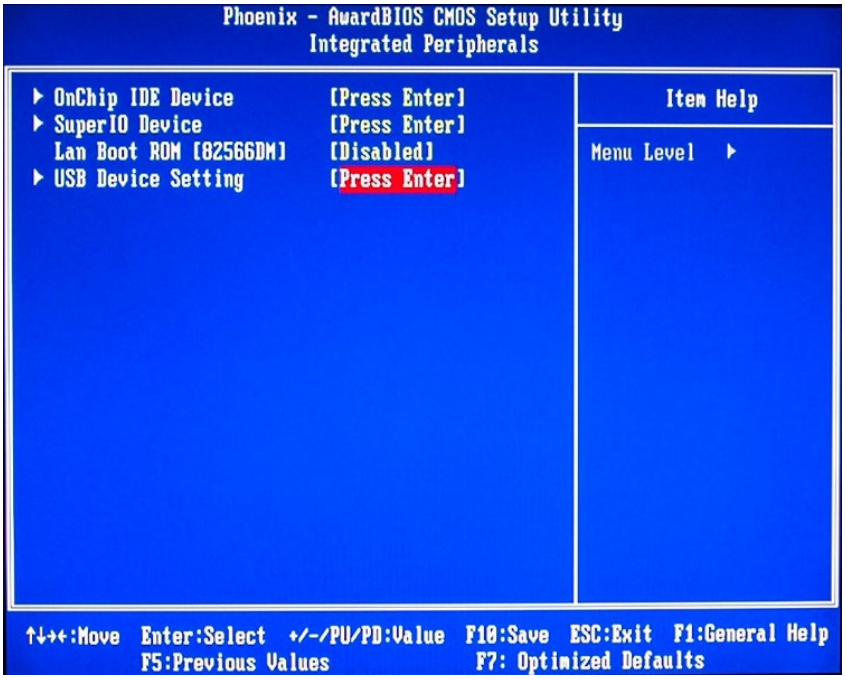
The R5200 has the ability to boot and run an operating system from some USB flash drives. Not all flash drives have the capability to boot an operating system. One that has known compatibility for booting and running an operating system is the Patriot Xporter drive. If a Patriot Xporter drive is being used steps 1 through 6 can be skipped. If another bootable drive is being used all steps may be required.

To configure and R5200 to boot from a USB drive you must:

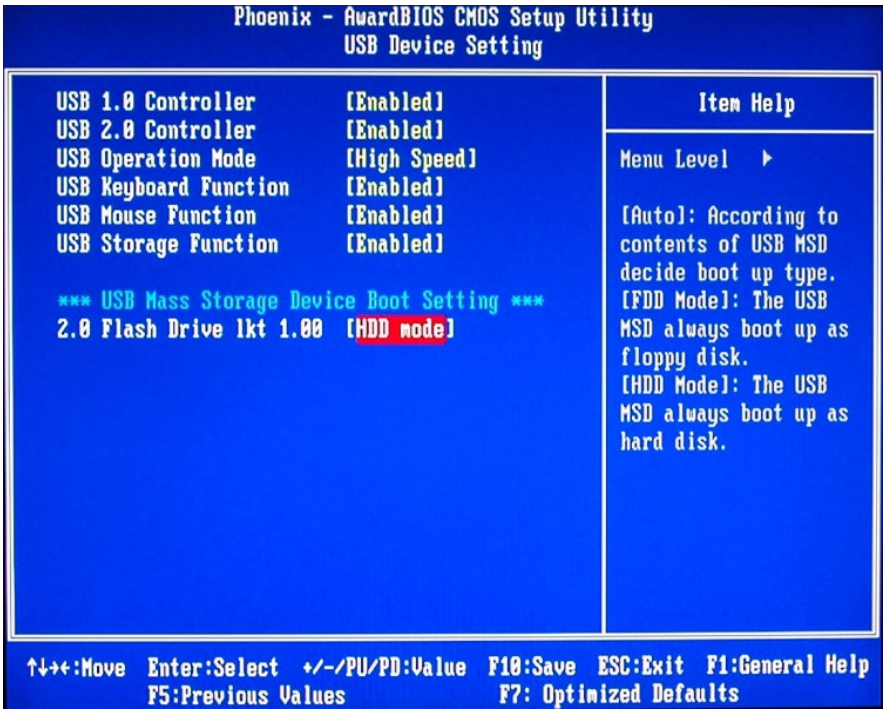
1. With the unit powered off, plug a bootable USB flash drive into an available USB port.
2. Power on the computer and enter the BIOS by pressing the 'DEL' button when the Sealevel splash screen appears on the screen.
3. Once in the BIOS, enter the "Integrated Peripherals" section.



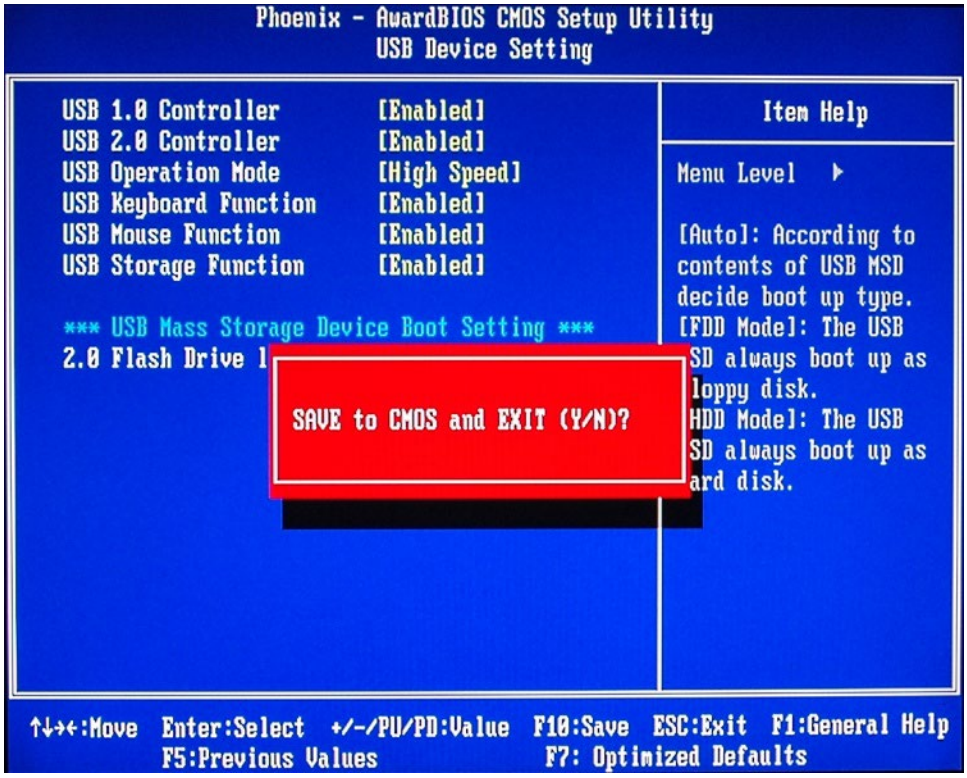
4. Enter the “USB Device Setting” section.



5. Change the “USB Mass Storage Device Boot Setting” to [HDD mode].

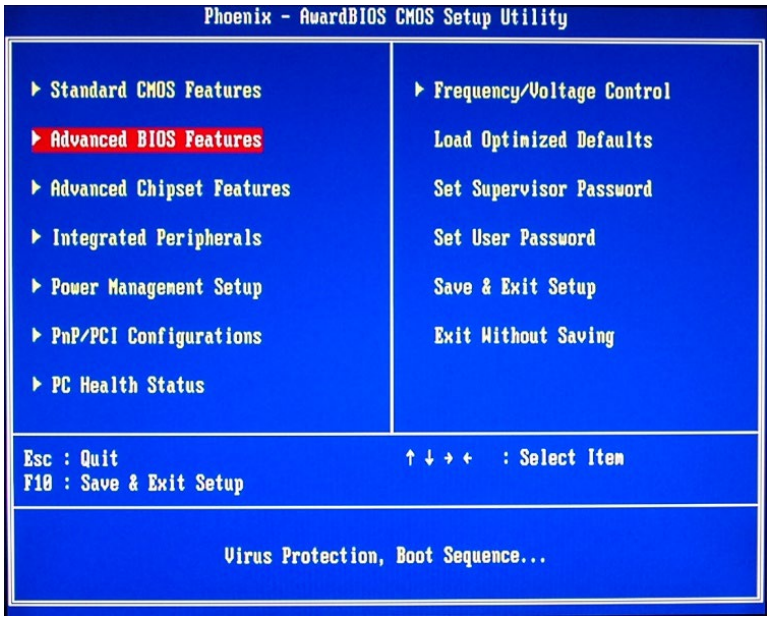


6. Press F10 to save changes and exit the BIOS. The computer will reboot.

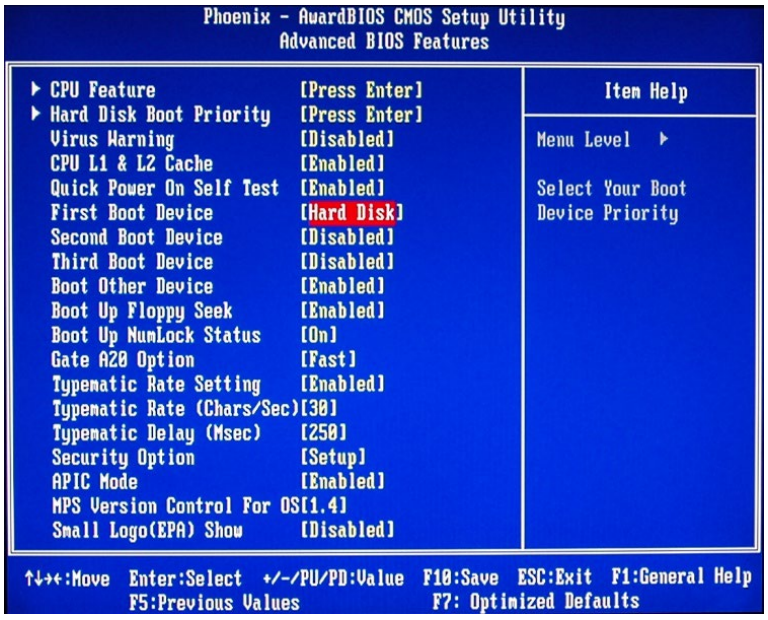


7. Enter the BIOS by pressing the ‘DEL’ button when the Sealevel splash screen appears.

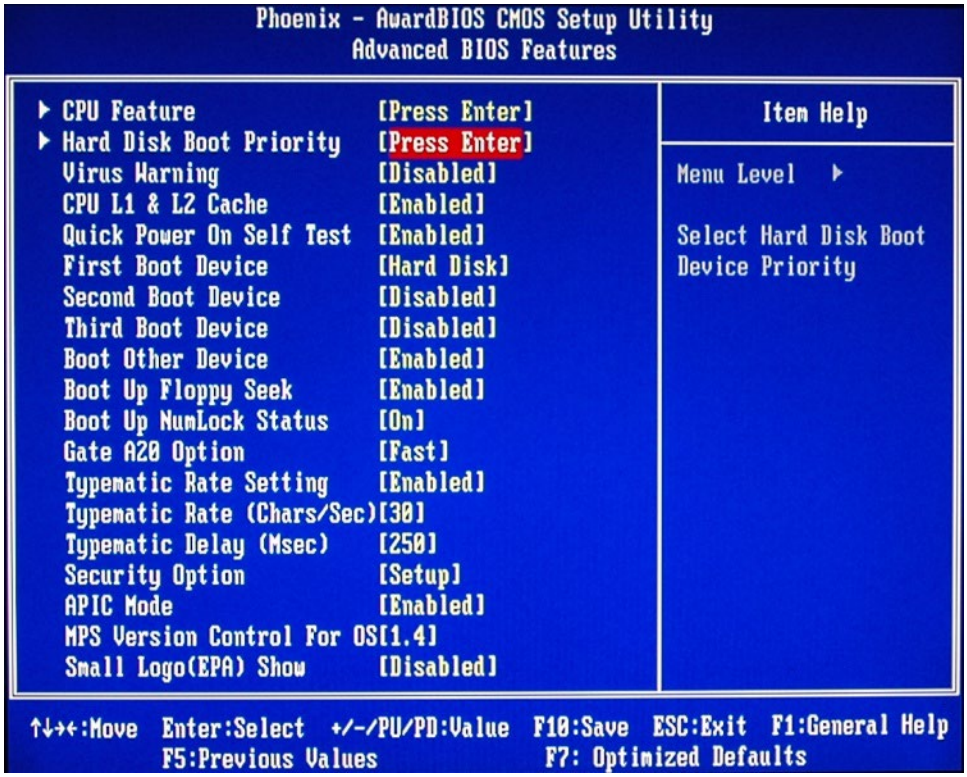
8. Once in the BIOS, enter the “Advanced BIOS Features” section.



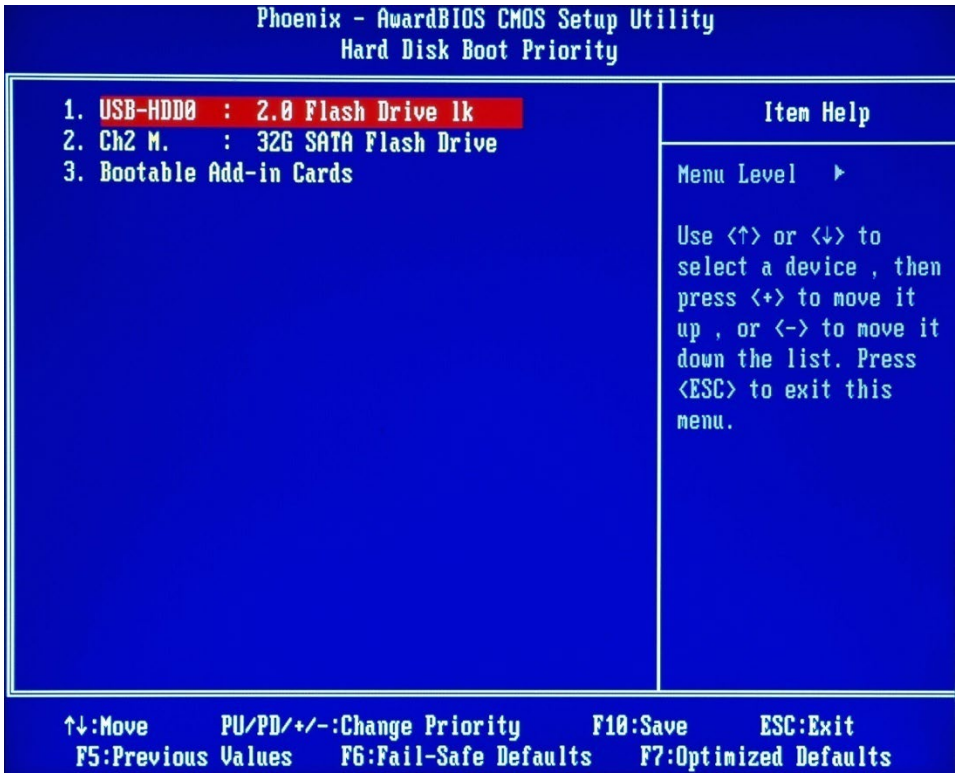
9. Ensure that “Hard Disk” is selected as the “First Boot Device”.



10. Enter the “Hard Disk Boot Priority” section.



11. If the flash drive appears in the device list on this screen, move it to the first position in the list[1].

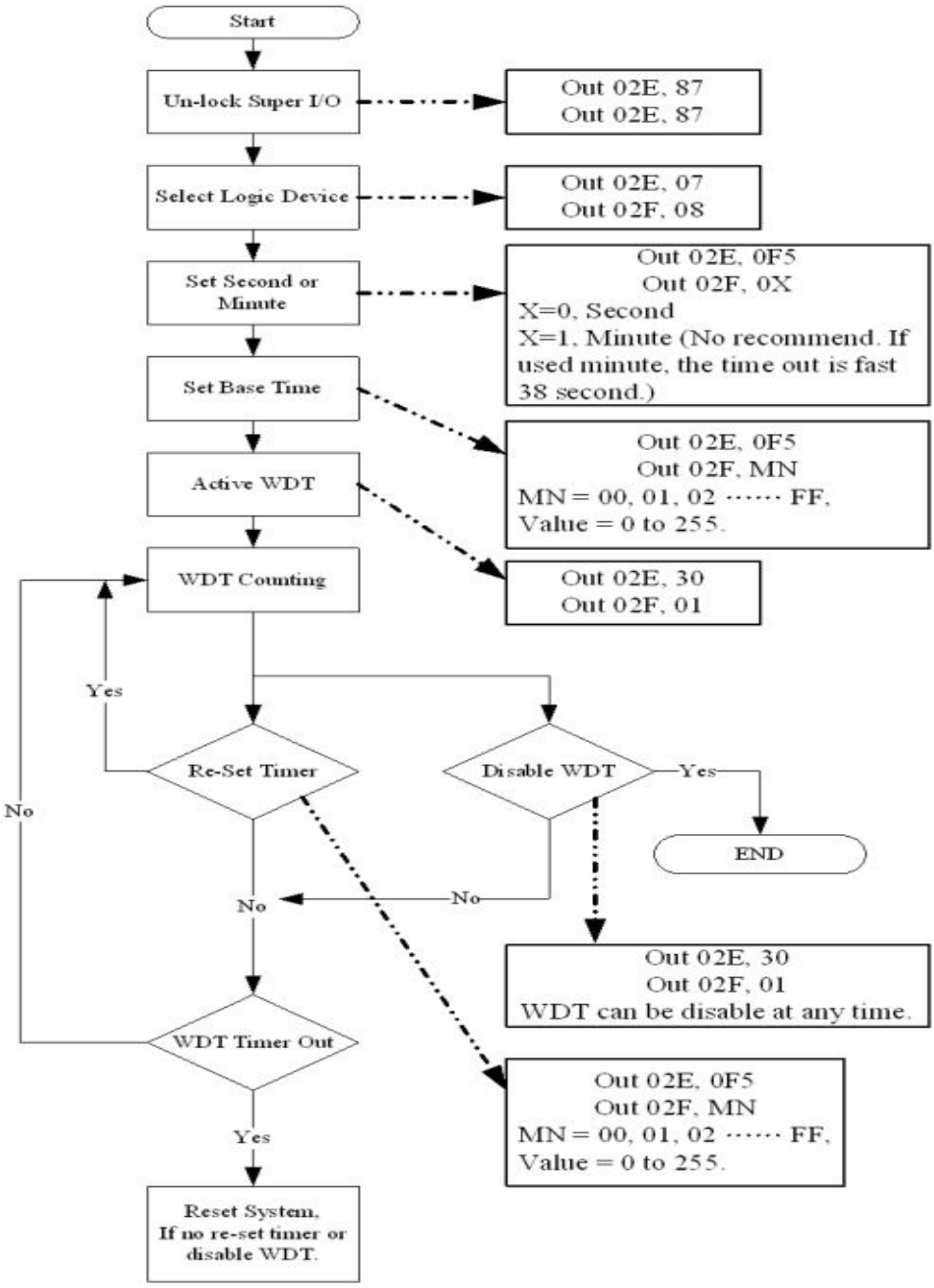


12. Press 'F10' on the keyboard and select "Y" when prompted to "SAVE to CMOS and EXIT" then press 'Enter' to save settings and exit.
13. The computer will now restart and will boot to the USB flash drive if it is a bootable device, is formatted correctly and contains a valid operating system.

[1] If you have set the "USB Mass Storage Device Boot Setting" to [HDD mode], saved the BIOS settings, rebooted and the drive does not appear in the "Hard Disk Boot Priority" section, the drive may not be bootable. Contact the USB drive manufacturer for feature and compatibility information.

Appendix D – Watch Dog Timer

Please follow the flow-chart process for setting up the WDT function.



Appendix E – How To Get Assistance

Begin by reading through the Trouble Shooting Guide in Appendix A. If assistance is still needed, please see below.

When calling for technical assistance, please have your user manual and current adapter settings. If possible, please have the adapter installed in a computer ready to run diagnostics.

Sealevel Systems provides an FAQ section on its web site. Please refer to this to answer many common questions. This section can be found at http://www.sealevel.com/faq.asp.

Sealevel Systems maintains a web page on the Internet. Our home page address is www.sealevel.com. The latest software updates, and newest manuals are available via our web site.

Technical support is available Monday to Friday from 8:00 A.M. to 5:00 P.M. Eastern Time. Technical support can be reached at (864) 843-4343.

RETURN AUTHORIZATION MUST BE OBTAINED FROM SEALEVEL SYSTEMS BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING SEALEVEL SYSTEMS AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

Appendix F – Serial Interfaces

RS-232

Quite possibly the most widely used communication standard is RS-232. This implementation has been defined and revised several times and is often referred to as RS-232 or EIA/TIA-232. The IBM PC computer defined the RS-232 port on a 9 pin D sub connector and subsequently the EIA/TIA approved this implementation as the EIA/TIA-574 standard. This standard is defined as the *9-Position Non-Synchronous Interface between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange*. Both implementations are in widespread use and will be referred to as RS-232 in this document. RS-232 is capable of operating at data rates up to 20 Kbps at distances less than 50 ft. The absolute maximum data rate may vary due to line conditions and cable lengths. RS-232 is a single ended or unbalanced interface, meaning that a single electrical signal is compared to a common signal (ground) to determine binary logic states. The RS-232 and the EIA/TIA-574 specification define two types of interface circuits, Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). The SeaLINK+16.VC is a DTE device.

RS-422

The RS-422 specification defines the electrical characteristics of balanced voltage digital interface circuits. RS-422 is a differential interface that defines voltage levels and driver/receiver electrical specifications. On a differential interface, logic levels are defined by the difference in voltage between a pair of outputs or inputs. In contrast, a single ended interface, for example RS-232, defines the logic levels as the difference in voltage between a single signal and a common ground connection. Differential interfaces are typically more immune to noise or voltage spikes that may occur on the communication lines. Differential interfaces also have greater drive capabilities that allow for longer cable lengths. RS-422 is rated up to 10 Megabits per second and can have cabling 4000 feet long. RS-422 also defines driver and receiver electrical characteristics that will allow 1 driver and up to 32 receivers on the line at once. RS-422 signal levels range from 0 to +5 volts. RS-422 does not define a physical connector.

RS-485

RS-485 is backwardly compatible with RS-422; however, it is optimized for party line or multi-drop applications. The output of the RS-422/485 driver is capable of being **Active** (enabled) or **Tri-State** (disabled). This capability allows multiple ports to be connected in a multi-drop bus and selectively polled. RS-485 allows cable lengths up to 4000 feet and data rates up to 10 Megabits per second. The signal levels for RS-485 are the same as those defined by RS-422. RS-485 has electrical characteristics that allow for 32 drivers and 32 receivers to be connected to one line. This interface is ideal for multi-drop or network environments. RS-485 tri-state driver (not dual-state) will allow the electrical presence of the driver to be removed from the line. Only one driver may be active at a time and the other driver(s) must be tri-stated. RS-485 can be cabled in two ways, two wire and four wire mode. Two wire mode does not allow for full duplex communication and requires that data be transferred in only one direction at a time. For half-duplex operation, the two transmit pins should be connected to the two receive pins (Tx+ to Rx+ and Tx- to Rx-). Four wire mode allows full duplex data transfers. RS-485 does not define a connector pin-out or a set of modem control signals. RS-485 does not define a physical connector.

Warranty

Sealevel's commitment to providing the best I/O solutions is reflected in the Lifetime Warranty that is standard on all Sealevel manufactured I/O products. We are able to offer this warranty due to our control of manufacturing quality and the historically high reliability of our products in the field. Sealevel products are designed and manufactured at its Liberty, South Carolina facility, allowing direct control over product development, production, burn-in and testing. Sealevel achieved ISO-9001:2015 certification in 2018.

Warranty Policy

Sealevel Systems, Inc. (hereafter "Sealevel") warrants that the Product shall conform to and perform in accordance with published technical specifications and shall be free of defects in materials and workmanship for the warranty period. In the event of failure, Sealevel will repair or replace the product at Sealevel's sole discretion. Failures resulting from misapplication or misuse of the Product, failure to adhere to any specifications or instructions, or failure resulting from neglect, abuse, accidents, or acts of nature are not covered under this warranty.

Warranty service may be obtained by delivering the Product to Sealevel and providing proof of purchase. Customer agrees to ensure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to Sealevel, and to use the original shipping container or equivalent. Warranty is valid only for original purchaser and is not transferable.

This warranty applies to Sealevel manufactured Product. Product purchased through Sealevel but manufactured by a third party will retain the original manufacturer's warranty.

Non-Warranty Repair/Retest

Products returned due to damage or misuse and Products retested with no problem found are subject to repair/retest charges. A purchase order or credit card number and authorization must be provided in order to obtain an RMA (Return Merchandise Authorization) number prior to returning Product.

How to obtain an RMA (Return Merchandise Authorization)

If you need to return a product for warranty or non-warranty repair, you must first obtain an RMA number. Please contact Sealevel Systems, Inc. Technical Support for assistance:

Available	Monday – Friday, 8:00AM to 5:00PM EST
Phone	864-843-4343
Email	support@sealevel.com

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