

Relio Fanless Core™2 Duo – R5100 Series

User Manual | R5120 (2GB RAM) R5140 (4GB RAM)



SEALEVEL®

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Introduction

The Relio R5100 dual-core industrial computer is designed for CPU-intensive applications in industrial environments. Available with a fanless 2.16GHz Intel® Core™2 Duo processor and up to 4GB RAM, the R5100 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 PCI slot and one PCI Express X4 slot. The R5100 includes an external power supply and US power cord that accepts 100-240V AC input and outputs 19VDC @ 90W. A pair of removable brackets allow for versatile mounting to walls, under counters, and on tabletops.

An optional 2.5" solid-state SATA hard drive can be integrated and preloaded with Windows XP. An internally accessible CompactFlash™ socket can be used for running Windows Embedded or Linux operating systems. Fanless operation is possible to 45°C. With your operating system and application running from solid-state disk or CompactFlash, the R5100 provides the ultimate in reliability – no moving parts.



Relio R5100 Fanless Core™2 Duo Solid-State Computer

General Features

Relio R5100 systems are designed for CPU-intensive applications in industrial environments and include the following features:

Standard System Features:

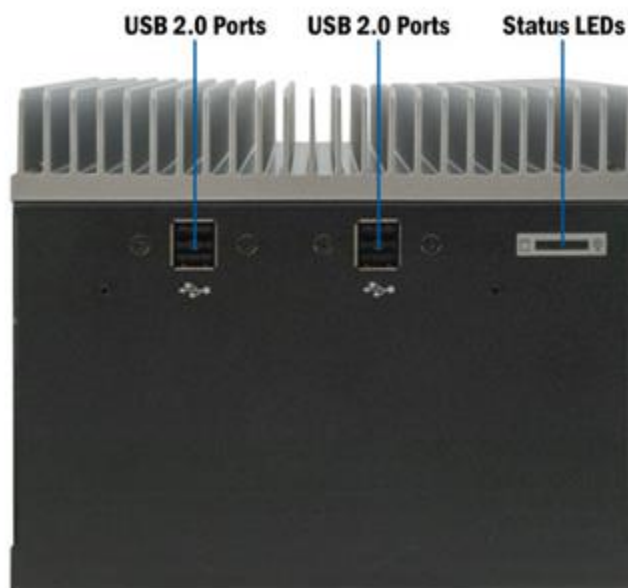
- Compact, rugged enclosure with silver-colored finish
- Large heat sink enables reliable, fanless operation
- Solid-state operation with no fans or other moving parts
- Includes 2.16GHz Intel® Core™2 Duo processor and 2GB RAM
- PICMG CPU board with Intel® 945GME, VGA, and dual Gigabit LAN
- Up to 4GB RAM (DDR2 533/667MHz 200-Pin SODIMM, Non-ECC, CL5) via two SODIMM slots
- Hardware (945GME GMCH GMA950) integrated graphics supports QXGA resolution up to 2048x1536 @ 75Hz and 32-bit color
- 2.5" internal hard drive bay is perfect for optional solid-state disk applications
- Internally accessible CompactFlash™ Type-II memory socket

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

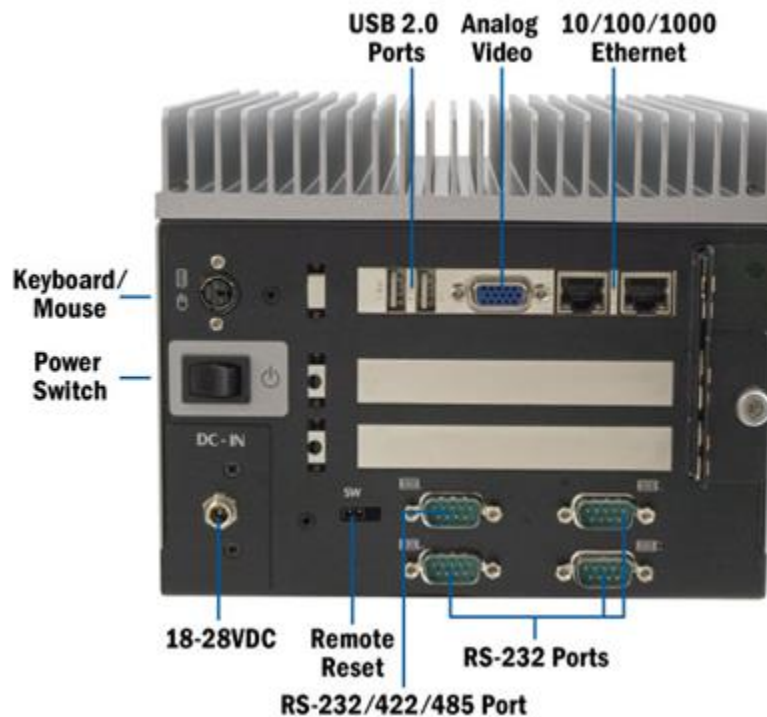
- Four USB 2.0 ports (More on rear)
- LED status indicators for power and disk activity



General Features, Continued

Enclosure Rear

- Two expansion slots support one PCIe X4 and one PCI card
- Two 10/100/1000BaseT RJ45 (Realtek RTL8111B) Gigabit Ethernet jacks with status LEDs
- Four DB9M serial ports (COM1 = RS-232/422/485, COM2,3,4 = RS-232)
- Two USB 2.0 ports (More on front)
- One analog VGA DB15 connector
- One PS/2 mouse/keyboard port
- Supports remote power on/off via 2-pin connector
- On/Off power switch



Before You Get Started

What's Included

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

- **Relio R5100 Series Fanless Core 2 Duo Computer**
 - R5120 includes 2GB RAM
 - R5140 includes 4GB RAM
- **100-240V AC to 19VDC Desktop Power Supply**
- **US Power Cord for Desktop Power Supply**
- **Mounting Brackets with Enclosure Mounting Hardware**
- **PS/2 'Y'-cable for PS/2 Mouse/Keyboard**
- **Remote Power On/Off Cable**

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 with the Relio R5100 to real-world signals. All items can be purchased from our website (www.sealevel.com) or by calling our sales team at (864) 843-4343.



Memory Options/Upgrades

Relio R5100 systems have two 200-pin SODIMM slots. The first slot includes 2GB RAM and ordering options allow for a maximum of 4GB. It is recommended to order the R5100 system with memory already integrated. The following memory is recommended for field replacement or upgrades.

1GB DDR2 200-Pin SODIMM (Item# RAM1GB-667X200)	
1GB DDR2 200-pin SODIMM (667MHz Non-ECC CL5) module.	
2GB DDR2 200-Pin SODIMM (Item# RAM2GB-667X200)	
2GB DDR2 200-pin SODIMM (667MHz Non-ECC CL5) module (one included in Relio R5120 and two included in Relio R5140).	



CompactFlash™ Memory

Install your embedded operating system and application on CompactFlash memory for true solid-state operation resulting in the highest reliability. Integration options are available. Contact your sales representative for details.

512MB CompactFlash Module (Item# CF-512)	
CompactFlash memory module.	
1GB CompactFlash Module (Item# CF-1GB)	
1GB CompactFlash memory module.	


SATA Solid-State Disk (SSD) Drives

Install your embedded operating system and application on CompactFlash memory 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 (Item# SSD-16GSS)	
16GB 2.5" SATA SSD with SLC memory.	
32GB SATA Solid-State Disk (Item# SSD-32GMS)	
32 GB 2.5" SATA SSD with MLC memory.	

OPTIONAL ITEMS

SATA Solid-State Disk (SSD) Drives, Continued

64GB SATA Solid-State Disk (Item# SSD-64GMS)	
64GB 2.5" SATA SSD with MLC memory.	

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.

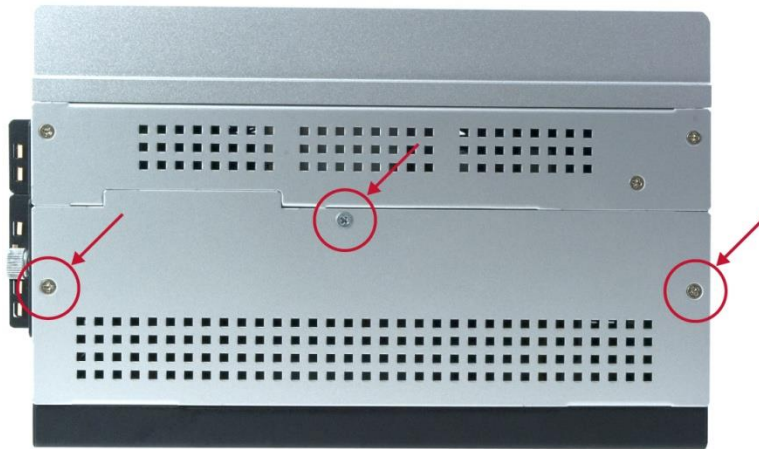
Installing System Memory

The R5100 supports a maximum of 4GB RAM via two 200-Pin SODIMM slots. The memory slots accept either 533MHz or 667MHz (CL5) Non-ECC DDR2 memory.

The base system (R5120) 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 (R5140) 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. Remove the three screws from the side of the enclosure

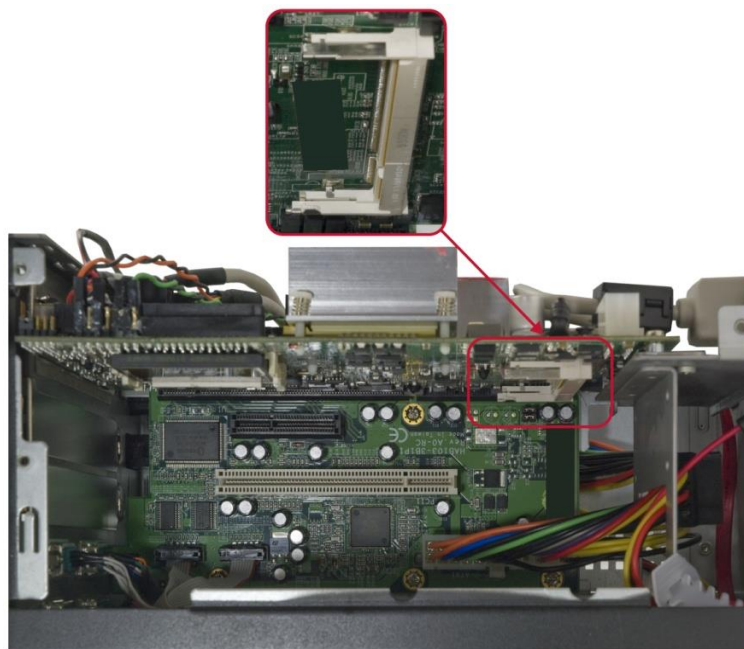


Hardware Installation, Continued

3. Remove the side panel and locate the SODIMM slot as shown in the image below.



The heat sink and both side panels have been removed to show detail.



4. Align the memory module with the socket. The socket is keyed so that memory can only be installed one way.
5. Firmly insert the memory module into the socket and at a slight angle until seated.
6. Push the memory module down flat (parallel to the motherboard) until the side latches engage the memory module.
7. Replace the side cover and install the three screws.
8. Plug the system into the power source and power up the system.

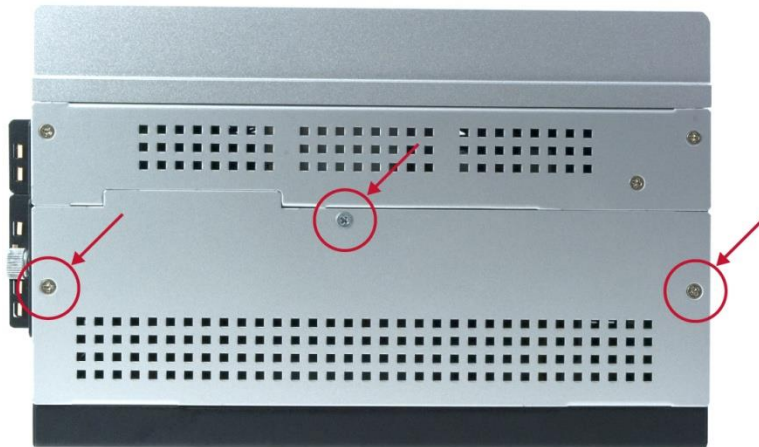
Hardware Installation, Continued

Installing a Solid-State Disk Drive

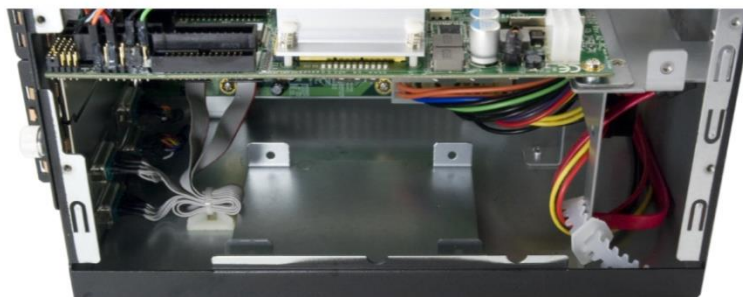
The R5100 offers a convenient drive tray that supports a single 2.5" solid-state disk (SSD) or hard drive. The drive tray is located in the bottom of the enclosure. A SATA cable and power cable are already installed inside the system.

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.



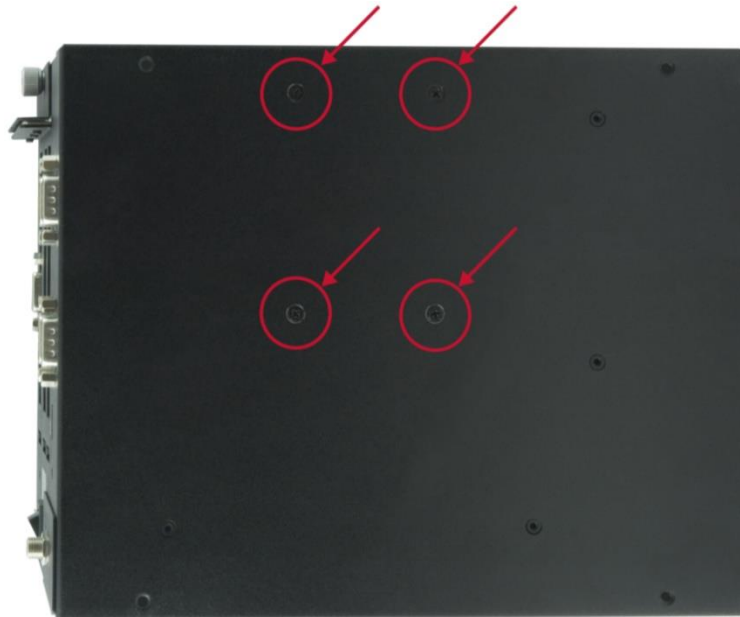
3. Remove the side panel and locate the drive tray in the bottom of the enclosure.



Hardware Installation, Continued

Installing a Solid State Drive, Continued

4. Turn the system on its side and locate the four screws holding the drive tray.



5. Hold the drive tray with one hand to prevent it from falling and damaging components inside the enclosure.
6. Remove the four screws from the bottom of the enclosure with the other hand.
7. Remove the drive tray from the enclosure.
8. Install the 2.5" drive in the tray using the screws supplied with the drive by the manufacturer.
9. Install the drive tray into the enclosure with the connectors on the drive facing towards the cables.
10. Connect the SATA and power cables to the drive as shown. The SATA and power cables are located towards the front of the enclosure as shown below.

Hardware Installation, Continued

Installing a Solid State Drive, Continued



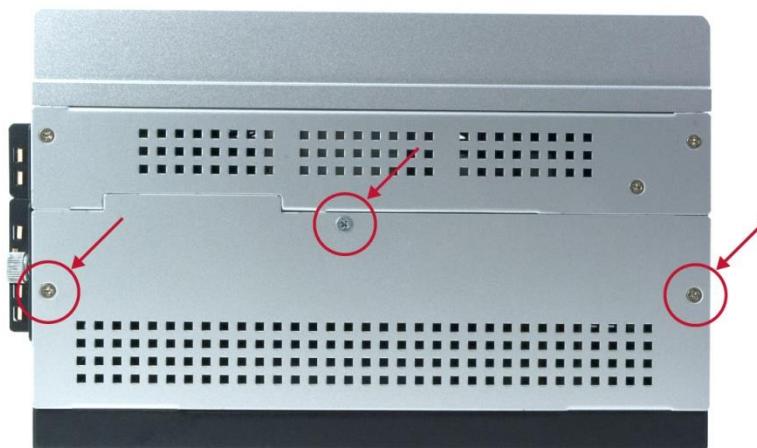
11. Replace the side cover and install the three screws.
12. Plug the system into the power source and power up the system.

Installing Expansion Cards

The R5100 offers two expansion slots that support one PCI Express X4 and one 32-bit PCI cards. The cards are held securely in place by a single thumbscrew.

To install an expansion card into the R5100, follow these instructions.

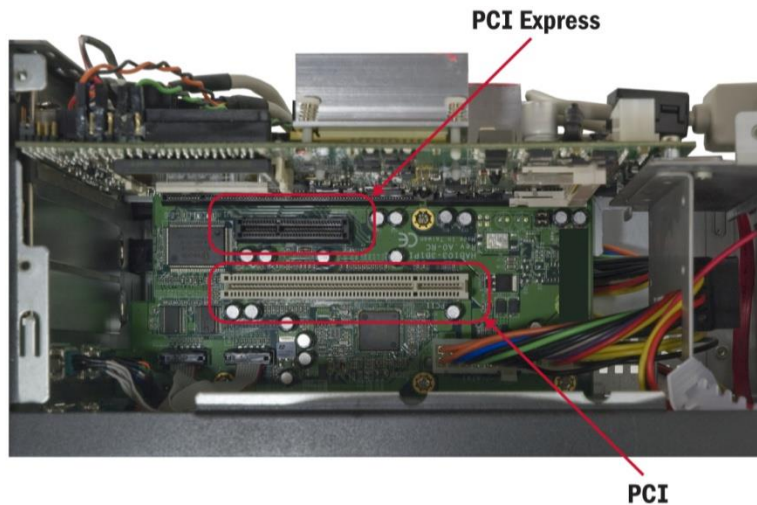
1. Turn off the system and disconnect from power source.
2. Remove the three screws from the side of the enclosure.



Hardware Installation, Continued

Installing Expansion Cards

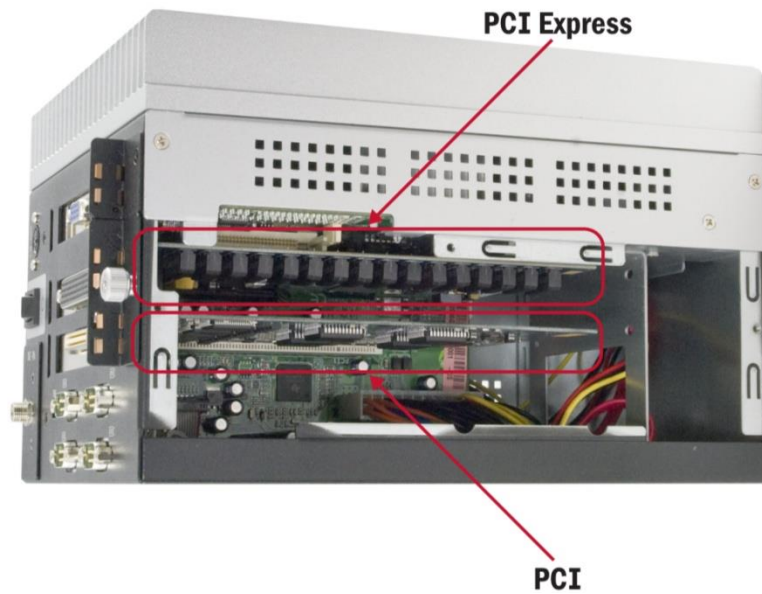
3. Remove the side panel and locate either the PCI Express or the PCI slot as shown in the image below.



4. Loosen the thumbscrew on the back of the enclosure and remove the bracket holding the PC brackets in place. The bracket is keyed and may have to be rocked back and forth to remove.
5. If installing multiple expansion cards, install the PCI Express 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 with thumbscrew and tighten securely by hand. The image shows two expansion cards properly installed.

Hardware Installation, Continued

Installing Expansion Cards, Continued



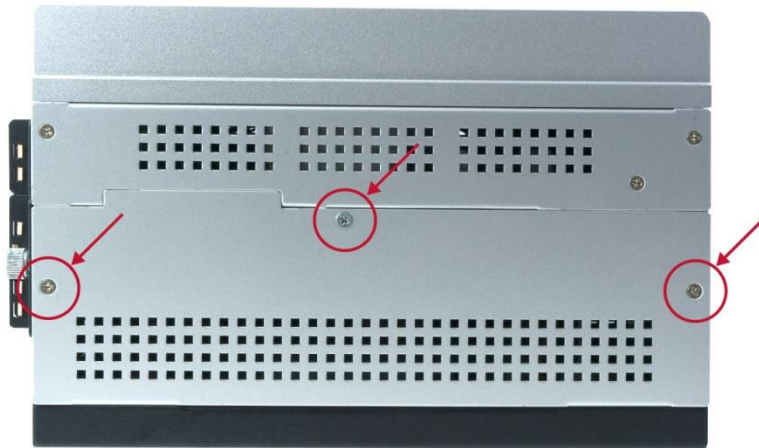
8. Replace the side cover and install the three screws.
9. Plug the system into the power source and power up the system.

Hardware Installation, Continued

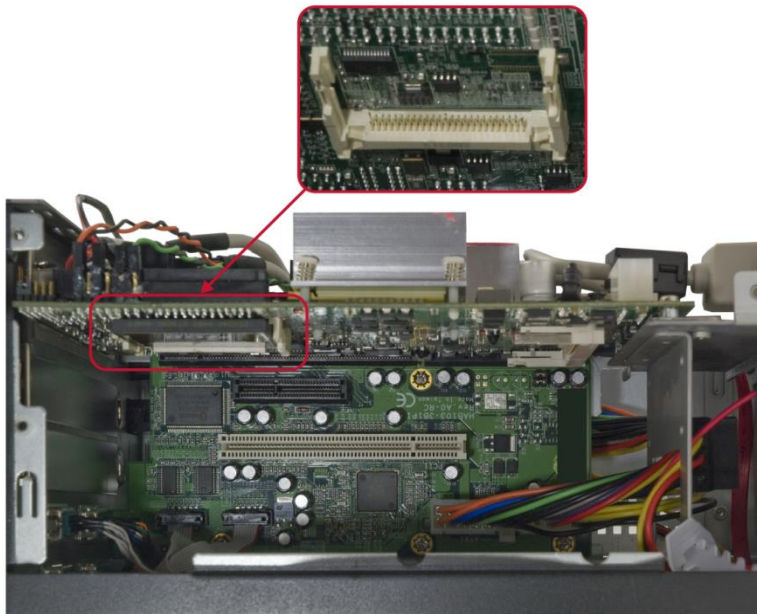
Installing CompactFlash

The Relio R5100 can run an embedded operating system and execute applications from CompactFlash memory, resulting in true solid-state operation. The system includes a single internally-accessible CompactFlash socket. Use the following installation instructions for accessing the internal CompactFlash socket.

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 CompactFlash socket as shown in the image below.

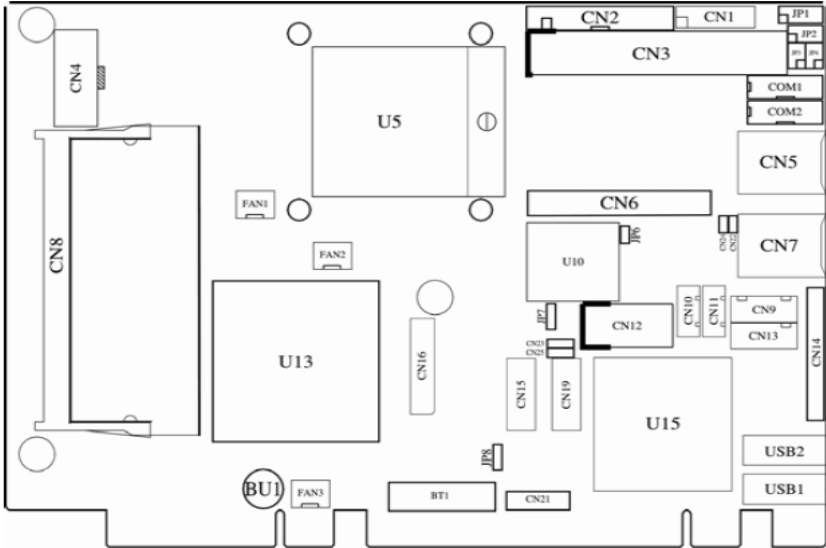


4. Firmly insert the CompactFlash card into the socket until seated.
5. Replace the side cover and install the three screws.
6. Plug the system into the power source and power up the system.

Technical Description

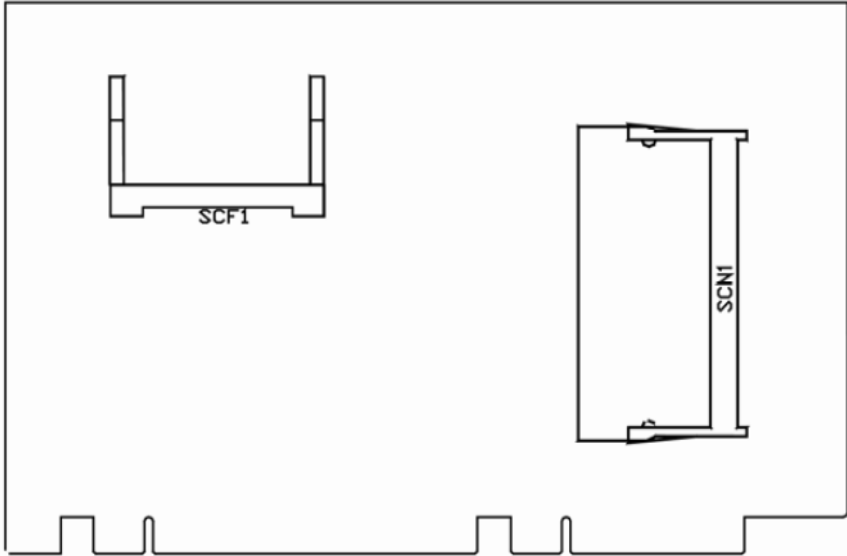
Motherboard Layout - Top

The board map below shows the components that are located on the top of the motherboard, underneath the heat sink.



Motherboard Layout – Bottom

The board map below shows the locations of the SODIMM memory and CompactFlash sockets on the bottom of the motherboard. These sockets are accessible through the side panel.



Technical Description, Continued

Component & Connector Locations

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 your sales rep or technical support for assistance. The following table details the components and connectors shown in the board maps on the previous page.

Label	Description
BU1	Internal Buzzer
BT1	Internal Battery
CN1	General Output Connector
CN2	Parallel Port Connector
CN3	IDE Connector
CN4	EPIC Power Connector
CN5	Ethernet Connector 2
CN6	FDD Connector
CN7	Ethernet Connector 1
CN8	200-Pin DDR2 Memory Channel B
CN9	External Mouse Connector
CN10	USB Port 5, 6 Connector
CN11	USB Port 3, 4 Connector
CN12	Audio Connector
CN13	External Keyboard Connector
CN14	CRT Connector
CN15	SATA Port 1 Connector
CN16	LVDX LCD Interface
CN19	SATA Port 2 Connector
CN21	LCD Power Connector
CN22	Ethernet 1 External Link/ACT LED
CN23	Ethernet 1 External Speed LED
CN24	Ethernet 2 External Link/ACT LED
CN25	Ethernet 2 External Speed LED
COM1	COM1
COM2	COM2
FAN1	System Fan 1 Connector
FAN2	System Fan 2 Connector
FAN3	System Fan 3 Connector
SCF1	CompactFlash Connector (Bottom)
SCN1	200-Pin DDR2 Memory Channel A (Bottom)
U5	Socket M CPU Socket
U10	System BIOS
USB1	USB Port 1 Connector
USB2	USB Port 2 Connector

Technical Description, Continued

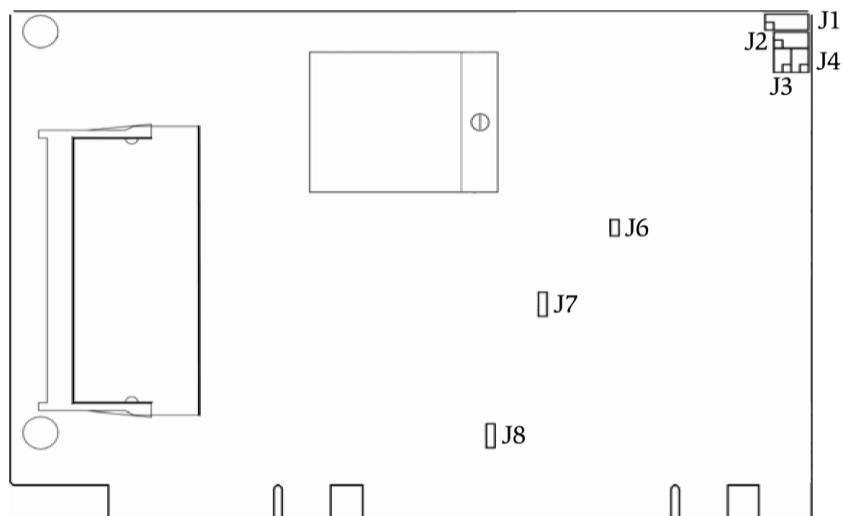
Jumper Descriptions & Locations

The R5100 has jumpers on the motherboard for configuring the COM1 serial port and CompactFlash settings. In rare instances where an incorrect setting is saved in the Setup Utility, you can use a jumper to clear the CMOS memory.

The jumpers are located on the top side of the motherboard, under the large heat sink on top of the enclosure. The PCI Express backplane jumper is located on the backplane, which can be accessed under the heat sink.

To access the jumpers, remove the eight (8) screws from the top of the heat sink. Remove the heat sink by lifting straight up (it may seem hard to remove due to the thermal pads connecting internal heat sinks to external heat sink). For the COM jumpers located at the corner 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
J1	COM1 DCD and RI Voltage Selection
J2	COM1 RS-232/422/485 Configuration
J3	COM1 RS-232/422/485 Configuration
J4	COM1 RS-232/422/485 Configuration
J6	CompactFlash Master/Slave Setting
J7	Clear CMOS
J8	CompactFlash Voltage Setting
J1 (Backplane)	PCI Express Backplane Setting

(J1) COM1 DCD and RI Voltage Selection

Use the jumper (J1) to configure the voltage for DCD and RI.

Technical Description, Continued

Jumper Description

Function	(J1) Jumper Setting
Normal Mode (Default)	
5V	
12V	
DCD 5V RI 12V	

(J2, J3, J4) COM1 RS-232/422/485 Configuration

Use the jumpers (J2), (J3) and (J4) 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.


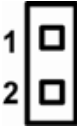
Function	(J2) Jumper Setting	(J3) Jumper Setting)	(J4) Jumper Setting
RS-232			
RS-422			
RS-485			

Technical Description, Continued

Jumper Description



(J6) CompactFlash Master/Slave Setting

Use the jumper (J6) to set the Master/Slave CompactFlash interface.

Function	(J6) Jumper Setting
Master (Default)	 A vertical rectangular jumper with two pins labeled 1 and 2. A grey bar connects the two pins, indicating they are shorted.
Slave	 A vertical rectangular jumper with two pins labeled 1 and 2. No connection is shown between the pins.

J7) Clear CMOS

Use the jumper (J7) 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	(J7) Clear CMOS
Normal (Default)	 A vertical rectangular jumper with three pins labeled 1, 2, and 3. A grey bar connects pins 2 and 3, indicating they are shorted.
Clear CMOS	 A vertical rectangular jumper with three pins labeled 1, 2, and 3. A grey bar connects pins 1 and 2, indicating they are shorted.

Technical Description, Continued

Jumper Description


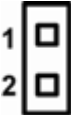
(J8) CompactFlash Voltage Setting

Use the jumper (J8) to select the voltage for the CompactFlash interface.

Function	(J8) Jumper Setting
3.3V (Default)	
5V	

(J1) PCI Express Backplane Jumper

Use the jumper (J1) to select the speed of the PCI Express backplane. This jumper is located on the backplane board, under the heat sink, next to the slot that holds the motherboard. It is labeled “PCI Express Backplane Jumper” in the silk screen.

Function	(J1) Jumper Setting
PCI Express X1 (Default)	
PCI Express X4	

Technical Description, Continued

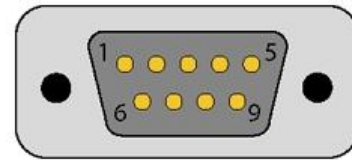
Connector Pin Outs

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

COM1 is configured at the factory for RS-232 and is available on a DB9 male connector. To configure the electrical interface for RS-422/485, refer to the jumper configuration section of this manual or contact your sales rep to have this configured at the factory.

COM1 is labeled as “|O|O|” with one small dot to the right. The pin out 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	--	--

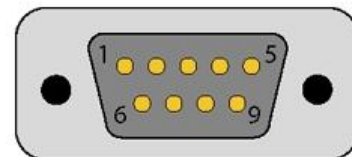


COM2, 3, 4 Serial Ports (RS-232)

COM2, 3, 4 support RS-232 and are available on DB9 male connectors.

The COM ports are labeled as a |O|O| with two, three, or four dots to the right of this symbol. The RS-232 pin out 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



Technical Description, Continued

Connector Pin Outs

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 R5100 can drive the display with a maximum resolution of 2048 x 1536 @ 75Hz. The pin out 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	GND	Digital Ground
9	N/C	Not connected
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.



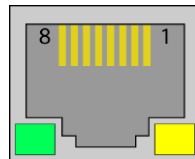
The shaded area denotes grounds.

Technical Description, Continued

Ethernet Interface

The Relio R5100 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 Realtek RTL8111B chipset and are supported by all major network operating systems. Ethernet network connections are made via the two RJ45 connectors on the rear of the enclosure.

PIN#	Signal
1	TX +
2	TX -
3	RX +
4	
5	
6	RX -
7	
8	



USB Interfaces

The R5100 is equipped with six high-speed USB 2.0 ports. Four ports are located on the front of the enclosure and two are located on the rear. The USB interfaces can be disabled in the system BIOS, if required.

Input Power

The power input is located on the rear of the enclosure, below the power switch. The locking Phoenix power connector accepts from 18VDC to 28VDC at 90W max.

A desktop power supply is included that accepts input power from 90VAC to 264VAC @ 6.32A (47/63Hz). The power supply outputs 19VDC at 90W max.

Specifications

Motherboard

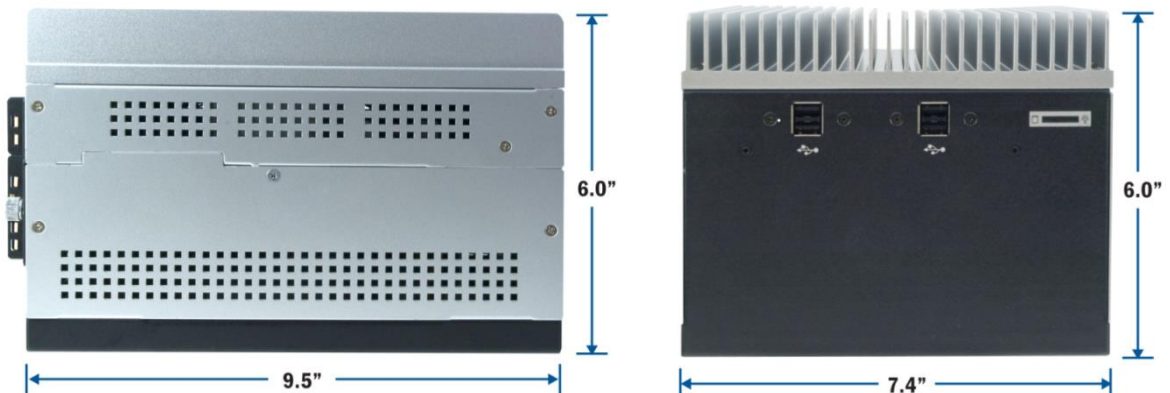
CPU	Socketed 2.16GHz Intel® Core™2 Duo
Chipset	Intel® 945GME
BIOS	Phoenix-Award, 4Mbit with RPL/PXE LAN Boot ROM, SmartView and Customer CMOS Backup
System RAM	(2) 200-Pin DDR2 533/667MHz SODIMM slots Maximum 4GB RAM
Input Power	DC/DC power supply supports 18-28V
System RAM	(2) 200-Pin DDR2 533/667MHz SODIMM slots

Environmental Specifications

Specification	Operating	Storage
Temperature Range	-5° TO 45 ° C	-20 ° TO 80° C
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Mechanical Dimensions

Length	9.5" inches (24.1 cm)
Width¹	7.4" inches (18.8 cm)
Height	6.0" inches (15.1 cm)



Mounting Options

Table/Wall Mounting

The R5100 includes a pair of mounting brackets and screws for attaching to the bottom of the enclosure as shown in the image. The system can be mounted flat to a tabletop, underneath a counter, inside an enclosure, or to a wall.



Appendix A – 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 R5100.

Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press immediately or press the 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 keys can restart the system. If you do not press keys at the right time and the system does not boot, an error message will pop out to prompt you the following information:

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

Control Keys

Up Arrow	Move cursor to the previous item
Down Arrow	Move cursor to the next item
Left Arrow	Move cursor to the item on the left
Right Arrow	Move cursor to the item on the right
Escape Key	In the Main Menu, quit and delete changes into CMOS Status In the Page Setup Menu and Option Page Setup Menu, exit current page and return to Main Menu
Page Up '+' Key	Increase the numeric value or make changes
Page Down '-' Key	Decrease the numeric value or make changes
F1 Key	Only in Status Page Setup Menu and Option Page Setup Menu, get General help
F2 Key	Change color from total of 16 colors. - F2 to select the color forward. - Shift-F2 to select the color backward.
F3 Key	Reserved
F4 Key	Reserved
F5 Key	Only in Option Page Setup Menu, restore the previous CMOS value from CMOS
F6 Key	Only in Option Page Setup Menu, load the default CMOS value from BIOS default table
F7 Key	Only in Option Page Setup Menu, load the Setup default
F8 Key	Reserved
F9 Key	Reserved
F10 Key	Only in Main Menu, save all CMOS changes

Getting Help

Main Menu

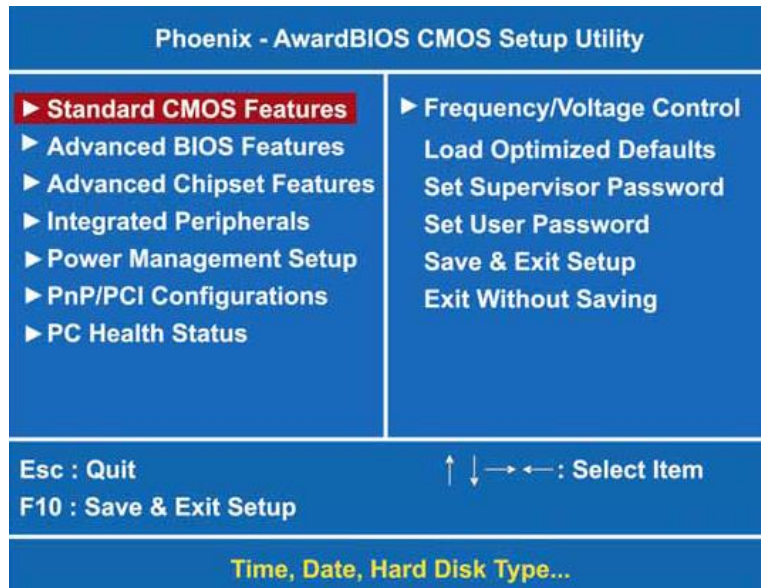
The online description of the highlighted setup function is displayed at the bottom of the screen.

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.

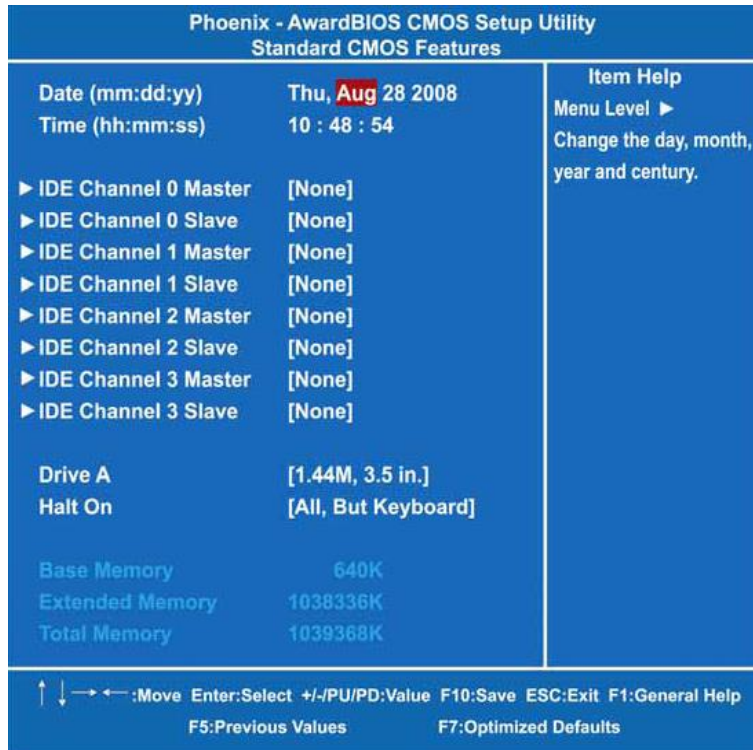


N If your computer can not boot after making and saving system changes with Setup, the Award BIOS will reset your system to the CMOS default settings via its built-in override feature.

It is strongly recommended that you should avoid changing the chipset's defaults. Both Award and your system manufacturer have carefully set up these 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 use <PgUp>.



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	Selected 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 0/1/2/3 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>. Please be noted your drive's

Standard CMOS Setup Menu, Continued

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

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.

Phoenix - AwardBIOS CMOS Setup Utility Advanced BIOS Features		
▶ CPU Feature	[Press Enter]	Item Help
▶ Hard Disk Boot Priority	[Press Enter]	Menu Level ▶
Virus Warning	[Disabled]	
CPU L1 & L2 Cache	[Enabled]	
Quick Power On Shelf Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Boot Other Device	[Enabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
↑ ↓ → ← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F7:Optimized Defaults		

CPU Feature

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

Phoenix - AwardBIOS CMOS Setup Utility CPU Features		
Delay Prior to Thermal	[16 Min]	Item Help
Thermal Management	[Thermal Monitor 2]	Menu Level ▶
C1E Function	[Auto]	
Execute Disable Bit	[Enabled]	
Virtual ization Technology	[Enabled]	
↑ ↓ → ← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F7:Optimized Defaults		

Advanced BIOS Features, Continued

➤ Delay prior to Thermal

This field is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.

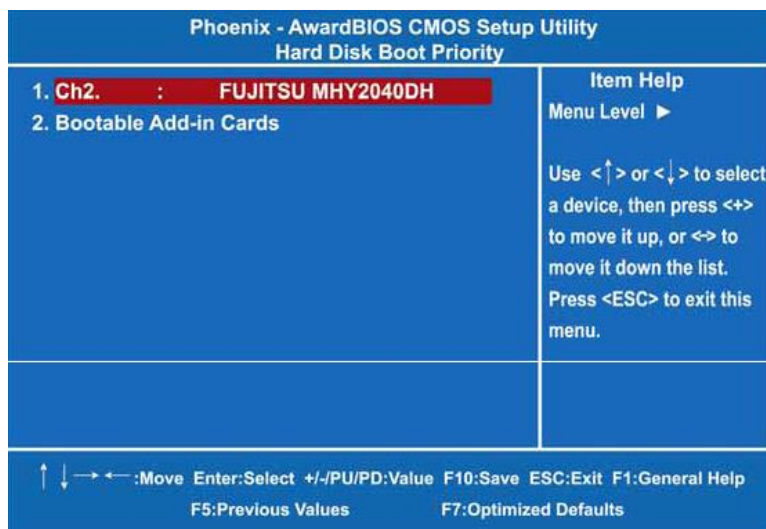
➤ Thermal Management

Thermal Monitor 1 On-die throttling Thermal Monitor 2 Ratio and VID transition

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

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.

Advanced BIOS Features, Continued

Virus Warning

This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem. The default setting is "Disabled."



Disk boot sector is to be modified. Type "Y" to accept write or type "N" to abort write Award Software, Inc. .

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.



This function is only available with DOS and other operating systems that do not trap INT13.

CPU L1 & L2 Cache

These two options speeds 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."

Advanced BIOS Features, Continued

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."

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.

Advanced BIOS Features, Continued

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.

OS Select for DRAM >64MB

This item allows you to access the memory over 64MB in OS/2.

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

Advanced Chipset Features

This section contains completely optimized chipset's features on the board that you are strongly recommended to leave all items on this page at their default values unless you are very familiar with the technical specifications of your system hardware.

Phoenix - AwardBIOS CMOS Setup Utility Advanced Chipset Features		
PCI Express Port 1	[Enabled]	Item Help Menu Level ▶
PCI Express Port 2	[Enabled]	
PCI Express Port 3	[Enabled]	
PCI Express Port 4	[Enabled]	
PCI Express Port 5	[Enabled]	
PCI Express Port 6	[Enabled]	
PCI-E Compliancy Mode	[v1.0a]	
** VGA Setting **		
PEG/Onchip VGA Control	[Auto]	
On-Chip Frame Buffer Size	[8MB]	
DVMT Mode	[DVMT]	
DVMT/FIXED Memory Size	[128MB]	
Boot Display	[CRT]	
Panel Scaling	[Auto]	
Panel Number	[1024 X 768]	
↑ ↓ → ← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F7:Optimized Defaults		

PCI Express Port 1 ~ 6

There are several PCI Express Ports for your selection.

PCI-E Compliancy Mode

This item allows you to set the version of the PCI Express base specifications.

** VGA Setting **

PEG/On-chip VGA Control

This setting allows you to select whether to use the on-chip 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 board will boot up using that card. Otherwise, it is defaulted to the on-chip graphics processor.

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.

Advanced Chipset Features, Continued

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.

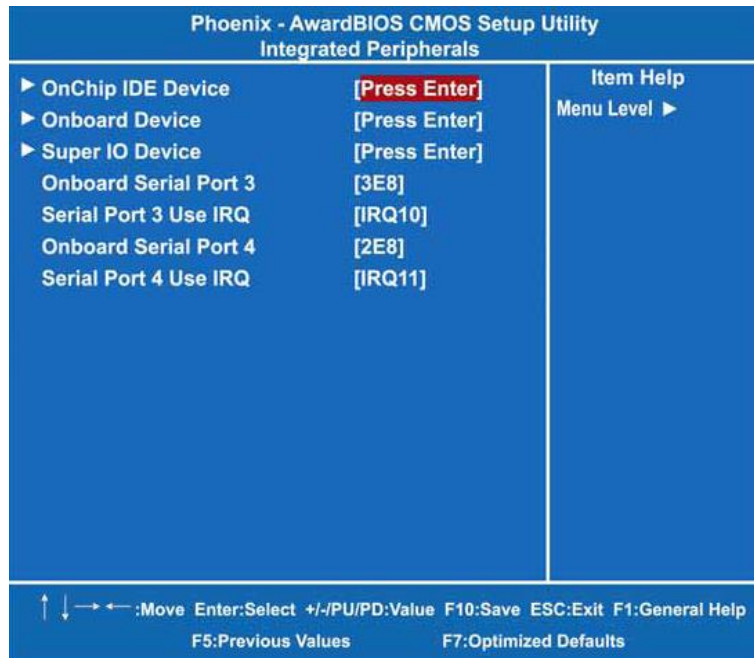
Panel Number

This item is to select panel resolution that you want.

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

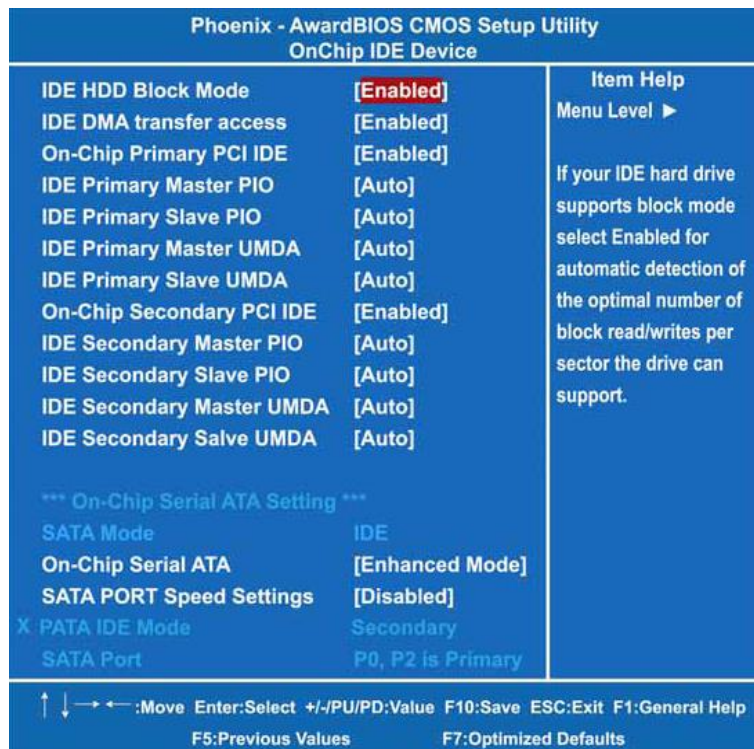
Integrated Peripherals

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



On-Chip IDE Device

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



Integrated Peripherals, Continued

On-Chip IDE Device, Continued

➤ 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.

➤ 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

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

Integrated Peripherals, Continued

On-Chip IDE Device, Continued

On-Chip Serial ATA

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

SATA PORT Speed Settings

Use this item to select SATA I or SATA II device support forcedly.

PATA IDE Mode

Use this item to set the PATA IDE mode. When set to Primary, P1 and P3 are Secondary; on the other hand, when set to Secondary, P0 and P2 are Primary.

SATA Port

If the "PATA IDE Mode" is Primary, " P1, P3 is Secondary" will be shown to mean SATA 2 and SATA 4 are Secondary. If the "PATA IDE Mode " is Secondary, " P0, P2 is Primary " will be shown to mean SATA 1 and SATA 3 are Primary.

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

Onboard Device

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



➤ USB Controller

Enable this item if you are using the USB 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 Support

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

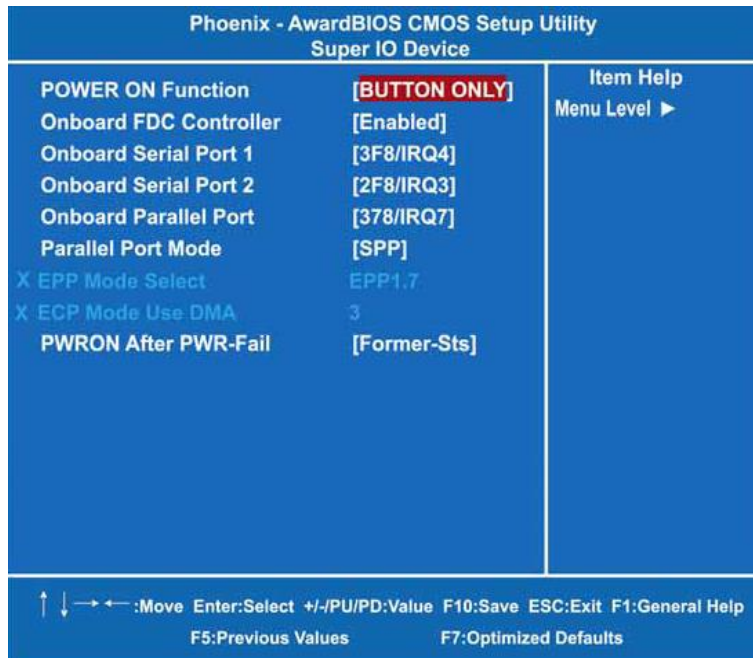
➤ AC'97 Audio

Use this item to enable or disable the onboard AC'97 Audio function.

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.



➤ POWER ON Function

This item provides several ways to power up the system: BUTTON ONLY, Keyboard 98, Password, Hot Key, Mouse Left, Mouse Right and Any Key.

➤ 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. Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

➤ 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.

Super IO Device, Continued

➤ 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

This item enables your computer to automatically restart or return to its operating status.

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

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.

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

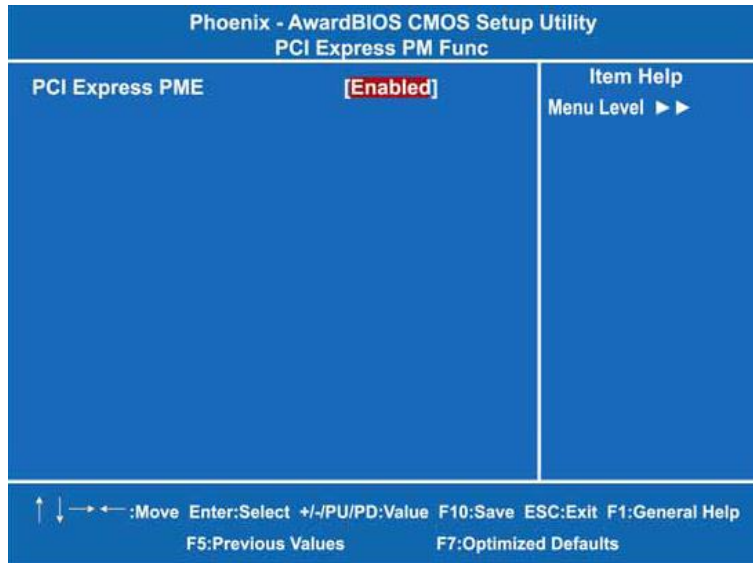
Power Management Setup

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.



PCI Express PM Function

Scroll to this item and press <Enter> to view the sub menu of PCI Express PM Function. Scroll to this item and press <Enter> to view the sub menu of PCI Express PM Function. PCI Express components are permitted to wake up the system using a wakeup mechanism followed by a power management event (PME) Message.



➤ PCI Express PME

This option performs the same function as Wake-Up by PCI card but is for PCIExpress cards. Options: "Enabled" and "Disabled."

Press <Esc> to return to the Power Management Setup page.

ACPI Function

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

PCI Express PM Function, Continued

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.

PCI Express PM Function, Continued

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.

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."

PCI Express PM Function, Continued

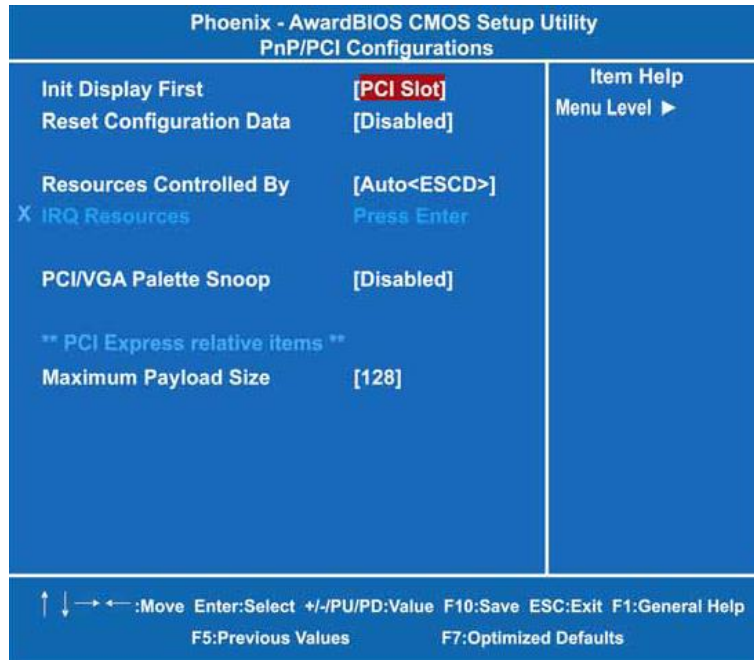
Resume by Alarm

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

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.



Init Display First

This item allows you to decide whether PCI Slot or AGP to be the first primary display card.

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."

PnP/PCI Configuration Setup, Continued

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.

Phoenix - AwardBIOS CMOS Setup Utility		Item Help
PC Health Status		Menu Level ▶
Current System Temperature	46°C/114°F	
Current CPU Temperature	62°C/143°F	
Current FAN1 Speed	6490 RPM	
Current FAN3 Speed	0 RPM	
Current FAN2 Speed	0 RPM	
Vcore	1.10 V	
+ 3.3 V	3.29 V	
+ 5 V	4.99 V	
+ 12 V	12.09 V	
5VSB(V)	4.94 V	

↑ ↓ → ← :Move Enter:Select +/-PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7:Optimized Defaults

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 FAN1 Speed

Show you the current system fan1 temperature.

Current FAN3 Speed

Show you the current system fan3 temperature.

Current FAN2 Speed

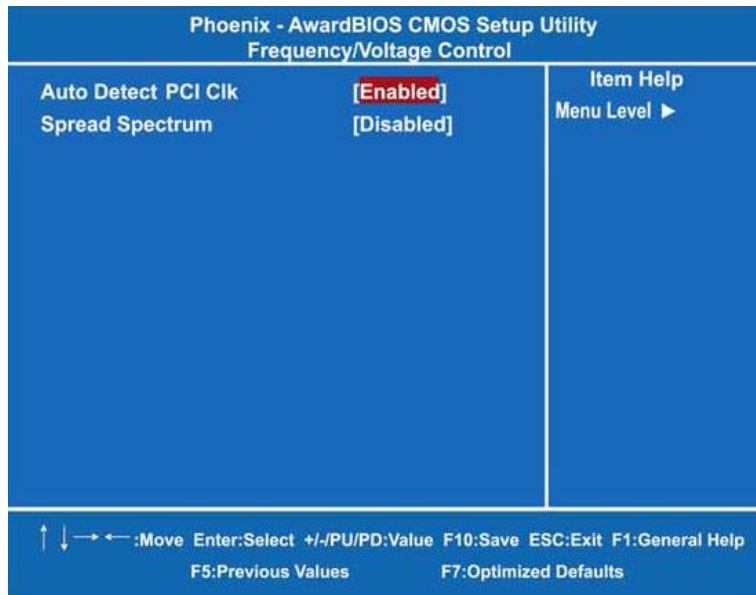
Show you the current system fan2 temperature.

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

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

Frequency/Voltage Control

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



Auto Detect PCI Clk

The enabled item can automatically disable the clock source for a PCI slot without a module, to reduce EMI (Electro Magnetic Interference).

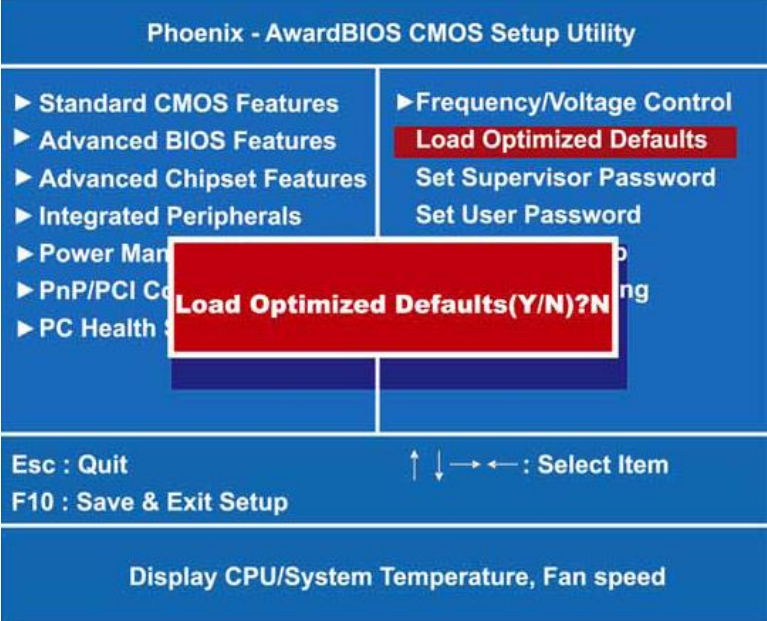
Spread Spectrum

If spread spectrum is enabled, EMI (Electro Magnetic Interference) generated by the system can be significantly reduced.

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 CMOS SRAM with SETUP default values, please 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

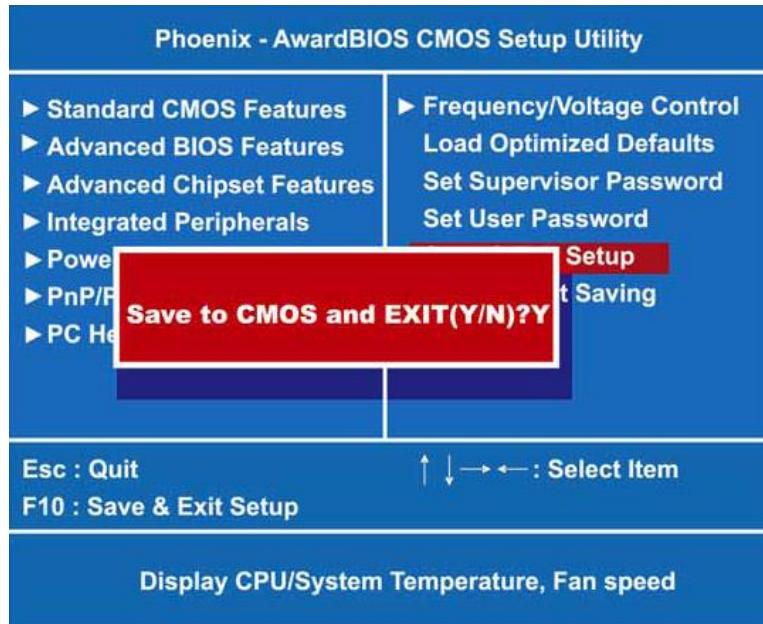
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

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.

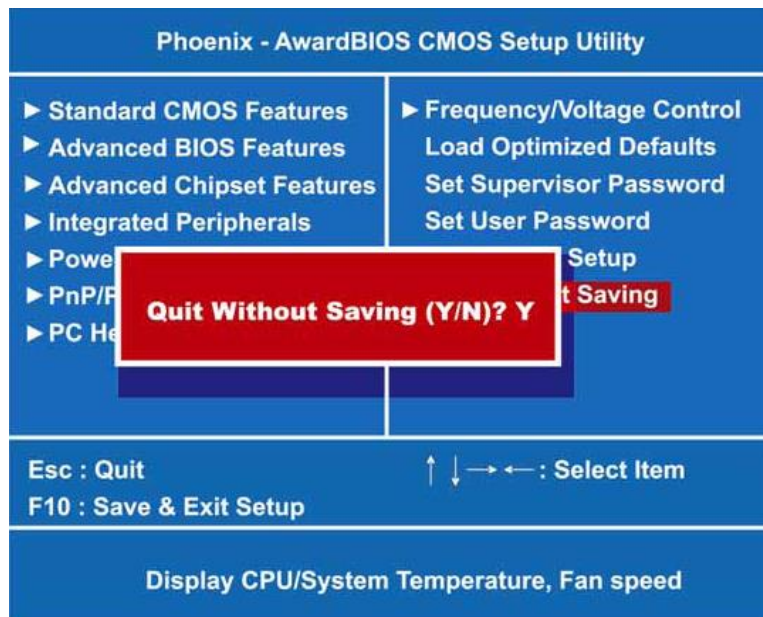
Save & Exit Setup

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 B – INSTALLING SYSTEM DRIVERS

The device drivers can be downloaded from the [Sealevel software driver database](#). The auto-run function of drivers will guide you to install the utilities and device drivers under a Windows system. You can follow the onscreen instructions to install these devices:

- Chipset
- VGA
- LAN

Installing the Chipset Driver

1. Once you locate the chipset driver and download the file from the database, click the 'Next' button to proceed.



2. An Intel® License Agreement appears. Click the 'Yes' button to agree to the terms of the license agreement and proceed to the next step.



3. Please wait while the following setup operations are performed. Click the 'Next' button if required to proceed.





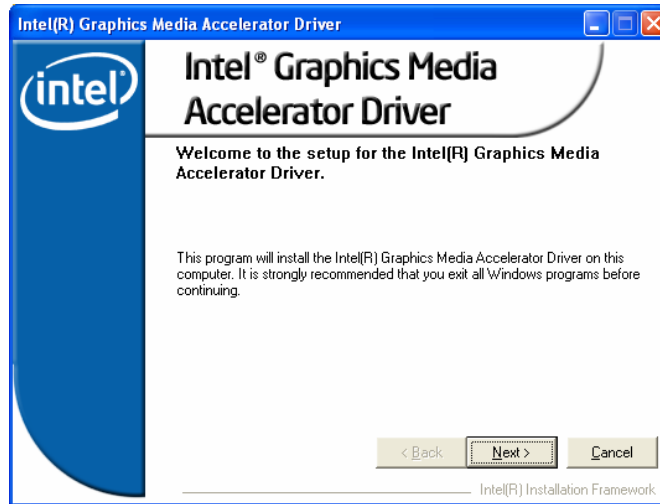
4. Click the 'Finish' button to complete the setup process.



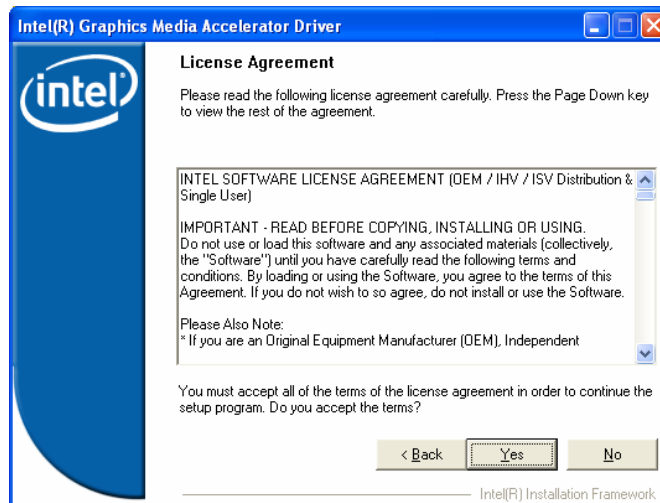
5. You will be asked to reboot your computer when the installation completes. Please click 'Yes, I want to restart my computer now' if you do not need to install any other drivers. Otherwise, click 'No, I will restart my computer later' and proceed with installing the video drivers.

Installing the VGA Driver

1. Once you locate the driver and download the file from the database, click the 'Next' button to proceed to the next step.

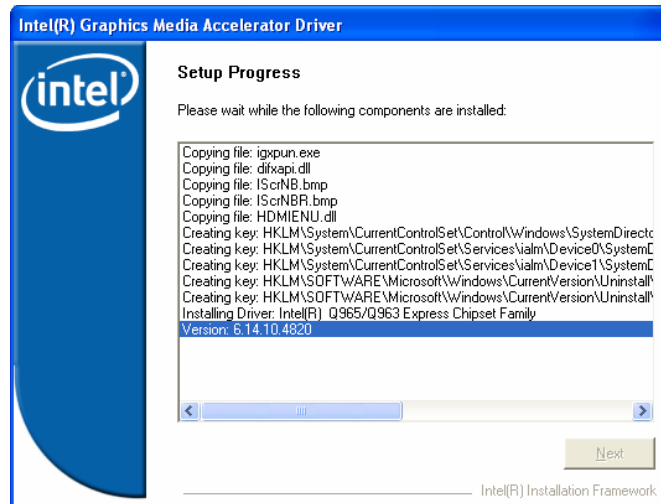


2. An Intel® License Agreement appears. Click the 'Yes' button to agree to the terms of the license agreement and proceed to the next step.

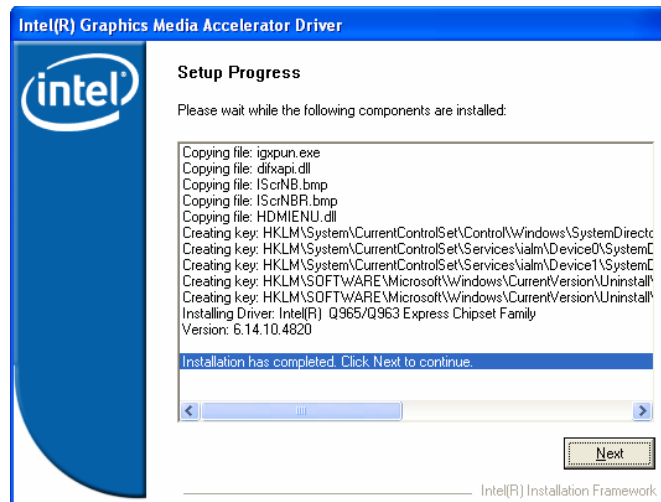


3. The next window displays the contents of the Readme File to show you the system requirements and installation information. Click the 'Next' button to proceed.

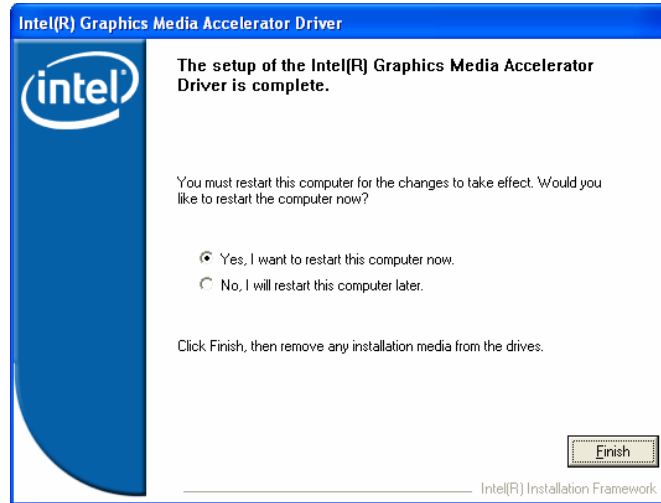
- Please wait while the following setup operations are performed.



- When the Setup Progress displays that the installation is complete, click the 'Next' button to proceed.



6. You will be asked to reboot your computer. Please click 'Yes, I want to restart my computer now' if you do not need to install any other drivers. Otherwise, click 'No, I will restart my computer later' and then click the 'Finish' button to complete the installation.



Installing the LAN Driver

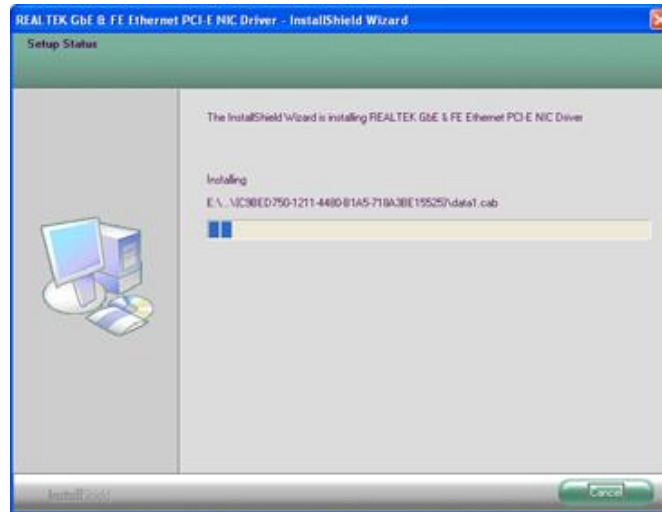
1. Once you locate the driver and download the file from the database, click the 'Next' button to proceed to the next step



2. Click the 'Install' button to start the installation.



3. Please wait while the following setup operations are performed.



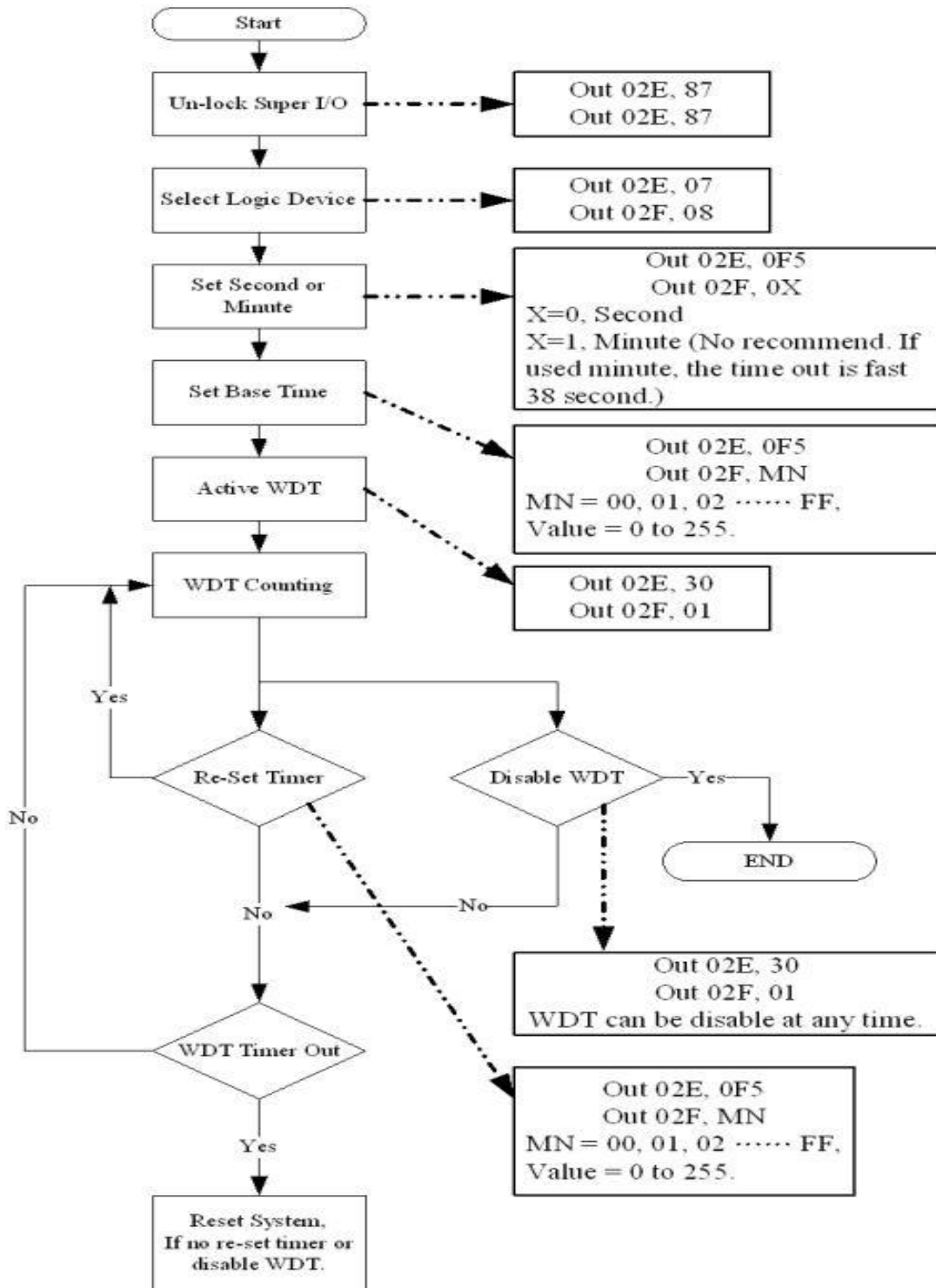
4. Click the 'Finish' button to complete the installation.



5. You will be asked to reboot your computer. Please click 'Yes, I want to restart my computer now' if you do not need to install any other drivers. Otherwise, click 'No, I will restart my computer later.'
6. The system is now ready to use in your application.

Appendix C – Watch Dog Timer

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



Appendix D – 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 E – 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. It is defined by the EIA as the *Interface between Data Terminal Equipment and Data Circuit- Terminating Equipment Employing Serial Binary Data Interchange*. The mechanical implementation of RS-232 is on a 25 pin D sub connector. 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 often operates at 38.4 Kbps over very short distances. The voltage levels defined by RS-232 range from -12 to +12 volts. 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. A voltage of +12 volts (usually +3 to +10 volts) represents a binary 0 (space) and -12 volts (-3 to -10 volts) denotes a binary 1 (mark). The RS-232 and the EIA/TIA-574 specification defines two type of interface circuits, Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). The Sealevel Systems adapter is a DTE interface.

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.

Appendix F – Compliance Notices

Federal Communications Commission (FCC) Statement



This equipment has been tested and found to comply with the limits for 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 such case the user will be required to correct the interference at the user's expense.

EMC Directive Statement



Products bearing the CE Label fulfill the requirements of the EMC directive (89/336/EEC) and of the low-voltage directive (73/23/EEC) issued by the European Commission. To obey these directives, the following European standards must be met:

- **EN55022 Class A** - "Limits and methods of measurement of radio interference characteristics of information technology equipment"
- **EN55024** - "Information technology equipment Immunity characteristics Limits and methods of measurement".



This is a Class A Product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures to prevent or correct the interference.



Always use cabling provided with this product if possible. If no cable is provided or if an alternate cable is required, use high quality shielded cabling to maintain compliance with FCC/EMC directives.

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. Relio™ industrial computers are warranted for a period of two years and the R9 family is warranted for a five-year period from date of purchase. 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-9001:2008 certification in 2011.

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

Trademarks

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