

# User's Manual

**FWA-6X0  
Network Appliances**

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. For example, CPU speed, Advantech products used, other hardware and software used, etc. Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## **Packing List**

You should find the items listed below in the server package. If anything is missing or damaged, please consult with your vendor for resolution.

- 1 CPU heat sink
- 1 AC Adapter
- 1 Console cable
- 1 slim HDD flat cable
- 4 Screw Sinks for HDD drive
- 1 CD Title-Driver & Manual
- 1 Warrant Card

### **Technical Support and Sales Assistance**

If you have any technical questions about the FWA-600 series products, please visit our support website at <http://www.advantech.com.tw/support>

For more information about Advantech products and sales information, please visit: <http://www.advantech.com>.

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# Chapter 1 Introduction

## 1.1 About the FWA-600 Series

A tabletop, compact powerful Network Appliance, the FWA-600 series is specifically designed for Internet secure connectivity. It is suitable for SOHO (Small Office, Home Office), SMB (Small Medium Business), and ROBO (Remote Office, Branch Office) segments. Designed within the Intel® Celeron 566 MHz processor only, it has low power consumption and high performance that can meet the requirement needed of firewall appliance. The system supports a Compact Flash used in installing OS and Firewall/VPN or other network appliance application, which totally avoids the service disruption caused by hard disk's mechanical/magnetic failures. In addition, the FWA-600 series can support system memory up to 512 MB SDRAM. Both the Compact Flash card and SDRAM can be accessed and replaced for software upgrade through an easily removable cover. Designed with the Plug-and-Serve concept in mind, the FWA-600 series offers maximum four 10/100 Mbps auto-sensing Fast Ethernet ports in the front panel for WAN1, WAN2, LAN, and DMZ connections. There are nine LED indicators on the front panel display that monitor power status, LAN activities and LAN link speed (10 M or 100 M bit per second) for each LAN. Also on the front panel for easy access is a 9-pin, RS-232 serial port for local system management, maintenance, and diagnostics. The FWA-600 series reserves a place for an optional slim-type 2.5" IDE HDD, which can be installed for storing event log and user data. It meets FCC and CE compliance. For some special network appliance applications, it is necessary to require the LAN bypass function. FWA-600 series reserves manufacture option for the 2 LAN ports. Meanwhile, FWA-600 series is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone, or unmanned, environments. The detail will be discussed later. The console re-direction function of FWA-600 series allows users to set CMOS parameter via consol port. The FWA-600 series supports Windows 2000/XP and Linux OS. Here, we also provide a hardened Linux OS in driver CD. The hardened Linux is useful, but it is not guaranteed because each customer has different requirement.

## 1.2 Specification

### 1.2.1 FWA-660 Specification

Processor	CPU	Intel® Celeron
	Max. Speed	566 MHz
	L2 Cache	128 KB
	Chipset	Intel 815E
	BIOS	Award 2 Mb Flash
Memory	Technology	PC-133/100 SDRAM
	Max. Capacity	512 MB
Ethernet	Interface	10/100 Base-TX
	Controller	Intel 82559ER x 3, ICH2 x 1
	Connector	RJ-45 x 4
Drive Bay	2.5"HDD	1
Cooling	Fan	2 (5 CFM/each)
Management	Console	RS-232 x1
Miscellaneous	Control	Power switch
	CompactFlash	1
	Socket	
Adapter Power Requirement	Input	AC/DC 90 ~ 264 V full range @ 47 ~ 63 Hz
	Output	30 W
Environment	Temperature	Operating                      Non-Operating 0 ~ 40 °C (32 ~ 104 °F)    -20 ~ 75 °C (-4 ~ 167 °F)
	Humidity	5 ~ 85 % @ 40 °C (104 °F)    5 ~ 95 %
Physical	Dimension (W x H x D)	224 x 39 x 170 mm (8.8" x 1.5" x 6.7")
	Weight	1.2 kg (2.6 lb)
	OS support	Windows 2000/XP, Linux

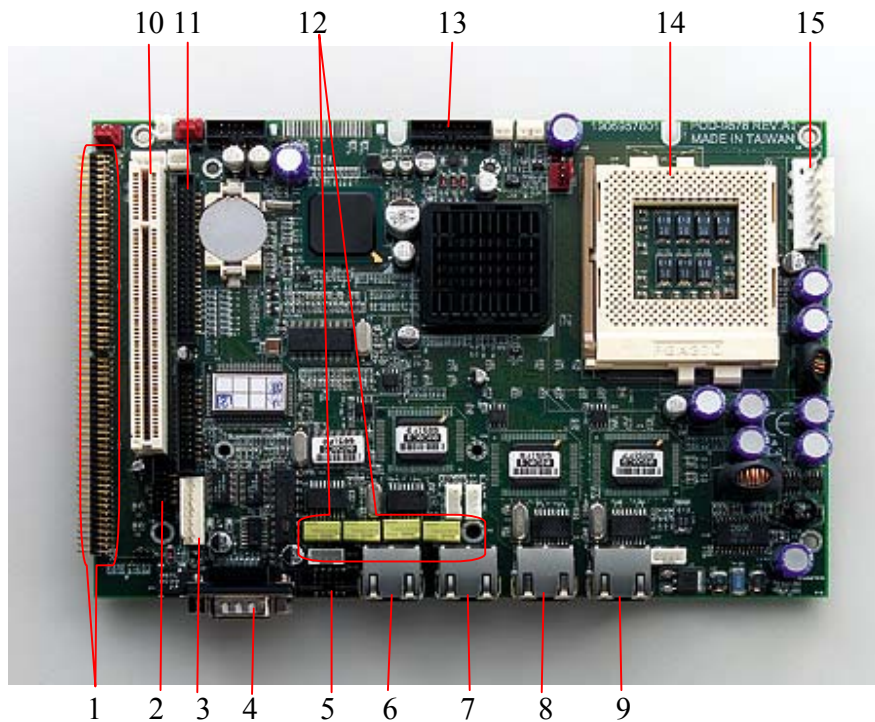


### 1.2.2 FWA-600 Specification

Processor	CPU	Intel® Celeron
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	L2 Cache	128 KB
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Drive Bay	2.5"HDD	1
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Management	Console	RS-232 x1
Miscellaneous	Control	Power switch
	CompactFlash Socket	1
Adapter Power Requirement	Input	AC/DC 90 ~ 264 V full range @ 47 ~ 63 Hz
	Output	30 W
Environment	Temperature	Operating: 0 ~ 40 °C (32 ~ 104 °F)      Non-Operating: -20 ~ 75 °C (-4 ~ 167 °F)
	Humidity	5 ~ 85 % @ 40 °C (104 °F)      5 ~ 95 %
Physical	Dimension (W x H x D)	224 x 39 x 170 mm (8.8" x 1.5" x 6.7")
	Weight	1.2 kg (2.6 lb)
	OS support	Windows 2000/XP, Linux

## 1.3 The Motherboard of FWA-600 Series

### 1.3.1 Component Side

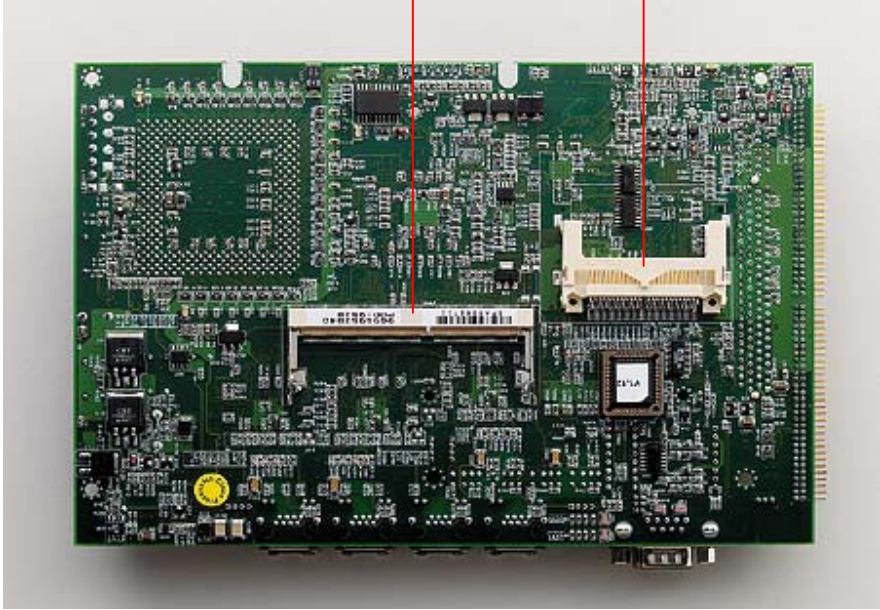


- 1: CN2 & CN3- PCI BUS pin header for LAN expansion
- 2: CN5- Provide 8 GPIO
- 3: keyboard and mouse connector
- 4: COM1- Console Port
- 5: COM2- pin header
- 6: RJ45 LAN4 connector (ICH2)
- 7: RJ45 LAN3 connector (Intel 82559ER)
- 8: RJ45 LAN2 connector (Intel 82559ER)
- 9: RJ45 LAN1 connector (Intel 82559ER)
- 10: PCI slot
- 11: IDE connector (44pin)
- 12: Relays for LAN Bypass- LAN3 and LAN4 (**manufacture option**)
- 13: VGA pin header
- 14: FC-PGA370 socket for FC-PGA and FC-PGA2 CPU **only**
- 15: Power Connector

**1.3.2 Solder Side**

SO-DIMM  
Socket

CF Socket



### 1.3.3 Pin Definition of Motherboard (POD-9578) Connectors

#### CN1 System FAN-2 connector

Pin-1 => FAN plus signal

Pin-2 => +12V

Pin-3 => GND

#### CN2, CN3 PCI signal connector

CN3 Pin-1 => NC

CN3 Pin-2 => NC

CN3 Pin-3 => NC

CN3 Pin-4 => +12V

CN3 Pin-5 => GND

CN3 Pin-6 => TMS

CN3 Pin-7 => NC

CN3 Pin-8 => TDI

CN3 Pin-9 => +5V

CN3 Pin-10 => +5V

CN3 Pin-11 => +5V

CN3 Pin-12 => INTA#

CN3 Pin-13 => INTB#

CN3 Pin-14 => INTC#

CN3 Pin-15 => INTD#

CN3 Pin-16 => +5V

CN3 Pin-17 => NC

CN3 Pin-18 => GNTE#

CN3 Pin-19 => REQE#

CN3 Pin-20 => VIO (Select by J1)

CN3 Pin-21 => SUS 3.3V

CN3 Pin-22 => #PGNT5

CN3 Pin-23 => GND

CN3 Pin-24 => GND

CN3 Pin-25 => GND

CN3 Pin-26 => GND

CN3 Pin-27 => WOL2

CN3 Pin-28 => #PREQ5

CN3 Pin-29 => GND

CN3 Pin-30 => PCIRST

CN3 Pin-31 => PCICLK

CN3 Pin-32 => VIO (Select by J1)

CN3 Pin-33 => GND

CN3 Pin-34 => GNTD#

CN3 Pin-35 => REQD#

CN3 Pin-36 => GND

CN3 Pin-37 => VIO(Select by J1)

CN3 Pin-38 => SUS 5V

CN3 Pin-39 => AD31

CN3 Pin-40 => AD30

CN3 Pin-41 => AD29

CN3 Pin-42 => +3.3V

CN3 Pin-43 => GND

CN3 Pin-44 => AD28

CN3 Pin-45 => AD27

CN3 Pin-46 => AD26

CN3 Pin-47 => AD25

CN3 Pin-48 => GND

CN3 Pin-49 => +3.3V

CN3 Pin-50 => AD24

CN3 Pin-51 => C/BE3#

CN3 Pin-52 => IDSEL (AD28)

CN3 Pin-53 => AD23

CN3 Pin-54 => +3.3V

CN3 Pin-55 => GND

CN3 Pin-56 => AD22

CN3 Pin-57 => AD21

CN3 Pin-58 => AD20

CN3 Pin-59 => AD19

CN3 Pin-60 => GND

CN2 Pin-1 => +3.3V	CN2 Pin-2 => AD18
CN2 Pin-3 => AD17	CN2 Pin-4 => AD16
CN2 Pin-5 => C/BE2#	CN2 Pin-6 => +3.3V
CN2 Pin-7 => GND	CN2 Pin-8 => FRAME#
CN2 Pin-9 => IRDY#	CN2 Pin-10 => GND
CN2 Pin-11 => +3.3V	CN2 Pin-12 => TRDY#
CN2 Pin-13 => DEVSEL#	CN2 Pin-14 => GND
CN2 Pin-15 => GND	CN2 Pin-16 => STOP#
CN2 Pin-17 => PLOCK#	CN2 Pin-18 => +3.3V
CN2 Pin-19 => PERR#	CN2 Pin-20 => SDONE
CN2 Pin-21 => +3.3V	CN2 Pin-22 => SBO
CN2 Pin-23 => SERR#	CN2 Pin-24 => GND
CN2 Pin-25 => +3.3V	CN2 Pin-26 => PAR
CN2 Pin-27 => C/BE1#	CN2 Pin-28 => AD15
CN2 Pin-29 => AD14	CN2 Pin-30 => +3.3V
CN2 Pin-31 => GND	CN2 Pin-32 => AD13
CN2 Pin-33 => AD12	CN2 Pin-34 => AD11
CN2 Pin-35 => AD10	CN2 Pin-36 => GND
CN2 Pin-37 => GND	CN2 Pin-38 => AD9
CN2 Pin-39 => AD8	CN2 Pin-40 => C/BE0#
CN2 Pin-41 => AD7	CN2 Pin-42 => +3.3V
CN2 Pin-43 => +3.3V	CN2 Pin-44 => AD6
CN2 Pin-45 => AD5	CN2 Pin-46 => AD4
CN2 Pin-47 => AD3	CN2 Pin-48 => GND
CN2 Pin-49 => GND	CN2 Pin-50 => AD2
CN2 Pin-51 => AD1	CN2 Pin-52 => AD0
CN2 Pin-53 => VIO(Select by J1)	CN2 Pin-54 => VIO (Select by J1)
CN2 Pin-55 => ACK64#	CN2 Pin-56 => REQ64#
CN2 Pin-57 => +5V	CN2 Pin-58 => +5V
CN2 Pin-59 => +5V	CN2 Pin-60 => +5V

#### **CN4 Power & HDD LED connector**

Pin-1 => HDD LED+  
 Pin-2 => HDD LED-  
 Pin-3 => Power LED+  
 Pin-4 => Power LED-

### **CN5 Digital I/O connector**

Pin-1 => DIO0 (GP10)	Pin-2 => DIO1 (GP11)
Pin-3 => DIO2 (GP12)	Pin-4 => DIO3 (GP13)
Pin-5 => DIO4 (GP14)	Pin-6 => DIO5 (GP15)
Pin-7 => DIO6 (GP16)	Pin-8 => DIO7 (GP17)
Pin-9 => GND	Pin-10 => GND

**(GP11 ~ GP17 come from Super IO W83627HF)**

The specification is put in driver CD disc.

### **CN6 Reset button connector**

Pin-1 => GND
Pin-2 => Reset signal

### **CN7 FAN failure LED connector**

Pin-1 => FAN fail LED+
Pin-2 => FAN fail LED-

### **CN8 IDE connector**

Pin-1 => IDE Reset	Pin-2 => GND
Pin-3 => D7	Pin-4 => D8
Pin-5 => D6	Pin-6 => D9
Pin-7 => D5	Pin-8 => D10
Pin-9 => D4	Pin-10 => D11
Pin-11 => D3	Pin-12 => D12
Pin-13 => D2	Pin-14 => D13
Pin-15 => D1	Pin-16 => D14
Pin-17 => D0	Pin-18 => D15
Pin-19 => GND	Pin-20 => NC
Pin-21 => DRQ	Pin-22 => GND
Pin-23 => IOW	Pin-24 => GND
Pin-25 => IOR	Pin-26 => GND
Pin-27 => IORDY	Pin-28 => Cable Select
Pin-29 => DACK	Pin-30 => GND
Pin-31 => IRQ14	Pin-32 => NC
Pin-33 => A1	Pin-34 => Reserved
Pin-35 => A0	Pin-36 => A2
Pin-37 => CS1#	Pin-38 => CS3#

Pin-39 => Active	Pin-40 => GND
Pin-41 => +5V	Pin-42 => +5V
Pin-43 => GND	Pin-44 => NC

#### **CN9 Print port connector**

Pin-1 => STB#	Pin-2 => AFD#
Pin-3 => D0	Pin-4 => ERR#
Pin-5 => D1	Pin-6 => INIT#
Pin-7 => D2	Pin-8 => SLIN
Pin-9 => D3	Pin-10 => GND
Pin-11 => D4	Pin-12 => GND
Pin-13 => D5	Pin-14 => GND
Pin-15 => D6	Pin-16 => GND
Pin-17 => D7	Pin-18 => GND
Pin-19 => ACK#	Pin-20 => GND
Pin-21 => BUSY	Pin-22 => GND
Pin-23 => PE	Pin-24 => GND
Pin-25 => SLCT	Pin-26 => GND

#### **CN10 System FAN-1 connector**

Pin-1 => FAN plus signal
Pin-2 => +12V
Pin-3 => GND

#### **CN11 Keyboard & PS2 Mouse connector**

Pin-1 => GND
Pin-2 => +5V
Pin-3 => MSDATA signal
Pin-4 => MSCLK signal
Pin-5 => GND
Pin-6 => +5V
Pin-7 => KBDATA
Pin-8 => KBCLK

**CN12 USB connector**

Pin-1 => +5V	Pin-2 => +5V
Pin-3 => USB0-	Pin-4 => USB1-
Pin-5 => USB0+	Pin-6 => USB1+
Pin-7 => USB_GND	Pin-8 => USB_GND
Pin-9 => GND	Pin-10 => NC

**CN13 COM1 D-SUB connector**

Pin-1 => DCD  
Pin-2 => RXD  
Pin-3 => TXD  
Pin-4 => DTR  
Pin-5 => GND  
Pin-6 => DSR  
Pin-7 => RTS  
Pin-8 => CTS  
Pin-9 => RI

**CN14 Reserved**

**CN15 LAN4 LED connector**

Pin-1 => Active LED+  
Pin-2 => Active LED-  
Pin-3 => Link LED+  
Pin-4 => Link LED-

**CN16 COM2 connector**

Pin-1 => DCD	Pin-2 => DSR
Pin-3 => RXD	Pin-4 => RTS
Pin-5 => TXD	Pin-6 => CTS
Pin-7 => DTR	Pin-8 => RI
Pin-9 => GND	Pin-10 => NC



**CN17 LAN4 RJ-45 connector**

**CN18 VGA connector**

Pin-1 => Red	Pin-2 => +5V
Pin-3 => Green	Pin-4 => GND
Pin-5 => Blue	Pin-6 => NC
Pin-7 => NC	Pin-8 => S-DATA
Pin-9 => GND	Pin-10 => HSYNC
Pin-11 => GND	Pin-12 => VSYNC
Pin-13 => GND	Pin-14 => S-CLK
Pin-15 => GND	Pin-16 => NC

**CN19 LAN3 LED connector**

Pin-1 => Active LED+
Pin-2 => Active LED-
Pin-3 => Link LED+
Pin-4 => Link LED-

**CN20 LAN3 RJ-45 connector**

**CN21 LAN2 LED connector**

Pin-1 => Active LED+
Pin-2 => Active LED-
Pin-3 => Link LED+
Pin-4 => Link LED-

**CN22 ATX power On/Off button connector**

Pin-1 => Power On/Off signal
Pin-2 => GND

**CN23 ATX power suspend 5V and PS\_ON signal**

Pin-1 => Suspend 5V
Pin-2 => GND
Pin-3 => PS_ON signal

**CN24 LAN2 RJ-45 connector**

**CN25 CPU FAN-2 connector**

Pin-1 => FAN plus signal

Pin-2 => +12V

Pin-3 => GND

**CN26 LAN1 RJ-45 connector**

**CN27 LAN1 LED connector**

Pin-1 => Active LED+

Pin-2 => Active LED-

Pin-3 => Link LED+

Pin-4 => Link LED-

**CN29 EBX Power connector**

Pin-1 => +5V

Pin-2 => GND

Pin-3 => GND

Pin-4 => NC

Pin-5 => NC

Pin-6 => GND

Pin-7 => +5V

**J1 PCI VIO select**

Pin-1 => +5V

Pin-2 => VIO

Pin-3 => +3.3V

Pin-1,2 closed => PCI VIO select +5V

Pin-2,3 closed => PCI VIO select +3.3V

## **J2 L3, L4 by pass control**

Pins	Auto Detect* by GPIO	Always enable
1-3	Closed	Closed
3-5	NA	NA
2-4	Closed	NA
4-6	NA	Closed

\* Default setting

### **J3 LAN3, LAN4 Bypass signal select (When J2 Pin-1,2 closed)**

Pin-1,2 closed => When Power on , Relay auto on

Pin-2,3 closed => Relay On/Off control by ICH GPO23

### **J4 CMOS Clear jumper**

Pin-1,2 closed => Normal

Pin-2,3 closed => Clear CMOS data

### **J5 Firmware Hub Lock jumper**

Pin-1,2 closed => Firmware Hub write enable

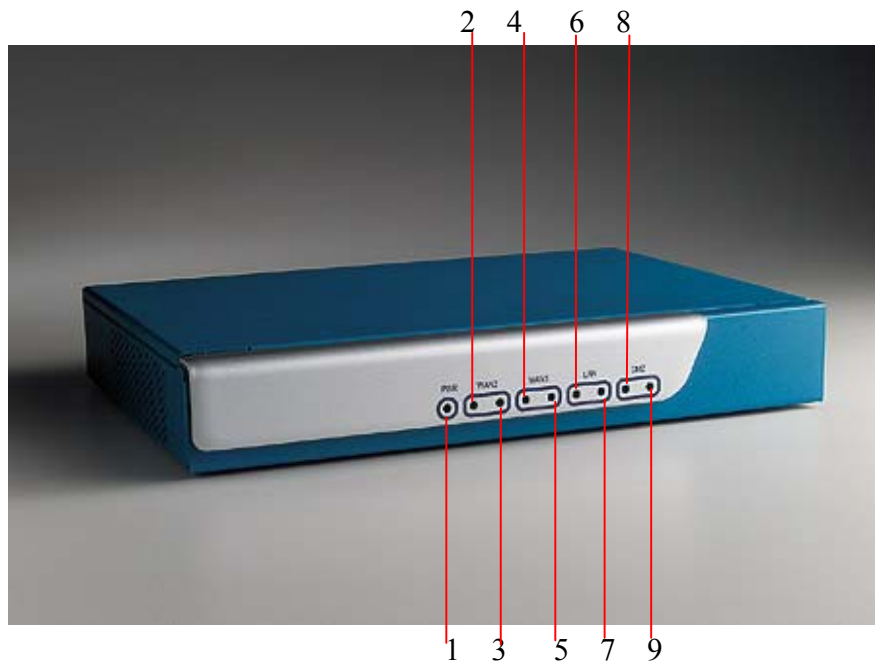
Pin-1,2 open => Firmware Hub read only

### **PCI Bus difference:**

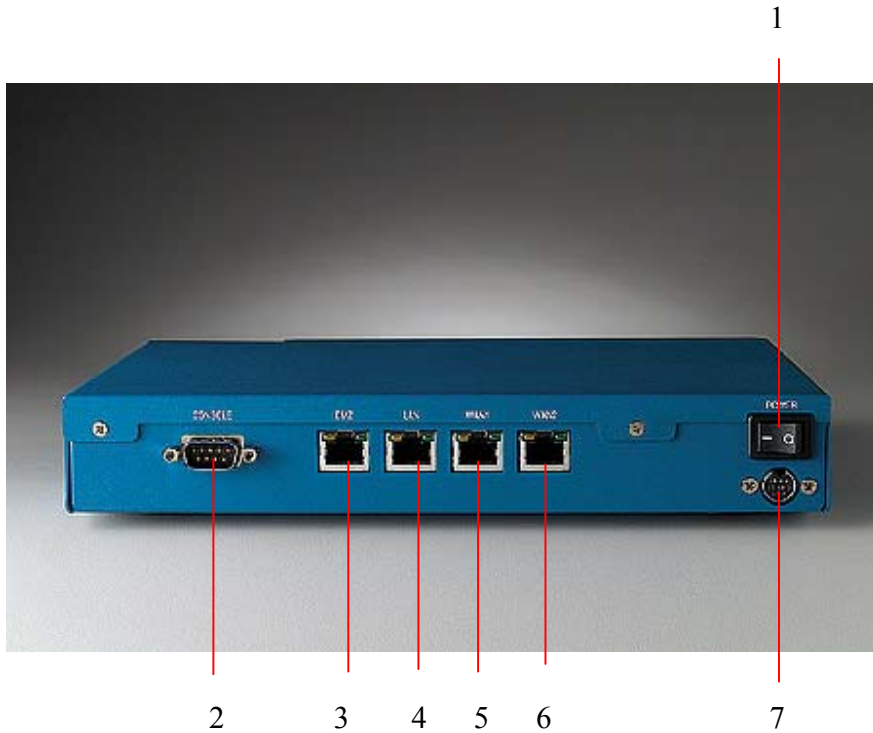
A9 => #PGNTE	(Normal is RSV)
A11 => #PGNT5	(Normal is RSV)
A14 => #PREQ5	(Normal is RSV)
A19 => Suspend 5V	(Normal is RSV)
B10 => #PREQE	(Normal is RSV)
B11 => Suspend 3.3V	(Normal is #PRSNT2)
B14 => WOL1	(Normal is RSV)

## 1.4 The mechanism of FWA-600 Series

The FWA-600 series has an internal Compact Flash card. The system only supports Celeron processor 566MHz with one SO-DIMM socket, which supports up to 512MB PC-133 SDRAM SO-DIMM. The system comes with an external AC adapter.



- 1: Power LED
- 2: LAN1 Link
- 3: LAN1 Activity
- 4: LAN2 Link
- 5: LAN2 Activity
- 6: LAN3 Link
- 7: LAN3 Activity
- 8: LAN4 Link
- 9: LAN4 Activity



- 1: Power On/Off Switch
- 2: Console Port
- 3: LAN4
- 4: LAN3
- 5: LAN2
- 6: LAN1
- 7: DC IN

**Cross table for LAN port definition**

	LAN4	LAN3	LAN2	LAN1
Linux OS	Eth0	Eth3	Eth2	Eth1
FWA-600	N/A	DMZ	LAN	WAN
FWA-660	DMZ	LAN	WAN1	WAN2

## **Firewall/VPN LAN Port Definition**

### **DMZ Port**

The DMZ port connector is RJ-45 and supports 10/100BaseTX Ethernet (10 Mbps/100 Mbps on a twisted pair cable). This port connects non-secured/ untrusted devices.

### **LAN Port**

The LAN port connector is RJ-45 and supports 10/100BaseTX Ethernet (10 Mbps/100 Mbps on a twisted pair cable). This port connects to secured/trusted devices.

### **WAN Port**

The WAN port connector is RJ-45 and supports 10/100BaseTX Ethernet (10 Mbps/100 Mbps on a twisted pair cable). This port connects to the external network of Internet.

### **Console Port**

The console port supports a data terminal equipment (DTE) interface (cable included) with 8 data bits, no parity, and 1 stop bit, the default speed is 38400 bps.

### **DMZ LED**

When the cable is connected to the DMZ, the LED is orange. When the FWA-600 series receives the data, the above LED flashes green.

### **LAN LED**

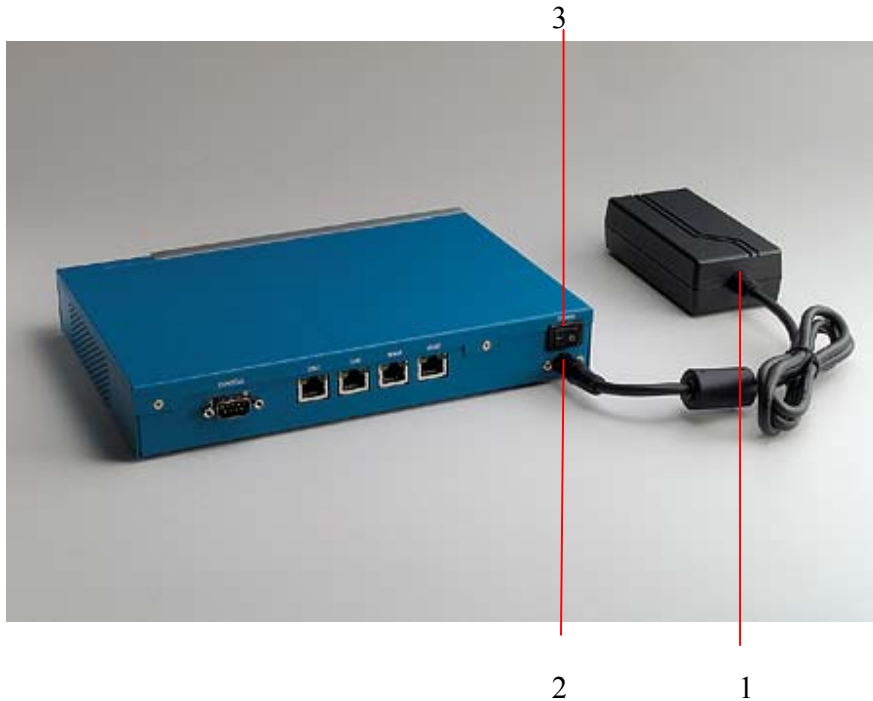
When the cable is connected to the LAN, the LED is orange. When the FWA-600 series receives data, the above LED flashes green.

### **WAN LED**

When the cable is connected to the WAN, the LED is orange. When the FWA-600 series receives data, the above LED flashes green.

### **Power LED (PWR)**

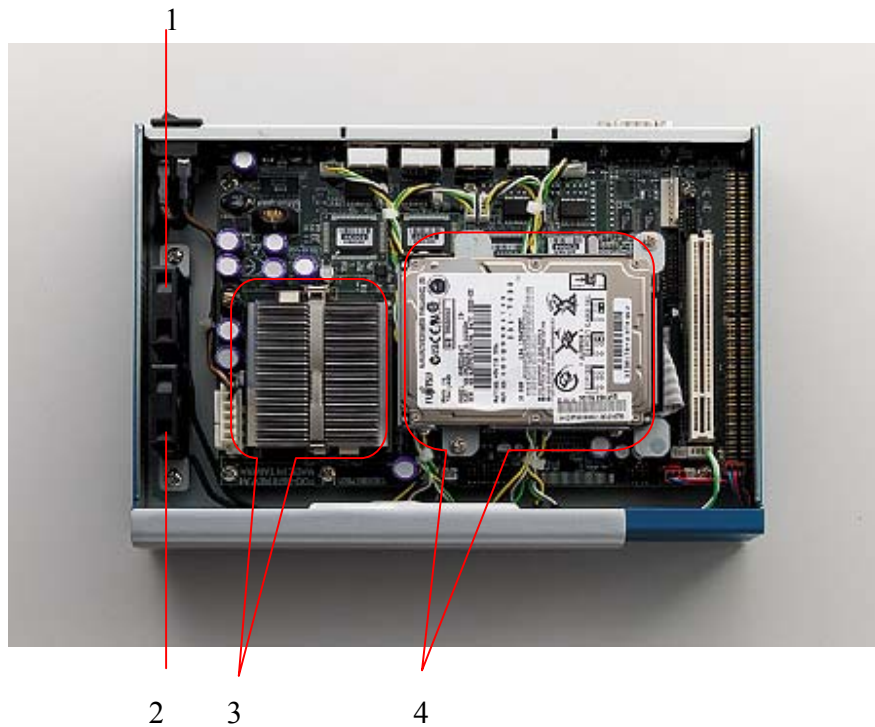
The PWR LED is green under normal conditions.



- 1: AC Adapter
- 2: Connector of Adapter plug in DC-IN on FWA-600 Series
- 3: Power On/Off Switch

The machine comes with one AC adapter.

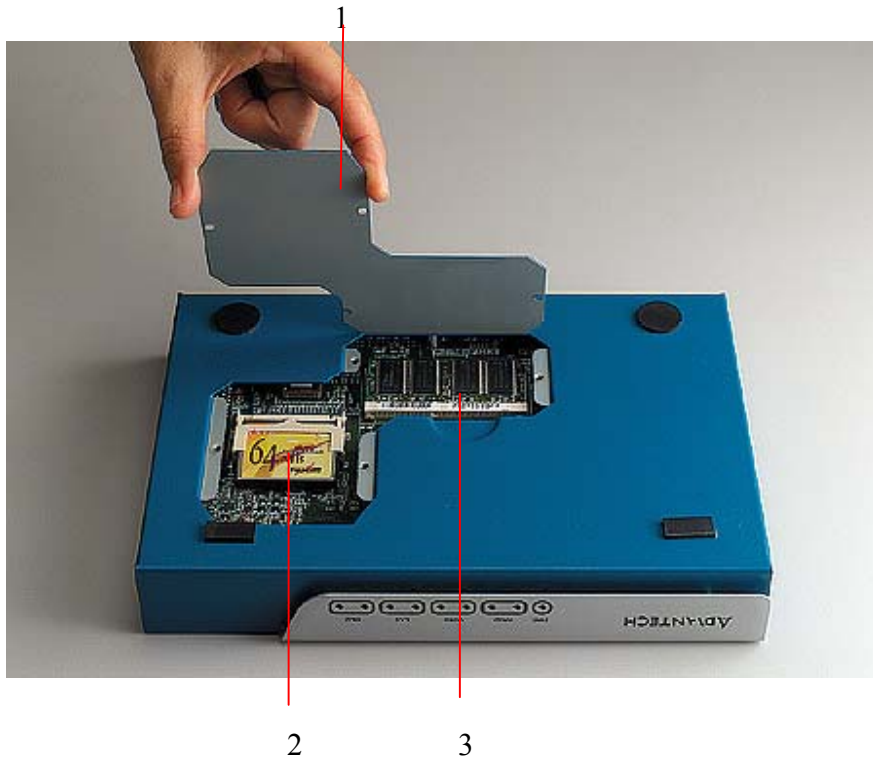
- Tightly plug the AC adapter power cord into the power socket at the back of the FWA-600 series.
- Plug the power cord into the power socket of AC adapter.
- Plug the other end of the power cord (optional) to the power outlet.
- Press the power On/Off switch to turn the FWA-600 series on.



- 1: 5-CFM FAN
- 2: 5-CFM FAN
- 3: CPU heat-sink installed
- 4: 2.5" IDE HDD drive installed (optional)

**Note:** There is a fan guide which covers CPU heat-sink and 2 system FANs. The fan guide is used to solve CPU thermal issue. Without the fan guide, it maybe damages CPU. Please be careful. The fan guide (plastic cover) will be stated later.





- 1:** Remove the cover to order to install Compact Flash card and SO-DIMM
- 2:** Compact Flash installed (Optional)
- 3:** SO-DIMM SDRAM installed (Optional)

## 1.5 Operating Systems

The FWA-600 series support Windows 2000, Windows XP and Linux OS. There is a hardened Linux OS in driver CD. Please take a look at driver CD for more detail information. Please remember that the hardened Linux OS is not guaranteed to meet with your requirement. In order to let users easy to develop their own software on the platform, it is recommended that users can purchase the following optional items:

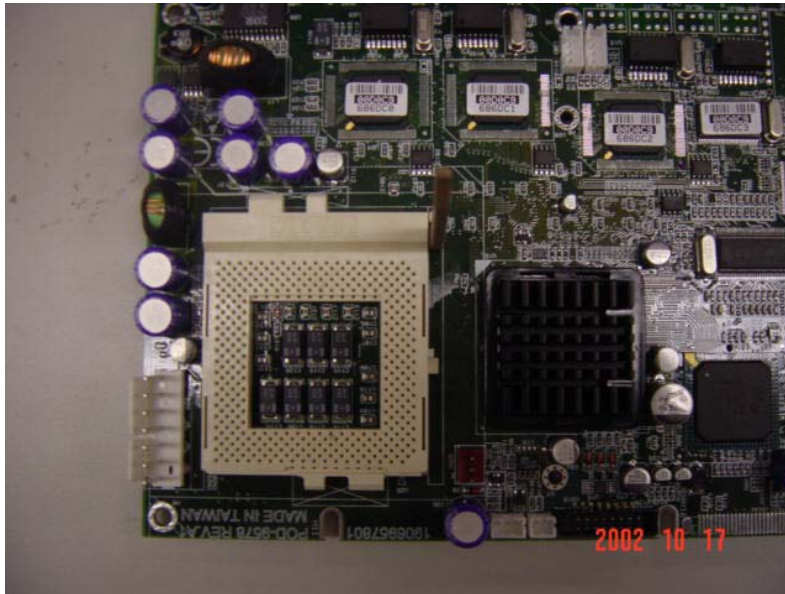
### Optional Accessory

No	Item Description	Part number
1	Power cable	1703080101
2	2.5" HDD cable	1701440500
3	USB cable	1703100260
4	parallel cable	1700260250
5	VGA port cable	1701160101
6	keyboard/ PS2 mouse cable	1700060200
7	Flat Cable 44P 50cm: 44P/44P/40P(Idiot-Proof)	1701440504



## Chapter 2 Setup and Configuration

### 2.1 Install CPU and heat-sink

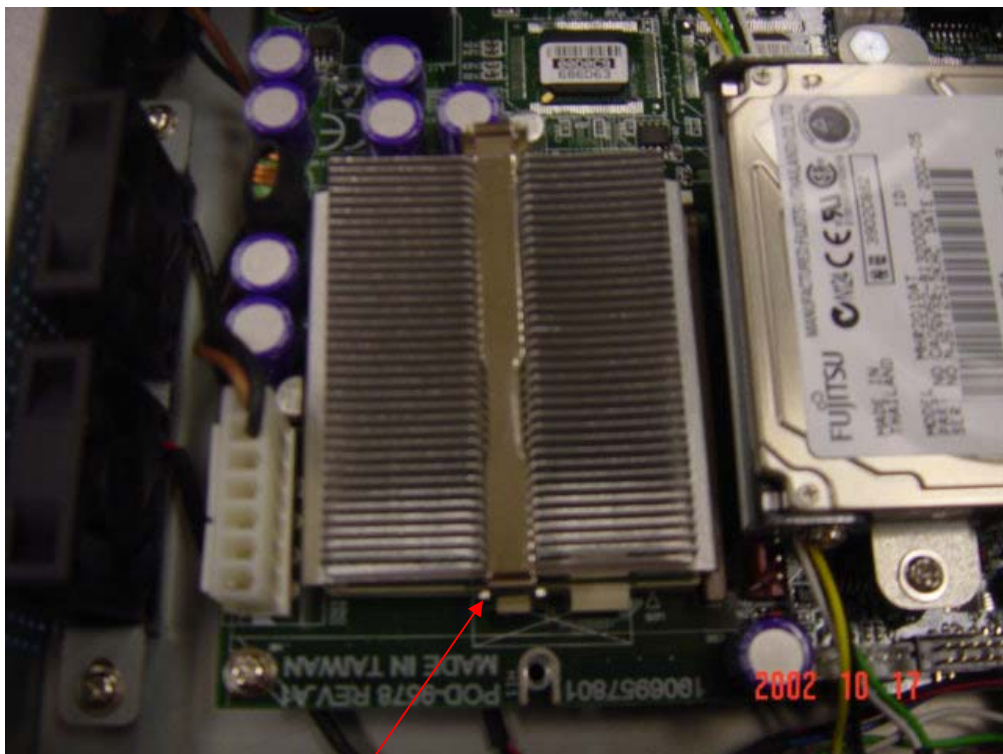
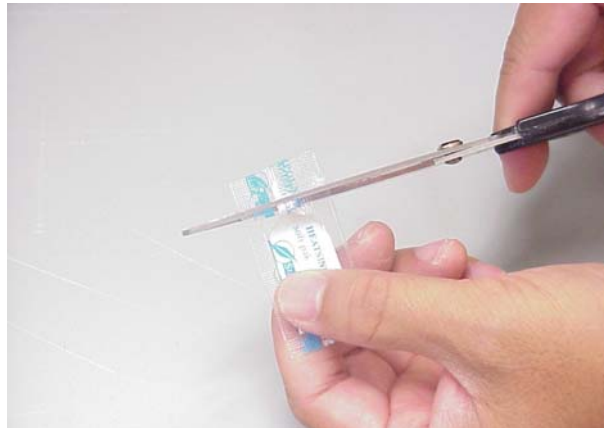


Raise the retaining lever of CPU socket to a position perpendicular to the socket up.

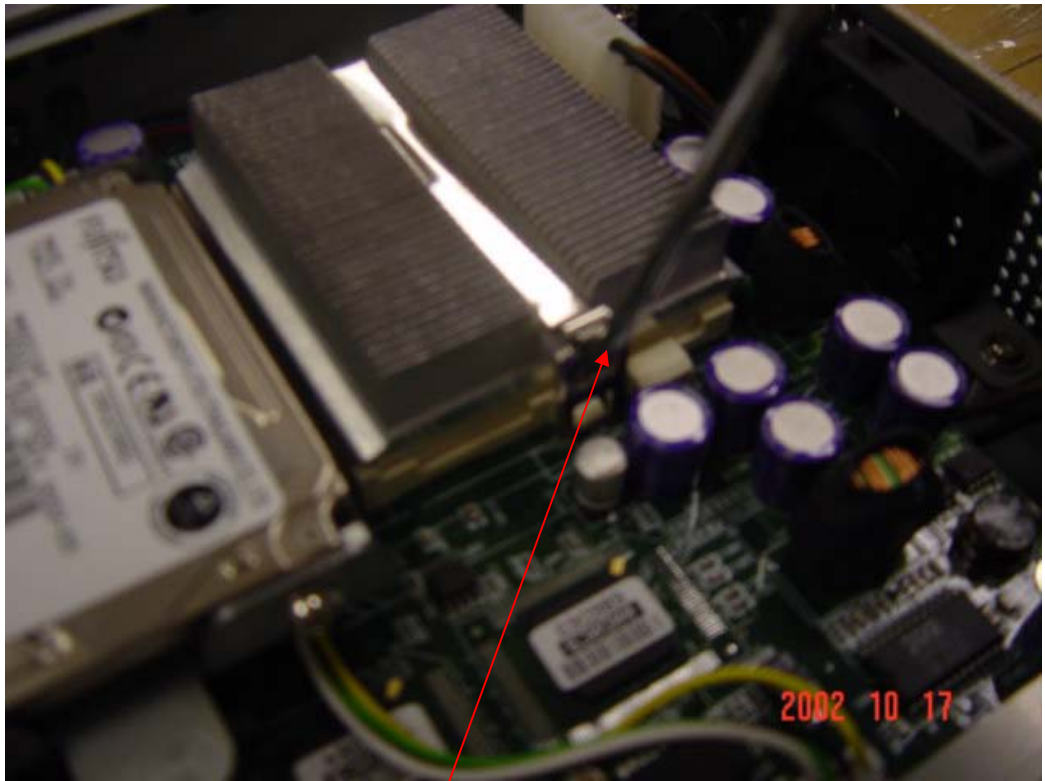


Orient the CPU to the socket correctly so that the pins match the receptacles. Insert the CPU in the socket so that the pins fully insert.

After a CPU has been installed, you will need to **install the proper cooling device** for the CPU. The platform comes with one high efficiency heat-sink that sits on the top of an installed CPU and clip onto the CPU socket. Before heat-sink installation, please take out the heat-spread glue as below. Paint the heat-spread glue on the CPU die evenly as previous picture.

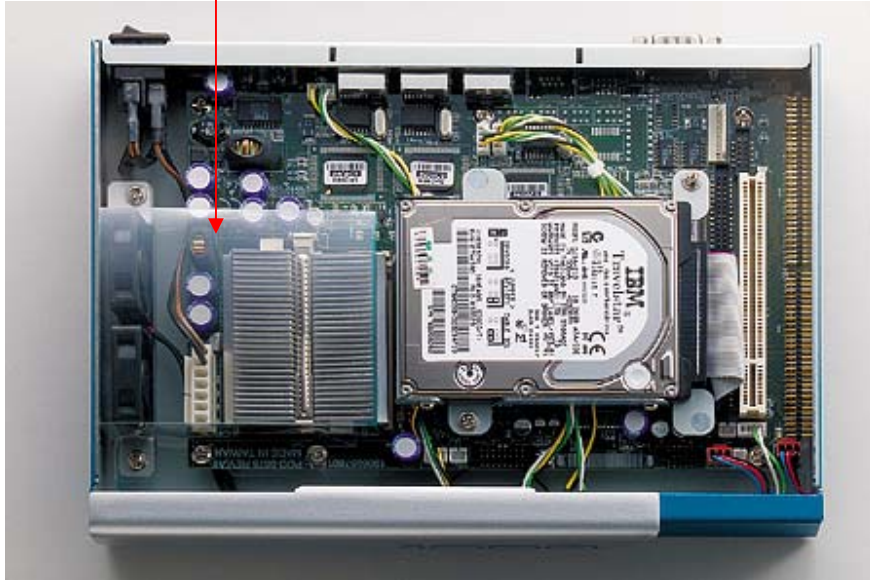


Place the clip to hold the protrusion on the side of CPU socket.



Place the clip to hold the protrusion on another side of CPU socket. Use a screw driver for help to Press the spring clip over the protrusion so that it snaps in place.

Plastic cover (fan guide)



Unscrew some screws in order to install plastic cover. Please fasten the plastic cover with the screw.

**Note:** Without thermal glue and plastic cover, system will possibly overheat.



## 2.2 Console Redirection

Use the null-modem cable (console cable) to connect the client's COM1 port to the console port of FWA-600 series. The other end of cable connects with another PC running Windows 98/2000/XP.

To set up a Windows OS system:

1. Run a console client management program such as HyperTerminal 6.X to configure the console port connection.
2. HyperTerminal 6.X is applied in the following example:

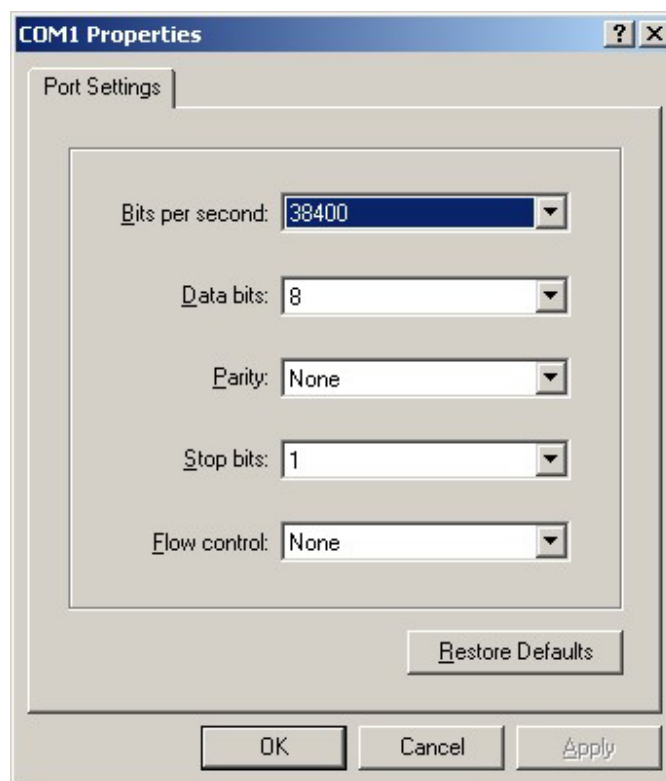




3. Set the connection to COM1.



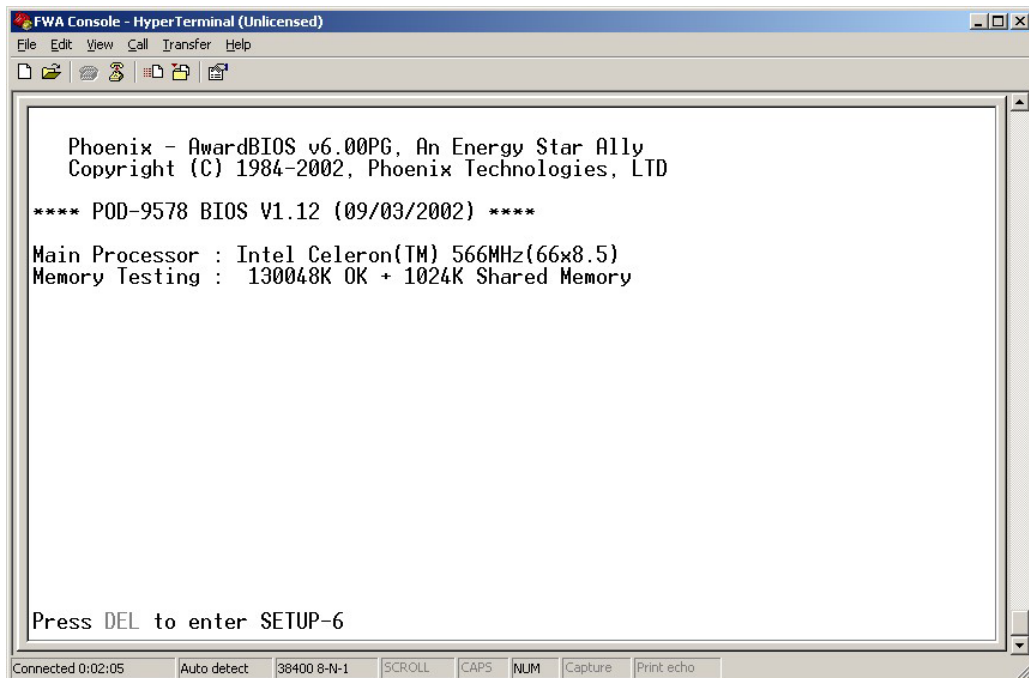
4. Set the baud rate to 38400bps for COM1. It emulates ANSI.



Port settings to be configured:

Bits per second	38400 (bps)
Data bits	8
Parity	None
Stop bits	1
Flow control	None

The screen shows Client performs Hyperterminal in remote site.

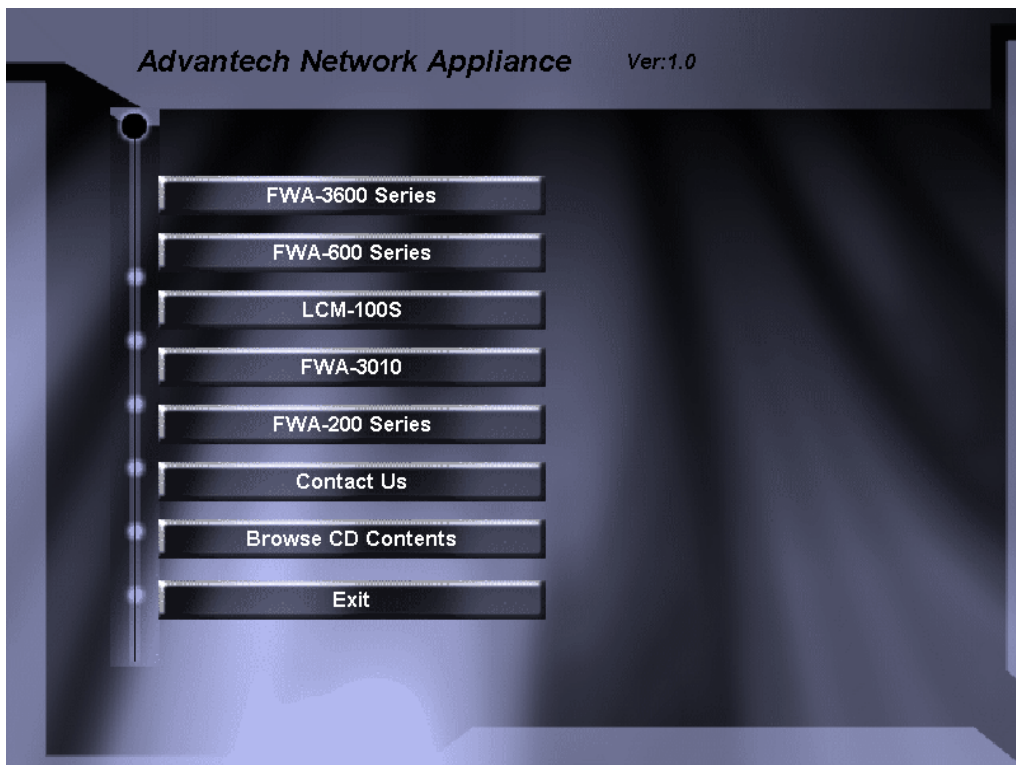


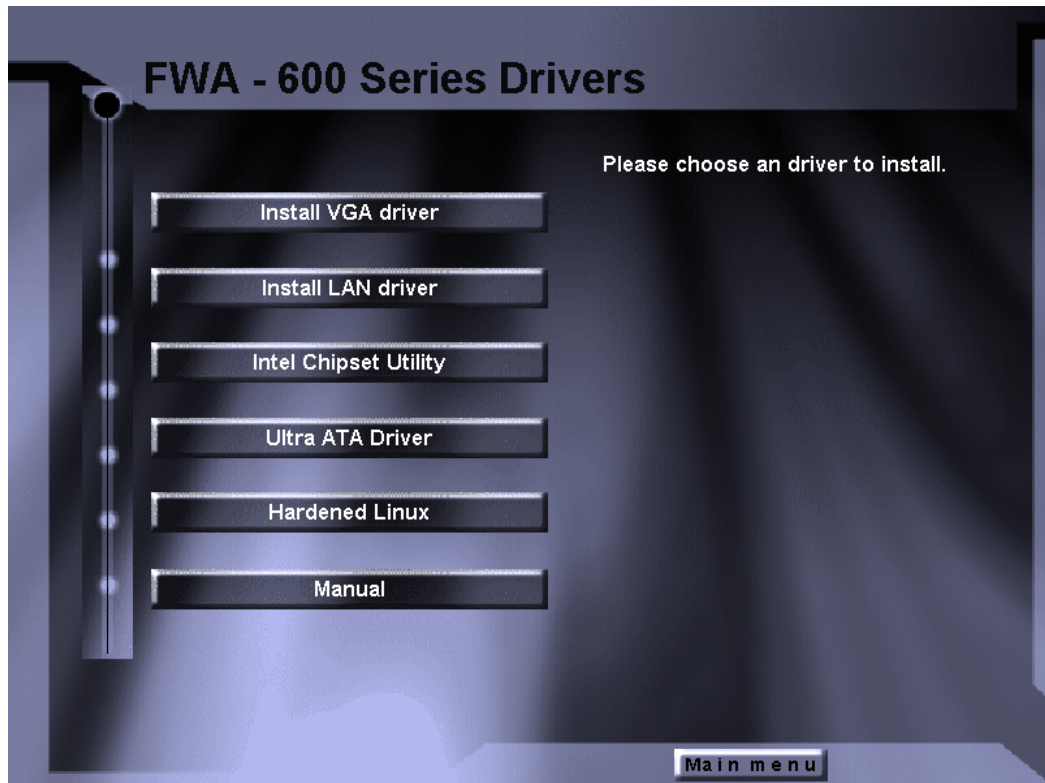


## Chapter 3 Driver Installation

The FWA-600 series supports several Operating Systems including Microsoft Windows 2000/XP and Linux 6.x/7.x.

In the driver bank CD disc, there are some options as below when running "Setup" or CD auto-run.





There are some selections on the screen above: 1) Install VGA driver 2) Install LAN driver 3) Install Intel Chipset Utility 4) Install Ultra ATA Driver 5) Hardened Linux 6) Manual

### **3.1 Install VGA Driver**

Since the platform doesn't provide external VGA port, it is recommended to turn off the VGA such that the system performance will be increased.

Click "**Install VGA driver**" selection. There is one folder- "**Win2000**"

#### **3.1.1 Driver Installation for WIN 2000**

1. Open "**Win2000**" folder.
2. Excute"**setup.exe**"
3. Restart your computer when the installation has completed.

### **3.1.2 Driver Installation for Linux**

Intel i810 / i815 Graphic Driver Installation Notes

**\* A. Download and read the Intel Graphic Release Notes**

**(<http://support.intel.com>)**

**B. Download two RPM files from [support.intel.com](http://support.intel.com)**

i810Gtt-0.2-4.src.rpm and XFCom\_i810-1.2-3.i386.rpm

**\* Prerequisites**

**a. XFree86 3.3.6**

**b. Kernel version 2.2.x or higher with sources**

**c. glibc 2.1 or higher**

**d. gcc**

**\*\* RedHat 6.2 includes all of them \*\***

**\* The following steps are done in Redhat 6.2**

**A. Compile and install the kernel module**

```
mkdir /810
```

```
# copy two rpm files (I810Gtt-0.2-4.src.rpm
```

```
                  XFCom_i810-1.2-3.i386.rpm) to /810
```

```
cd /810
```

```
rpm --recompile I810Gtt-0.2-4.src.rpm
```

**A. Verify that the module has been correctly loaded**

```
cat /proc/modules | grep agpgart
```

```
# A line starting with "agpgart" should be produced
```

**B. XFCom i810 Server Installation**

**(1) Verify the XFree86 version**

```
/bin/sh -c 'X -version 2>&1 |head -2'
```

```
# the version has to be 3.3.6
```

**(2) Install the XFXom\_i810 server**

```
cd /810
```

```
rpm -Uvh XFCom_i810-1.2-3.i386.rpm
```



**C. Use Xconfigurator to setup the XF86Config file**

```
su -c Xconfigurator
```

**D. Start X windows**

```
startx
```

## 3.2 Install LAN Driver

### 3.2.1 Driver Installation for WIN 2000/XP

Please follow the following procedure:

1. Boot Windows from your hard disk and log in as Administrator.
2. From the “**Control Panel**”, double-click the “**System**” icon, select the “**Hardware**” tab, and click the “**Device Manager**” button.
3. Expand the “**Computer\Other**” devices. Highlight "**PCI Ethernet Controller**" and click on "**Properties**".
4. From the “**Properties**” dialog box, click the “**Driver**” tab and click the “**Update Driver**” button. The Update Device Driver Wizard appears. Click “**Next**”.
5. In the "**Update Device Driver Wizard**" window, select “**Display a list of the known drivers for this device**”.
6. Click “**Hard have...**”. Click Specify a location and click “**Browse**” button. Then, navigate to “**F:\82559er**” (where “**F**” should be substituted as your CD-ROM drive), and click “**Next**”.
7. Click “**Next**” to accept the updated driver for “**Intel(R) GD82559ER Fast Ethernet Adapter**”. Click “**Next**” to continue with LAN driver installation.
8. Follow the instructions on the screen. Click “**Finish**” to complete installation.

### 3.2.2 Driver Installation for Linux

Please go to E:\Driver\lan\562\LINUX\Red-hat62 for LAN1 and E:\Driver\lan\559er\linux for LAN2, LAN3 and LAN4 when driver CD is inserted into CD-ROM drive.

Please follow the following steps:

1. Untar/unzip the archive by entering the following, where x.x.x is the version number for the driver tar:

```
tar xzf e100-x.x.x.tar.gz
```

2. Change to the driver src directory by entering the following, where x.x.x is the version number for the driver tar:

```
cd e100-x.x.x/src/
```

3. Compile the driver module:

```
make install
```

The binary will be installed as:

For Linux 2.2.x systems:

```
/lib/modules/[KERNEL_VERSION]/net/e100.o
```

For Linux 2.4.x systems:

```
/lib/modules/[KERNEL_VERSION]/kernel/drivers/net/e100.o
```

The install locations listed above are the default locations. They may not be correct for certain Linux distributions. For more information, see the ldistrib.txt file included in the driver tar.

4. Install the module:

```
insmod e100 <parameter>=<value>
```

NOTE: If you are using Hot Plug, see the "Hot Plug" section below.

5. Assign an IP address to the interface by entering the following, where <x> is interface number:

```
ifconfig ethx <IP_address>
```

6. Verify that the interface works. Enter the following, where <IP\_address> is the IP address for another machine on the same subnet as the interface that is being tested:

```
ping <IP_address>
```

NOTE: In order to see link messages and other Intel driver information on your console, you must set the dmesg level up to six. This can be done by entering the following on the command line:

```
dmesg -n 6
```

If you wish to see all messages issued by the driver, including debug messages, set the dmesg level to seven.

# Chapter 4 Watchdog Timer and LAN Bypass

## 4.1 Watchdog Timer Programming

The FWA-600 series is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone, or unmanned, environments.

In order to program the watchdog timer, you must write a program which writes I/O port address 43 (hex). The output data is a value of time interval. The value range is from 01(hex) to 3E (hex), and the related time interval is 1 sec. to 62 sec.

<b>Data</b>	<b>Time Interval</b>
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
.	
.	
.	
3E	62 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 43 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 43 (hex).

The following example shows how you might program the watchdog timer in C language:

```
#include <fcntl.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <asm/io.h>

#define WDT_EFER 0x2E
#define WDT_EFDR 0x2F

int main(int argc, char *argv[])
{
    ioperm( 0x2e, 3, 1);
    iopl(3);
    // Enter the extended function mode
    outb(0x87,WDT_EFER);
    outb(0x87,WDT_EFER);
    // Select the GPIO2 group
    outb(0x07,WDT_EFER);
    outb(0x08,WDT_EFDR);
    // Select the CR30 to enable GPIO2
    outb(0x30,WDT_EFER);
    outb(0x01,WDT_EFDR);

    printf("Press any key to start watchdog counting");
    getchar();
    // Set watchdog begin
    // Select the CRF6 to set watchdog timeout value and enable it
    outb(0xF6,WDT_EFER);
    outb(0x10,WDT_EFDR);
    //
    //Set watchdog end

    // Exit the extended function mode
    outb(0xAA,WDT_EFER);
}
```

## 4.2 LAN Bypass Function

The motherboard for FWA-600 series is POD-9578. The POD-9578 reserves LAN Bypass hardware. That means the standard platform does not own the function. It belongs to customized project.

Here, POD-9578 uses ICH2 GPO23 to control relay ON/OFF for LAN bypass function. Customers can set default LAN Bypass or normal in CMOS parameter. After BIOS booting and OS booting, customers can set LAN BYPASS status via programming ICH2 GPO23. Please read ICH2 datasheet put in driver CD to design your AP (Application Software). The LAN Bypass operation procedure is described as the following **for reference only**. The procedure should be inserted into customer's AP.

### J2 L3, L4 by pass control

Pins	Auto Detect* by GPIO	Always enable
1-3	Closed	open
3-5	NA	open
2-4	Closed	NA
4-6	NA	Closed

\* Default setting

The following example shows how you might program the LAN bypass in C language:

```
#include <fcntl.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <sys/io.h>

void printUsage(void);
char a,b;
int main(int argc, char *argv[])
{
    iopl(3);
    ioperm( 0x48E,2,1);

    switch (argc)
    {
        case 2:
            if (strcmp("e", argv[1]) == 0)
            {
                // To enable LanBypass function
                printf(" Press any key to enable LanBypass function :");
                getchar();
                a = inb(0x48E);
                a &= 0x0F;
                outb(a, 0x48E);
                usleep(100000);
            }
            else if(strcmp("d", argv[1]) == 0)
            {
                // To disable LanBypass function
                a = inb(0x48E);
                a |= 0x80;
                printf(" Press any key to disable LanBypass function :");
                getchar();
                outb(a, 0x48E);
                usleep(100000);
            }
            else
            {
                printUsage();
            }
            break;
    }
}
```

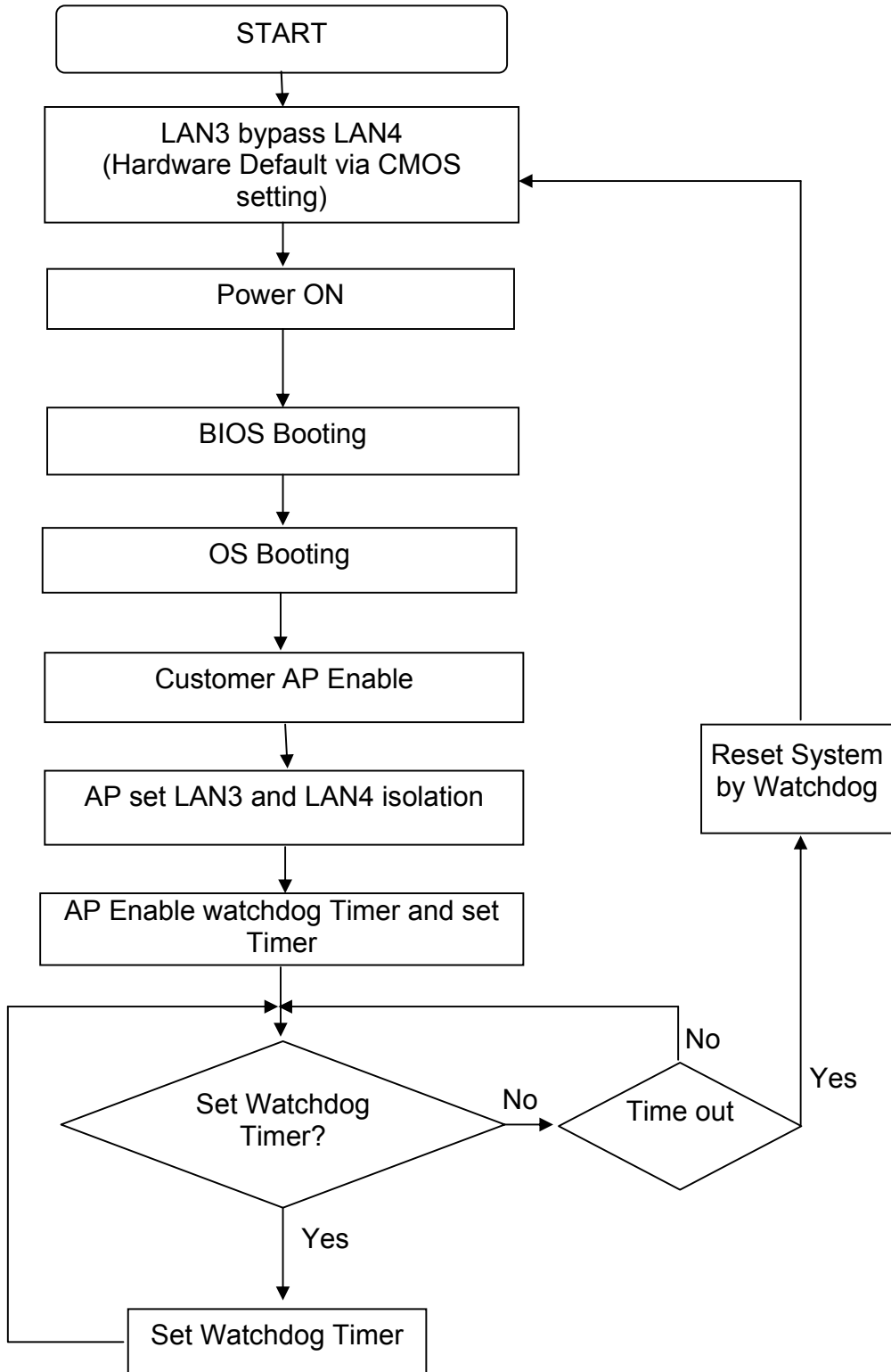


```

        default:
            printUsage();
            break;
    }
}
void printUsage(void)
{
    a = inb(0x48E);
    b = a;
    b &= 0x80;
    if ( (int)b == 0x00)
        printf("Now the LanBypass function is enable\n");
    else
        printf("Now the LanBypass function is disable\n");
    printf("\n-----Usage-----\n");
    printf("Enable LanBypass : relay e\n");
    printf("disable LanBypass : relay d\n");
}

```

## LAN BYPASS FUNCTION OPERATION PROCEDURE



## Chapter 5 BIOS Setup

Award BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM), so that it retains the Setup information when the power is turned off.

You should be able to use the BIOS optimized default settings as they come from the factory. If you want to check or alter BIOS settings, run the CMOS Setup Utility by pressing the “**Del**” key command during the POST. If you think the settings need to be refreshed, run the Setup Utility, choose the “**Load Optimized Defaults**” option from the main menu, save and reboot.

### 5.1 Function Keys

The Function Keys are located at the bottom of CMOS setup screen. The keys allow users to navigate then main setup menu. The following table lists describe their functions.

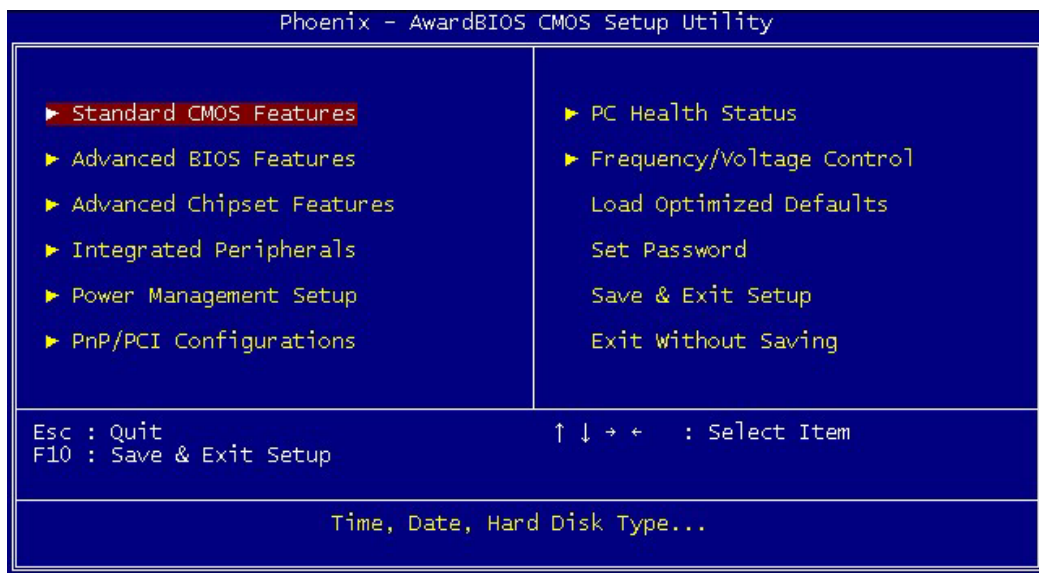
<b>Key</b>	<b>Function Description</b>
Esc	Jump to Exit menu or return to the main menu from sub-menu
↑ or ↓	Move the cursor to the up or down between fields
← or →	Select the menu item to the left or the right
<b>Enter</b>	Select menu item
<b>F10</b>	Save & Exit Setup

The Function keys of **sub-menu** are described as below:

<b>Key</b>	<b>Function Description</b>
Esc	Jump to Exit menu or return to the main menu from sub-menu
↑ or ↓	Move the cursor to the up or down between fields
← or →	Select the menu item to the left or the right
<b>PU/PD</b>	Modify the value or setting
+/-	Modify the value or setting
<b>Enter</b>	Select the menu item
<b>F1</b>	Display the General Help screen from anywhere in the BIOS Setup
<b>F5</b>	Load Previous Values
<b>F7</b>	Load Optimized Defaults
<b>F10</b>	Save the setting

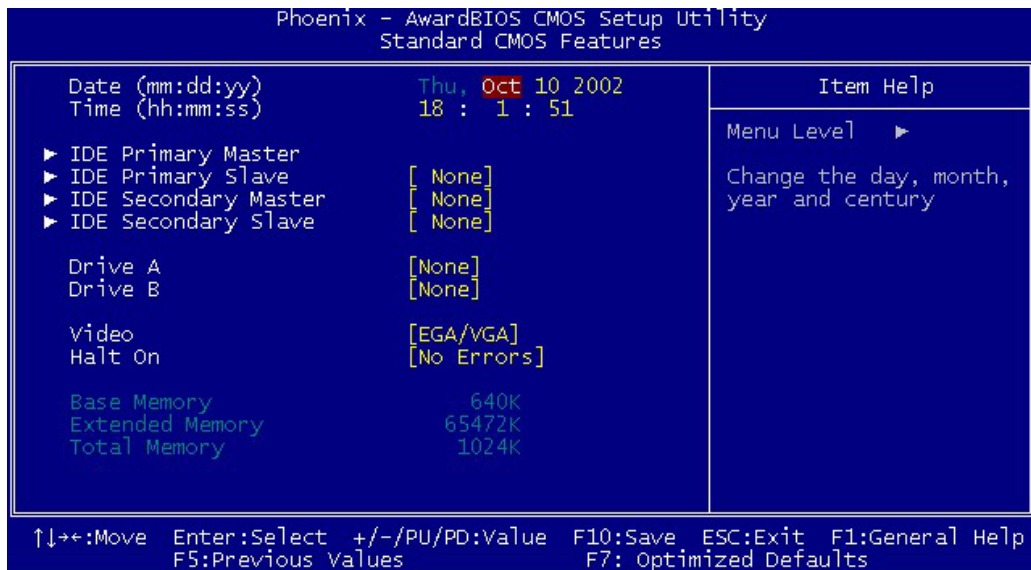
## 5.2 Main Menu

When the Setup program is accessed, the following screen appears. Move arrow keys to the appropriate place you will setup and press “**Enter**” for selection.



## 5.2.1 Standard CMOS Features

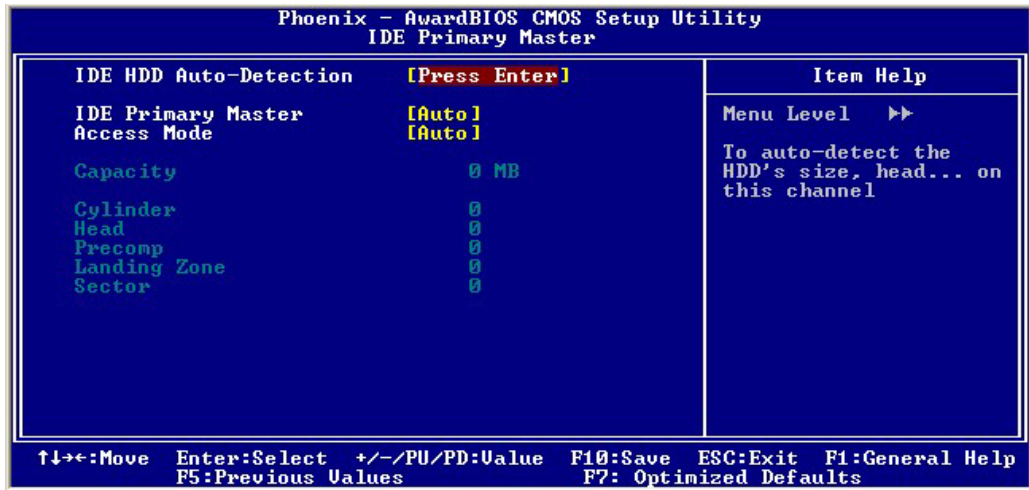
Choose the “Standard CMOS Features” option from main menu. The “Standard CMOS Features” allows users to configure system components such as date, time, hard disk drive and floppy drive types showed in the screen below:



**Date (mm:dd:yy):** Set the system date. The format is month, day and year. Move to proper place by arrow keys in order to modify the values by Page Up/+ Key or Page Down/- Key.

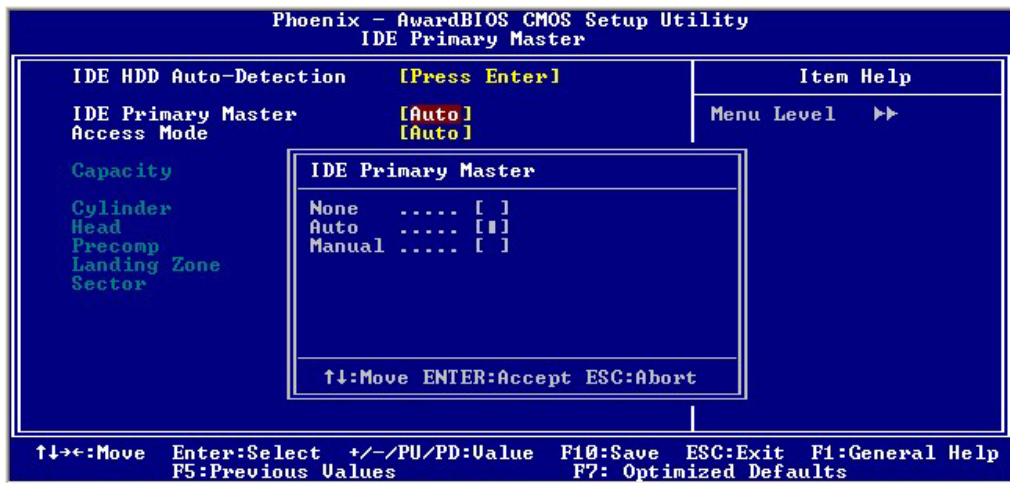
**Time (hh:mm:ss):** change internal clock.

**IDE Primary Master:** Move the highlight to the “IDE Primary Master” and enter to get the following screen.

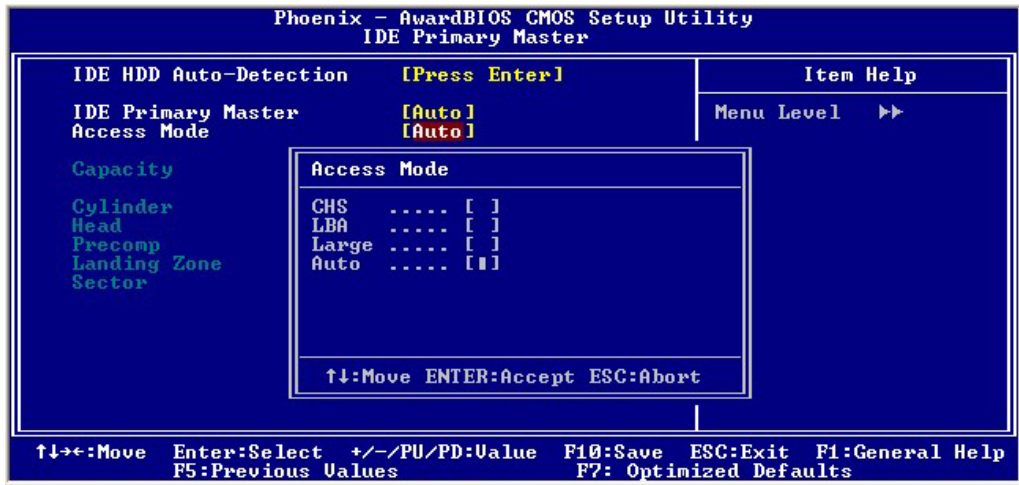


IDE HDD Auto-Detection: To auto-detect the capacity, cylinder, head and sector of HDD

IDE Primary Master: [Auto/Manual/None]



Access Mode: [Auto/Large/LBA/CHS]



**IDE Primary Slave:** Choose the option then get the following three items.

IDE HDD Auto-Detection: To auto-detect the capacity, cylinder, head and sector of HDD

IDE Primary Slave: [Auto/Manual/None]

Access Mode: [Auto/Large/LBA/CHS]

**IDE Secondary Master:** Choose the option then get the following three items.

IDE HDD Auto-Detection: To auto-detect the capacity, cylinder, head and sector of HDD

IDE Secondary Master: [Auto/Manual/None]

Access Mode: [Auto/Large/LBA/CHS]

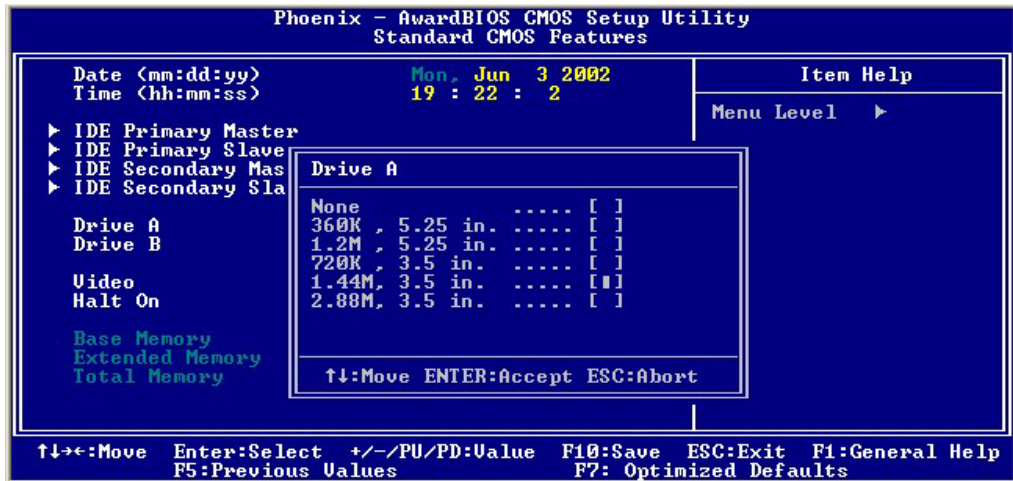
**IDE Secondary Slave:** Choose the option then get the following three items.

IDE HDD Auto-Detection: To auto-detect the capacity, cylinder, head and sector of HDD

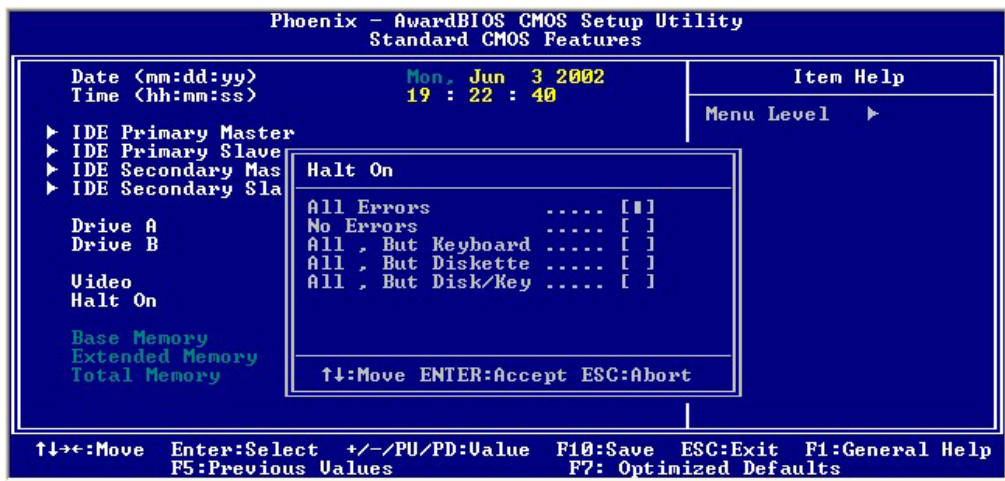
IDE Secondary Slave: [Auto/Manual/None]

Access Mode: [Auto/Large/LBA/CHS]

**Drive A:** Set the type of floppy drive installed by Page Up Key and Page Down.



**Halt On:** Set system halt on when specified item occurs.







**CPU L2 Cache ECC checking [Enabled/ Disabled]**

**Processor Number Feature [Enable/Disable]**

**Quick Power On Self Test (POST) [Enabled/Disabled]:** Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

**First Boot Device [Floppy/SCSI/CD-ROM/HDD/LAN/Disabled]:** Select your boot device priority

**Second Boot Device [Floppy/SCSI/CD-ROM/HDD/LAN/Disabled]:** Select your boot device priority

**Third Boot Device [Floppy/SCSI/CD-ROM/HDD/LAN/Disabled]:** Select your boot device priority

**Boot Other Device [Enabled/Disabled]:** Select your boot device priority

**Swap Floppy Drive [Enabled/Disabled]:** If the system has two floppy drives, choose physical drive B to logical drive A and vice versa.

**Boot Up Floppy Seek [Enabled/Disabled]:** **Enable-**During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. A 360 KB type drive is 40 tracks; while 720 KB, 1.2 MB, and 1.44 MB type drives are all 80 tracks.

**Disable-** BIOS will not search for the floppy drive type by track number.  
**Boot on NumLock status [On/Off]:** Select power on state for NumLock.

**Gate A20 Option [Fast/Normal]:** **Fast-** let chipset control Gate A20; **Normal-**a pin in keyboard controller controls Gate A20. Default is set “**Fast**”.

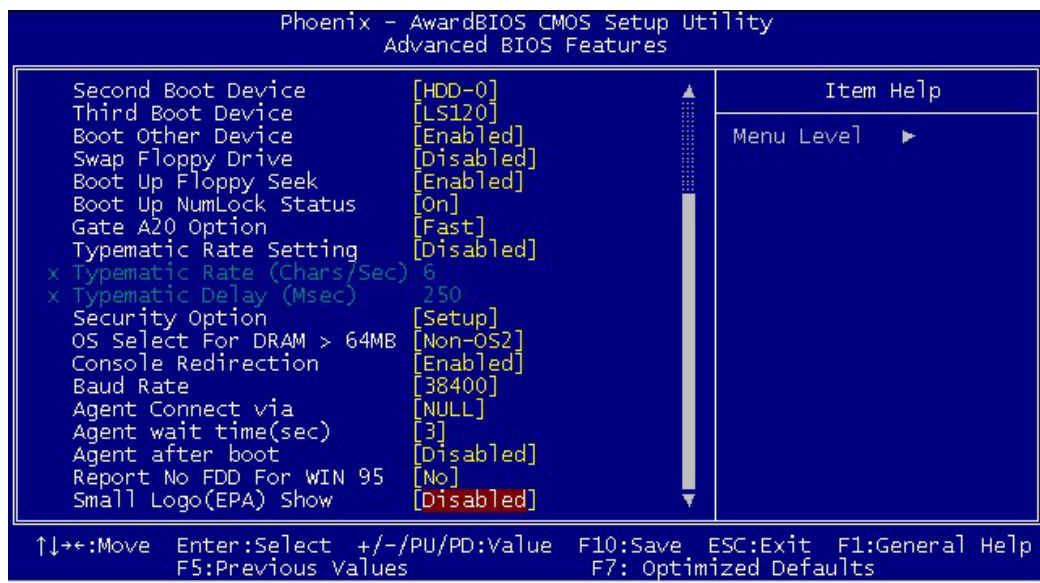
**Typematic Rate Setting [Enabled/Disabled]:** Keystrokes repeat at a rate determined by keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

**Typematic Rate (Chars/Sec):** BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24 and 30.

**Typematic Delay (msec):** Typematic delay is the time interval between the appearances of two consecutive characters, when holding down a key. The input values for this category are: 250, 500, 750, 1000 (msec).

**Security Option [System/Setup]:** The setting determines whether the system will boot up if the password is denied. Access to Setup is, however, always limited. **System-** The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt. **Setup-** The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

**OS/2 selection for DRAM > 64MB[Non-OS2/ OS2]:** Select OS2 if you are running OS/2 Operating System with greater than 64MB of RAM on the system.

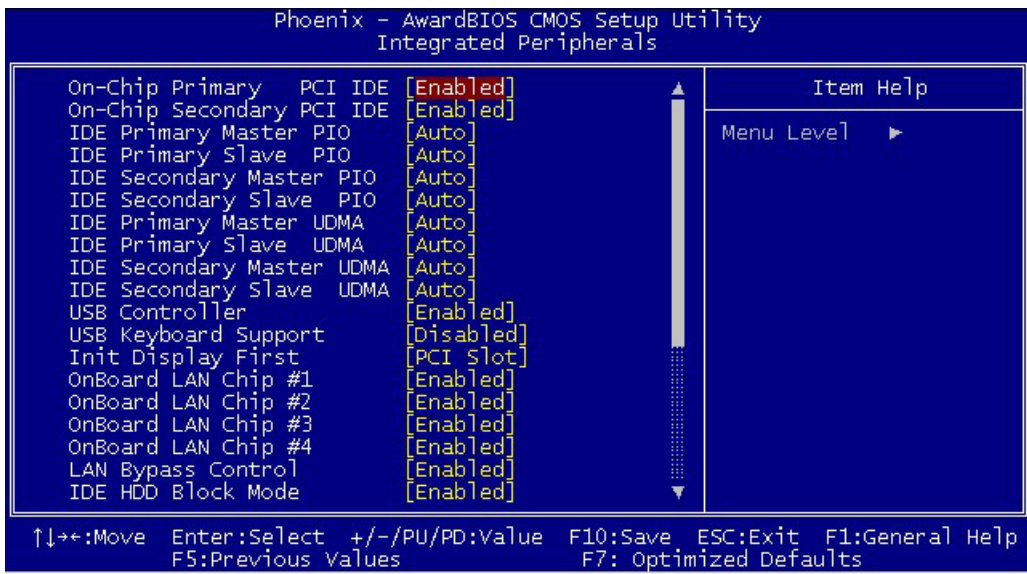
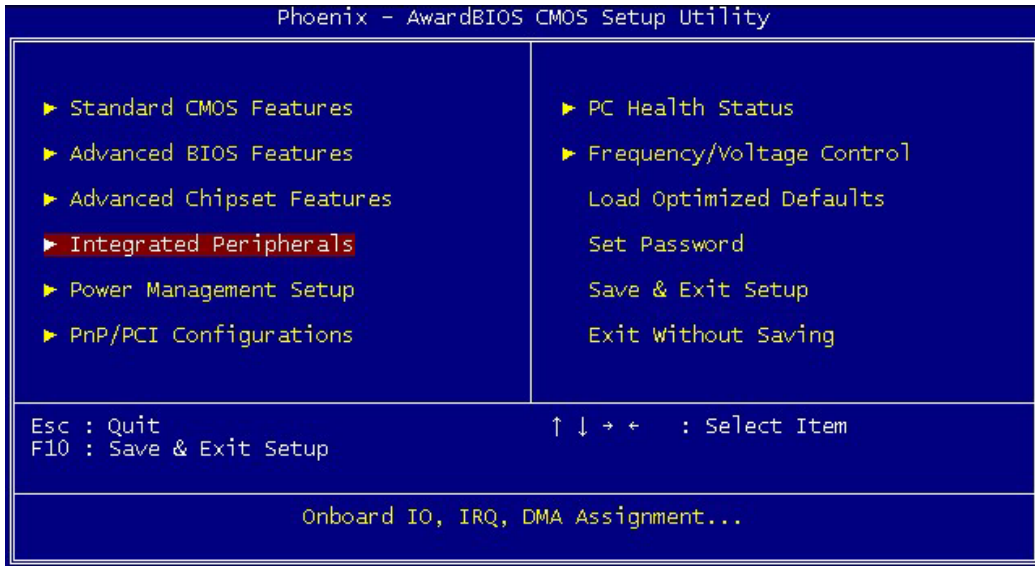


**Console Redirection [Enable/Disable]**

**Baud Rate [38400/19200/14400/9600/...]**



## 5.2.4 Integrated Peripherals



**On-Chip Primary PCI IDE [Enabled/Disabled]:** The system provides an onboard on-chipset PCI IDE controller that supports Dual Channel IDE. A maximum of 4 IDE devices can be supported. If user installed the Off-Board PCI IDE controller, the user must choose which channels to disable. This will depend on the channel used in the PCI Off-Board add-on card.

**IDE Primary Master/Slave PIO [Auto/Mode0/Mode 1-4]**

Each channel has both a master and a slave, making four IDE devices possible. Because each IDE device may have a different Mode timing (0,1,2,3,4), it is necessary for these to be independent. The default setting “**Auto**” will allow auto-detection to ensure optimal performance.

**IDE Primary Master/Slave UDMA [Auto/Disabled]**

**On-Chip Secondary PCI IDE [Enabled/Disabled]**

**IDE Secondary Master/Slave PIO [Auto/Mode0/Mode 1-4]**

**IDE Secondary Master/Slave UDMA [Auto/Disabled]**

**USB Controller [Enabled/Disabled]**

**USB Keyboard Support [Enabled/Disabled]:** Choosing “**Enabled**” will allow the system to use USB keyboard without device driver.

**Init Display First [PCI slot/ AGP]**

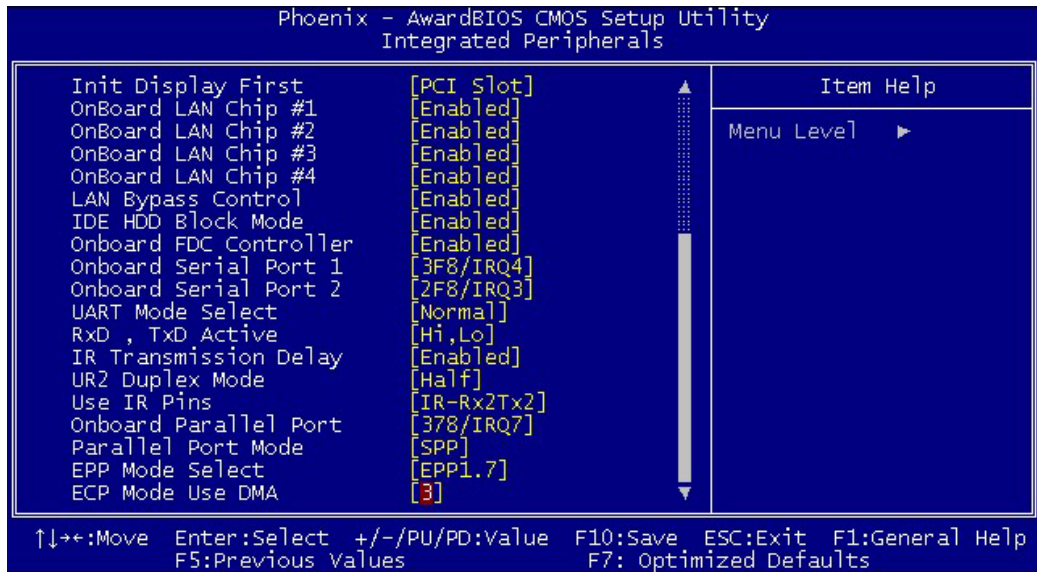
**Onboard LAN chip #1 [Enable/ Disable]**

**Onboard LAN chip #2 [Enable/ Disable]**

**Onboard LAN chip #3 [Enable/ Disable]**

**Onboard LAN chip #4 [Enable/ Disable]**

**LAN Bypass Control [Enable/Disable]:** for model with LAN bypass function only.



**IDE HDD Block Mode [Enabled/Disabled]:** Enabled allows the Block mode access for the IDE HDD

**Onboard FDC Controller [Enabled/Disabled]:** The system has an on-board Super I/O chip with a FDD controller that supports a FDD Drive for 360K/720K/1.2M/1.44M. Choose “**Enabled**” to use the on-board FDD controller for accessing the FDD. Otherwise choose ”**Disabled**” to use the off-board FDD controller.

#### Onboard Serial Port 1

[Auto/Disable/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)]

#### Onboard Serial Port 2

[Auto/Disable/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)]

The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

**Auto**

**Disable**

**3F8/IRQ4**      **COM 1 uses IRQ4**

**2F8/IRQ3**      **COM 2 uses IRQ3**

**3E8/IRQ4**      **COM 3 uses IRQ4**

**2E8/IRQ3**      **COM 4 uses IRQ3**

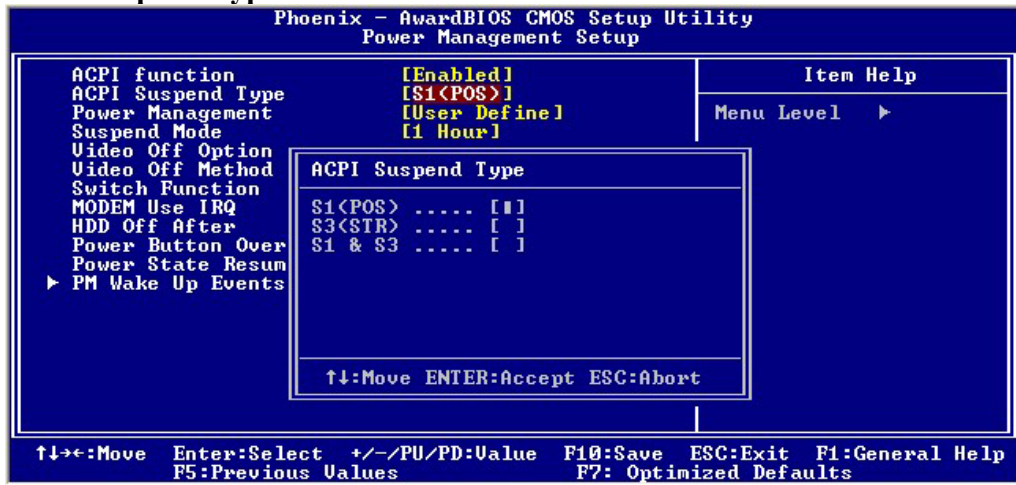
**ECP Mode Use DMA:** In **ECP Mode Use DMA**, you can select DMA channel 1 or DMA channel 3. Leave this field on the default setting.



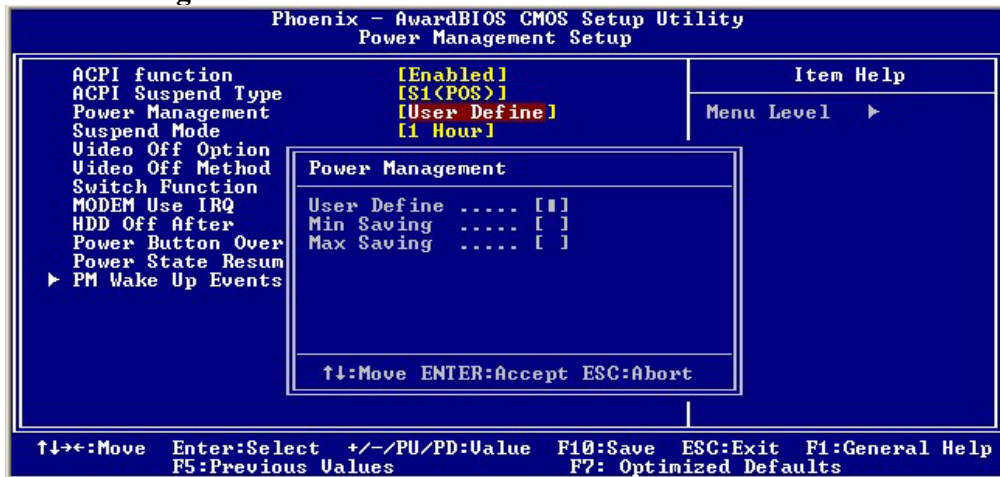




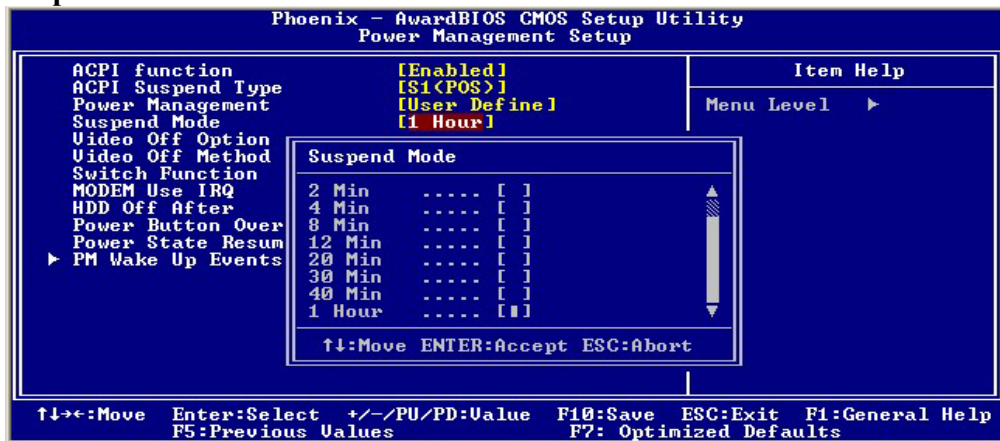
### ACPI Suspend Type



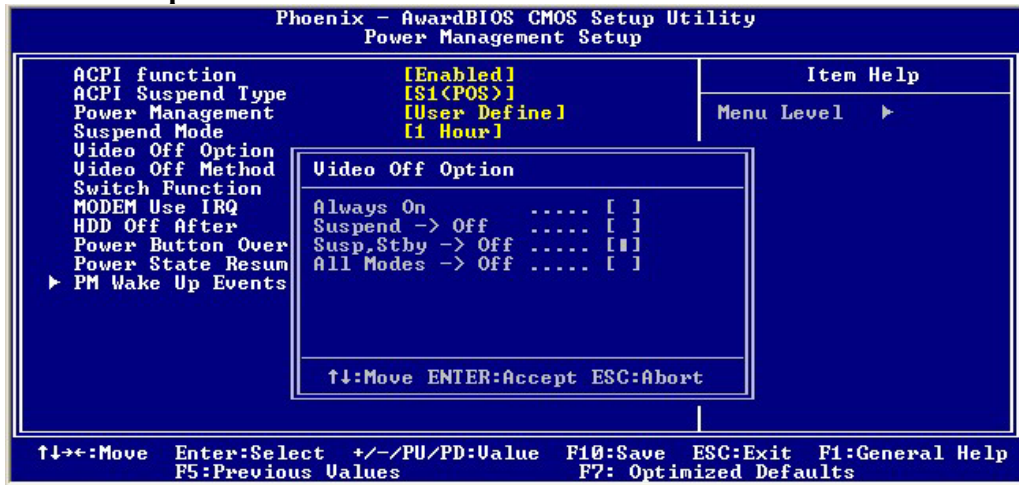
### Power Management:



### Suspend Mode:



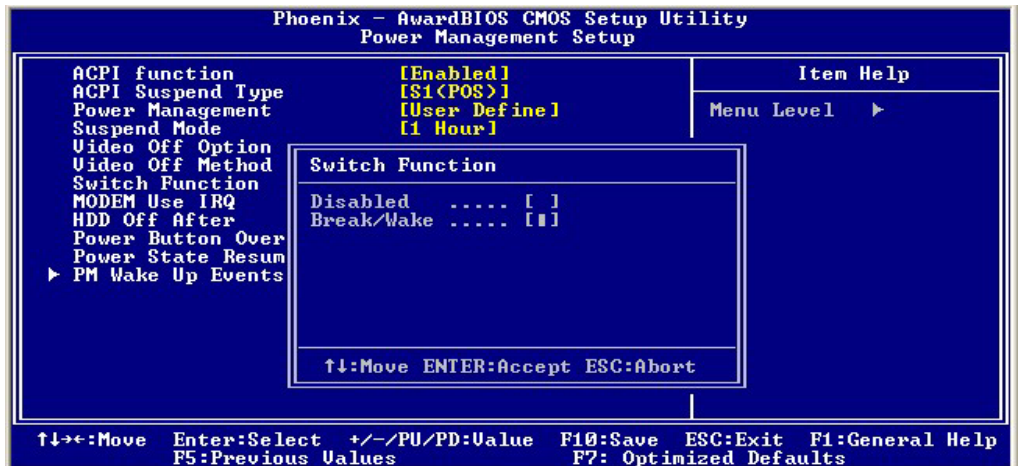
### Video Off Option:



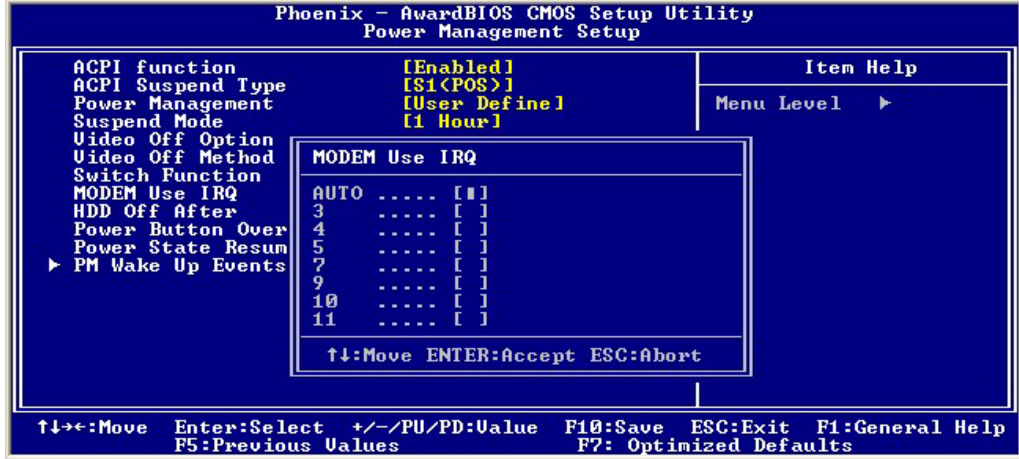
### Video Off Method:



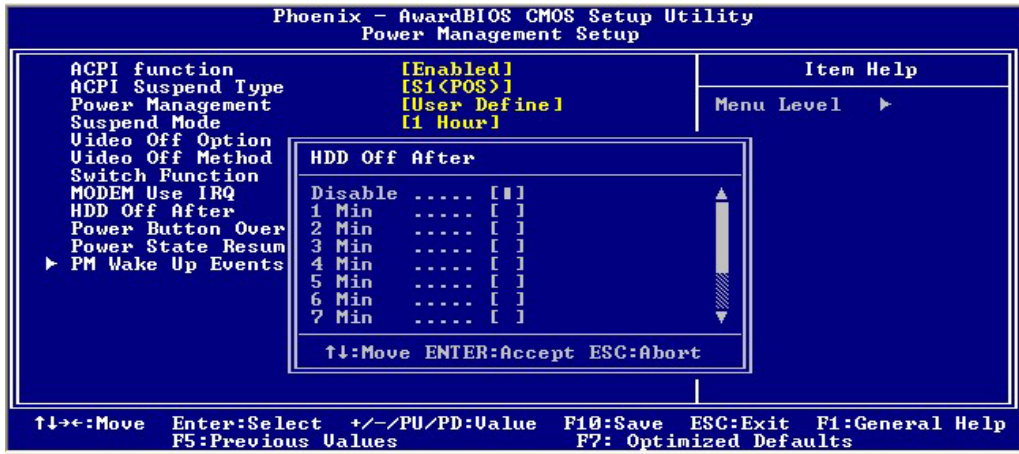
### Switch Function:



**MODEM Use IRQ:**



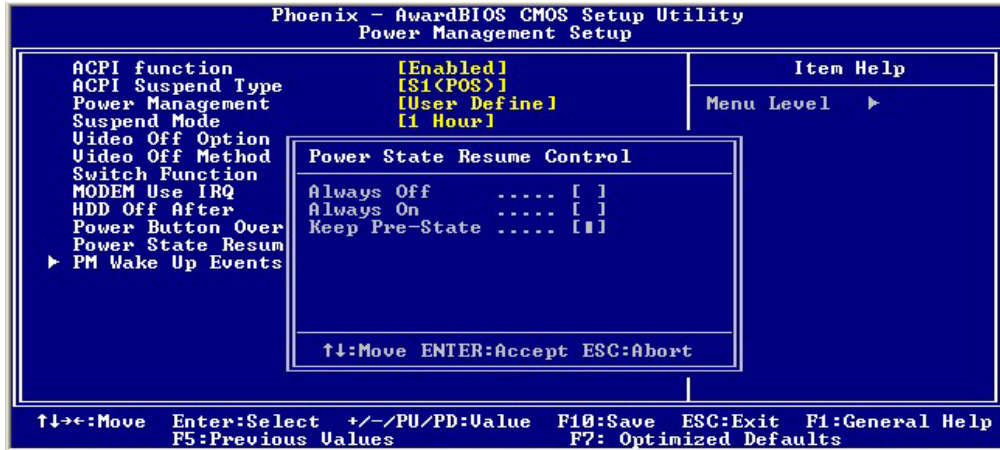
**HDD Off After:**



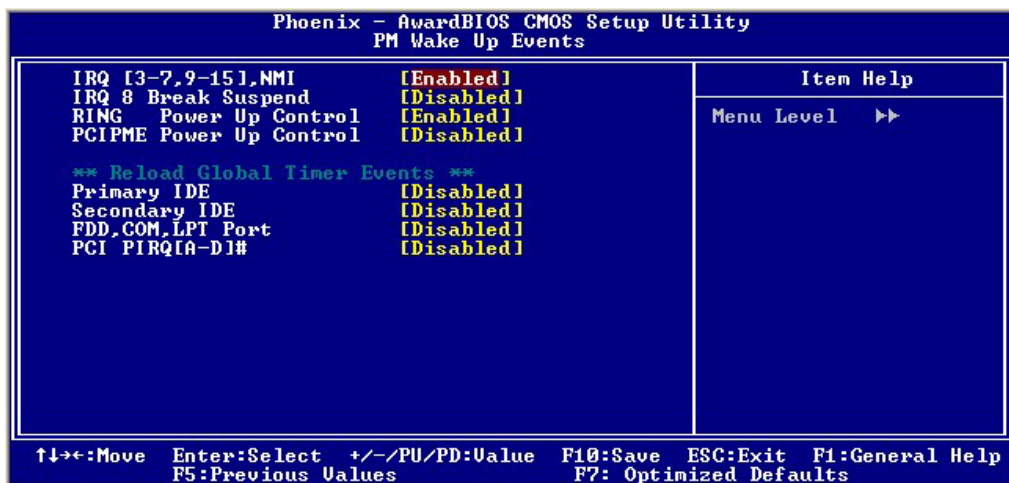
**Power Button Override:**



### Power State Resume Control:

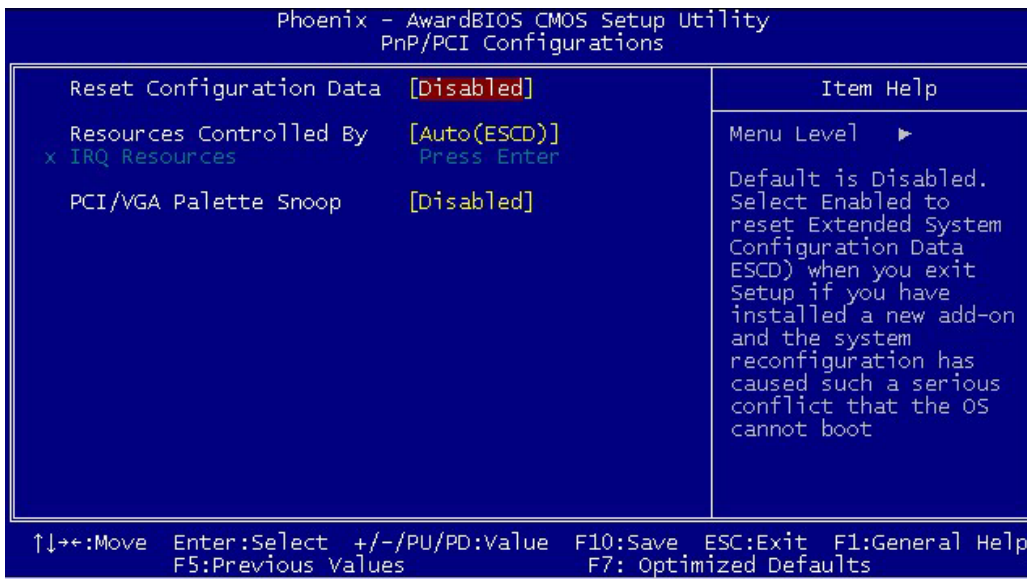


### PM Wake Up Events:





## 5.2.6 PnP/PCI Configurations



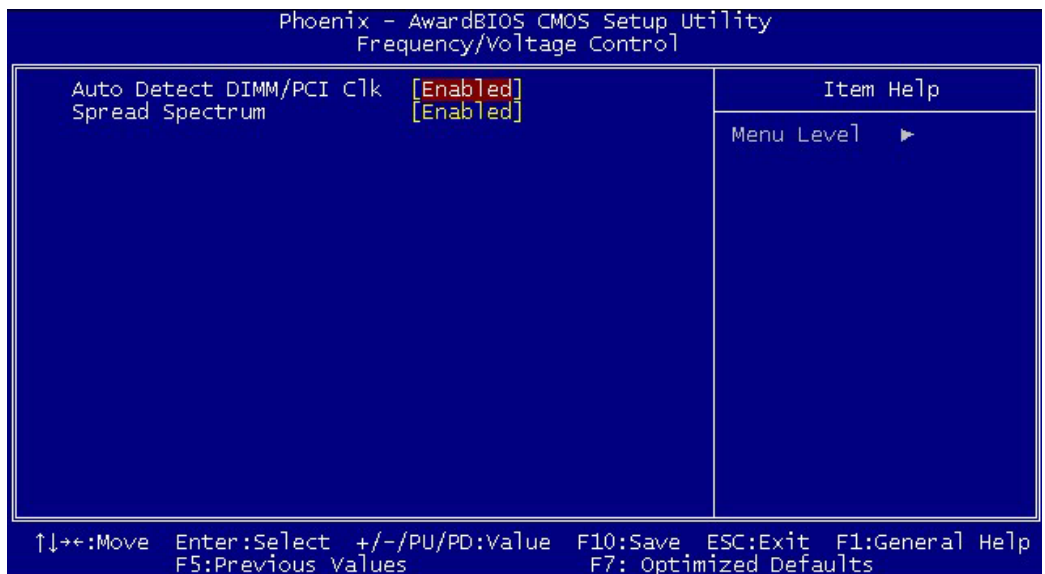
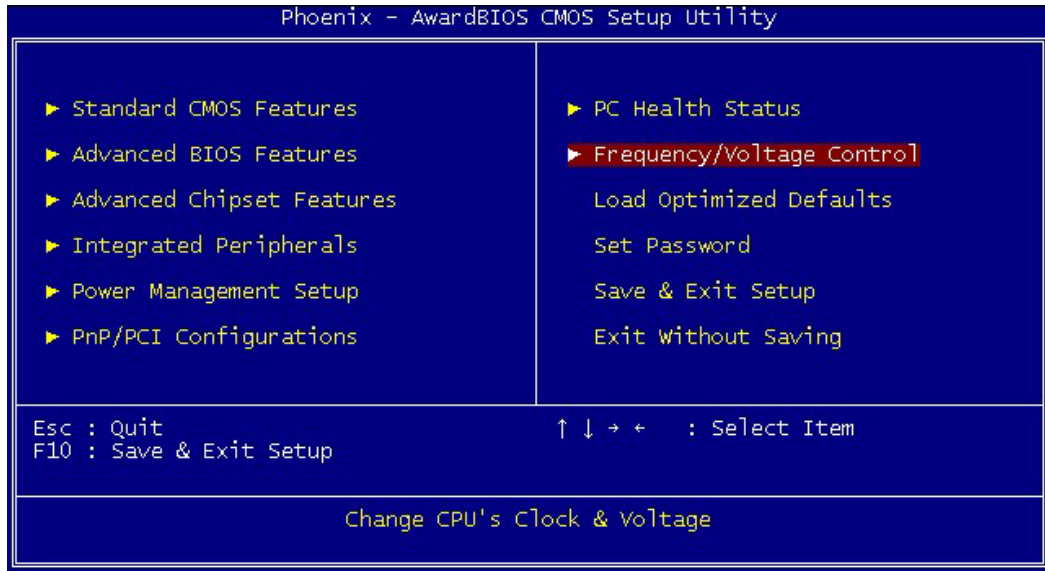
**Reset Configuration Data [Disabled/Enabled]:** Default is **Disabled**. Select **Enabled** to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

**Resources Controlled by [Auto/Manual]:** BIOS can automatically configure all the boot and plug & play compatible devices. If you choose Auto, you cannot select IRQ, DMA and memory base address fields, since BIOS automatically assigns them.

**PCI/VGA Palette Snoop [Disabled/Enabled]:** Some display cards that are nonstandard VGA, such as graphics accelerators or MPEG Video Cards, may not show colors properly. The setting **Enabled** should correct this problem. Otherwise, leave this on the setup default setting of **Disabled**. Recommend set **Disabled**.



## 5.2.8 Frequency/Voltage Control



**Auto Detect DIMM/PCI Clk [Enable/ Disable]**

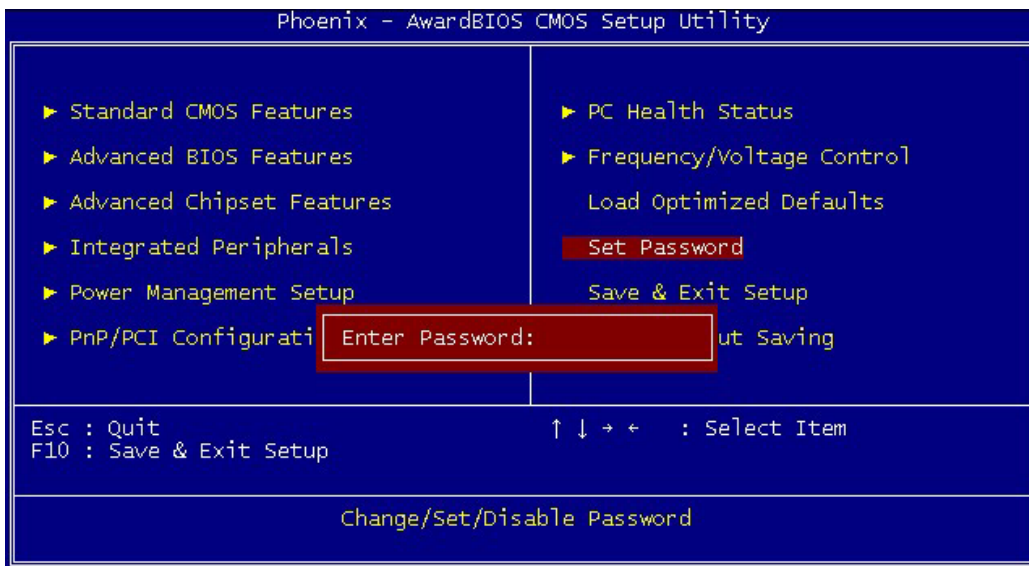
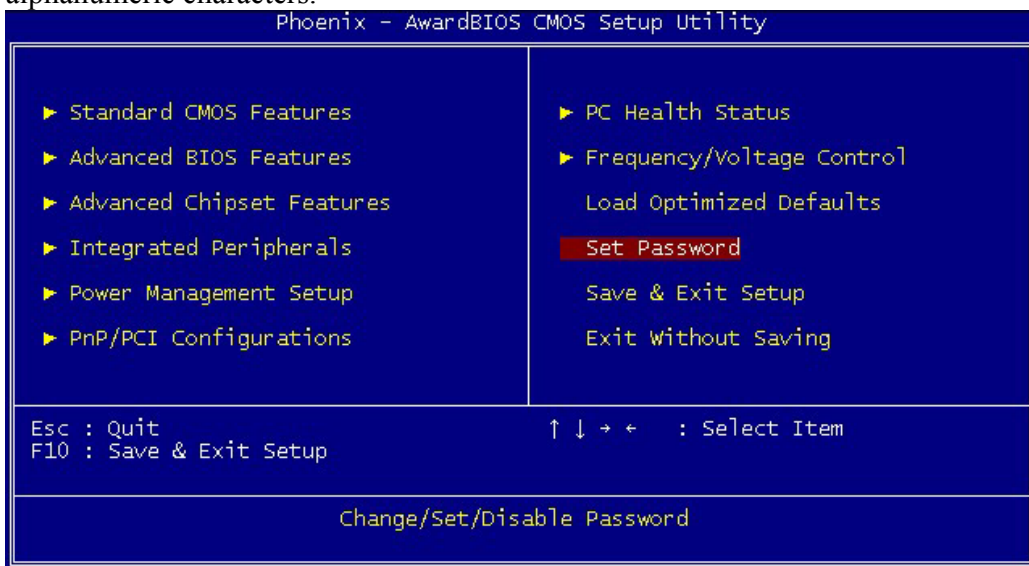
**Spread Spectrum [Enable/ Disable]**





## 5.2.10 Set Password

The option allows you to set or change user password. To set the user password, press “**Enter**”. Type password and press “**Enter**”. You can type up eight alphanumeric characters.



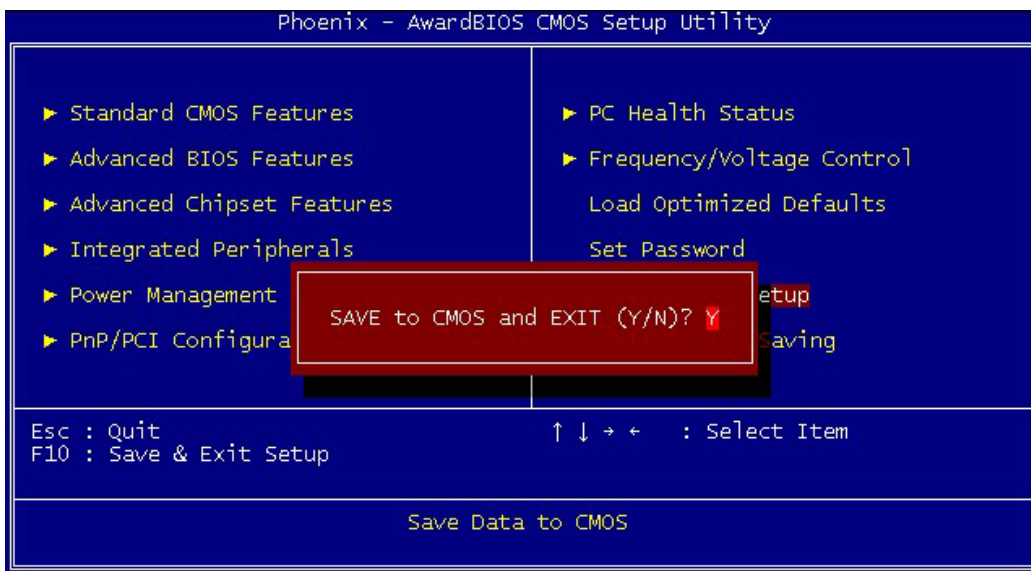
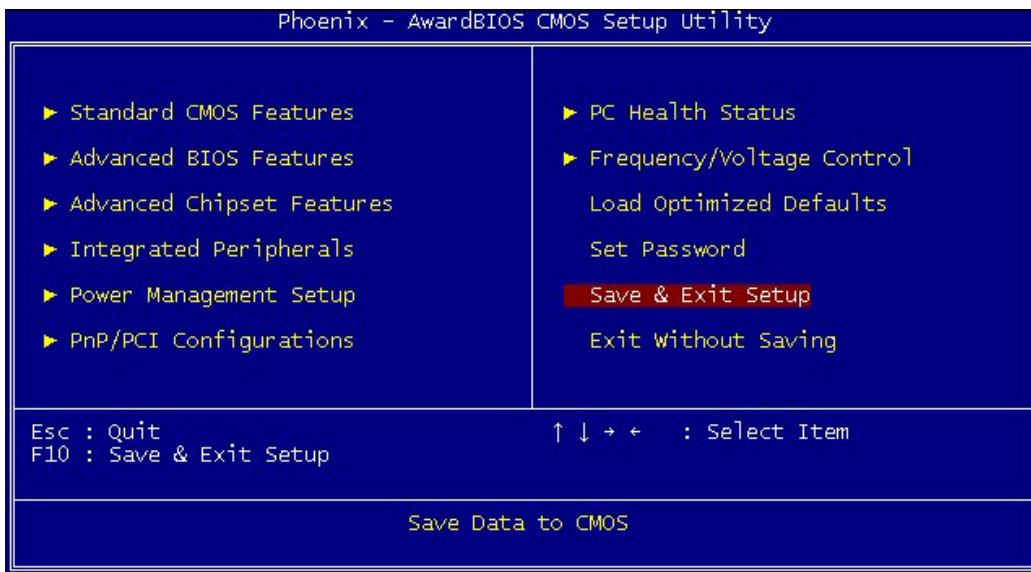
If the CMOS is good or if this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

### Confirm Password:

Input the current password and press “**Enter**”.

### 5.2.11 Save & Exit Setup

Once you finish your selection, choose the option to save the values you selected to CMOS RAM. The CMOS RAM is sustained by an on board backup battery and stays on even system is turned off. Once the option is selected, a confirmation is asked. Select “Y” to save changes and exit.



## 5.2.12 Exit without Saving

The option should only be used if you do not want to save the changes you have made to the Setup program. If you have made changes to the fields, the system will ask for confirmation before existing. Select “Y” then the system will keep previous values.

