AXIOMTEK

rBOX204-FL Series

Robust Din-rail Fanless Embedded System User's Manual

RoHS

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Safety Precautions

Before getting started, please read the following important safety precautions.

1. The **rBOX204-FL** does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.

2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.

3. Disconnect the power cord from the **rBOX204-FL** before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the **rBOX204-FL** is properly grounded.

4. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

5. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.

6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -45 or above 85 . It may damage the equipment.

7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

    ■   Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.

    ■   When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

Classification

1.　Degree of production against electric shock: not classified
2.　Degree of protection against the ingress of water: IP30
3.　Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4.　Mode of operation: Continuous
5.　Type of protection against electric shock: Class I equipment

General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

1.　Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
2.　Turn the system off before you start to clean up the component or computer.
3.　Never drop the components inside the computer or get circuit board damp or wet.
4.　Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
5.　Try not to put any food, drink or cigarette around the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning.

●　Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used

on most hardware as well, we still recommend you to rub it with a piece of cloth.

- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

Note *We strongly recommended that you should shut down the system before you start to clean any single components.*

Please follow the steps below:
1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all device
5. Pull out power cable

Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform your AXIOMTEK distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your AXIOMTEK distributor for recycling and we will make the proper arrangement.

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CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the **rBOX204-FL**. The Chapter 1 includes the following sections:

- **General Description**
- **System Specification**
- **Dimensions**
- **I/O Outlets**
- **Package List**

1.1 General Description

The **rBOX204-FL** Din-rail fanless embedded systems are suitable for communications control and for protocol converter applications in critical environments. Built for rugged work environments, the **rBOX204-FL** series features an AMD LX800 processor + CS5536AF supporting industrial temperature range of -40 to +70 . Their front accessible I/O cabling is very convenient for wiring and maintenance. The **rBOX204-FL** series offers a VGA output, making it particularly well-suited for communication control, SCADA and industrial automation. Its compact size with Din-rail mounting allows for easy installation into control cabinet. Pre-installed with Linux, Windows® CE 6.0 or Windows® XP embedded, the **rBOX204-FL** series provides programmers with a friendly environment for developing application software at a lower cost.

The **rBOX204-FL** is robust industrial-grade hardware design and adopts the advanced cooling system, besides, supporting the CompactFlash™, which makes it especially suitable for field control & monitoring system solution for following markets:

> Utility Industries (Water; Energy; Chemical Plant; Mining…)
> Public Transportation Industries (Traffic/ Highway Control; Train/Bus Control …)
> Homeland Security (Weather Monitoring/Alarm System …)

> ➢ **Features**
>   1. Fanless operation
>   2. Wide temperature operation of -40   - +70
>   3. Supports 4-port IEEE802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE) with Magnetic
>   4. Supports two 10/100Mbps Ethernet with Magnetic Isolation Protection
>   5. 2 Watchdog Timers
>   6. SNMP V1/V2c
>   7. Support one CompactFlash™
>   8. Two Power Paths with terminal block and 48VDC power input
>   9. Din-rail mounting
>   10. Wall mounting (optional)
>   11. Compliance with safety agency requirements (UL508, UL60950) & heavy industrial EMI/EMS testing (ex: EN61000-6-4, EN61000-6-2 …)

> ➢ **Embedded O.S. Supported**

> The **rBOX204-FL** not only supports Windows® XP, but also supports embedded OS, such as Windows® XP embedded, WinCE 6.0 and Linux. For storage device, the **rBOX204-FL** supports one type II CompactFlash™ slot.

1.2 System Specifications

1.2.1 CPU
- Onboard AMD LX800 processors with FSB 500MHz.

1.2.2 Chipset
- AMD CS5536 AF

1.2.3 BIOS
- PMC Pm49FL004T

1.2.4 System Memory
- One 200-pin SO-DIMM support DDR400 up to 1GB

1.2.5 Graphics Chip
- AMD ALXD800 internal graphic controller
- DB15 VGA port

1.2.6 Video Memory
- Share Memory max. up to 254MB.

1.2.7 LAN
- 2 LAN :
    FE Davicom DM9102HI, 2 x 10/100Mbps LAN with magnetic isolation protection 1.5KV

    LED definition: Active LED (Yellow flashing), 10 LAN LED (NO Light), 100 LAN LED (Green Light)

1.2.8 Storage
- 1 x CompactFlash TypeII

1.2.9 USB

- 2 x USB2.0
- With power distribution control and over current protection

1.2.10 COM

- 2 ports DB9 Pin Define RS-232/422/485 and ESD Protection 15KV
- The interface select by software or BIOS.
- It also supports Auto Flow Control in RS485 mode.

1.2.11 Power

- Two power paths
- 2 power sources must be same voltage and DC input range 48V Only
- Main power source is for Input Power Path 1, backup power source is for Input Power Path 2.
- Only one power source must be for Input Power Path 1.
- DC Input has UVP/OVP/Reverse protection.
- Reset Button without Power Switch

NOTE *The total power comsumption for rBOX204 is about 80W while the 10/100 LAN and the 4 port PoE are linked, but the USB and COMs haven't been used.*

NOTE *When the system is shoutdown after, if users press the **Reset Button** for **3 seconds** and the system will be booted up.*

1.2.12 Watch Dog Timer (WDT)

- 2 WDT
- WDT 1 : one step is 1sec, 255 levels

  WDT 2 : one step is 250ms, 255 levels

1.2.13 System LED

For maintenance issue, system will have below LED.

1. DC PWR1 : Green
2. DC PWR2 : Green
3. Alarm   : Red
4. OS Ready : Yellow
5. COM TX1 : Green
6. COM RX1 : Green
7. COM TX2 : Green
8. COM RX2 : Green

LED Name	Description	Color	Note
DC PWR1	Indicate the DC1 input status. When the DC input is acceptable, the LED will ON, but, it isn't related for the system shutdown or not.	Green	
DC PWR2	Indicate the DC2 input status. When the DC input is acceptable, the LED will ON, but, it isn't related for the system shutdown or not.	Green	
Alarm	The LED will ON if having below condition. 1. DC PWR1 or PWR2 is lost. (default) 2. User define event.(option) The behavior of Alarm and Relay are the same. When the LED of Alarm is ON and the Relay will be turn on at the same time.	Red	
RDY/ACT	The LED for RDY/ACT can help users to judge BIOS finish or not and the OS can normal work or not. When the BIOS finish the configuration of system, the LED will ON. After this the LED will flash when the storage is accessed.	Yellow	

	- The LED will flash when the storage is accessed. - The LED always ON without any flash for a long time, the OS is possible crashed. - The LED isn't ON for a long time, it means the system is on shutdown status.		
COM TX1	When COM1 transmit data the LED will on.	Green	
COM RX1	When COM1 receive data the LED will on.	Green	
COM TX2	When COM2 transmit data the LED will on.	Green	
COM RX2	When COM2 receive data the LED will on.	Green	

NOTE *When the system is shoutdown after, if users press the* **Reset Button** *for* **3 seconds** *and the system will be booted up.*

Below pictures are the LED example:

Indicate the PWR1 input status.
When the DC input is acceptable, the LED will ON.

The LED will ON if having below condition.
1. DC PWR1 or PWR2 is lost. (default)
2. User define event. (option)
The behavior of Alarm and Relay are the same.
When the LED of Alarm is ON and the Relay will be turn on at the same time.

Because the PWR1 is still linked, so, the LED of PWR1 is still ON.

When the system is shut down, the LED of ACT/RDY will not ON.

When the BIOS finish the configuration of system, the LED of ACT/RDY will ON.
After the LED of ACT/RDY will flash when the storage is accessed.

1.2.15 Alarm Contact

- 1 relay output
- Relay output with 0.5A @ 30VDC
- Event : Power Fail and User define

1.2.16 Reset Button

- 1 x Reset bottom

NOTE *When the system is shutdown after, if users press the **Reset Button** for **3 seconds** and the system will be booted up.*

1.2.17   Operation Temperature

- -40 ~ +70 (-40 ºF ~ +158ºF), with W.T. (Memory & CF)

1.2.18 Storage Temperature

- -45 ~ +85 (-49 ºF ~ +185ºF)

1.2.19   Humidity

- 5% ~ 95% (non-condensation)

1.2.20   Weight

- 1.38 kg (3 lb)

1.2.21   Dimensions

- 81mm(3.18") (W) x 110mm(4.33") (D) x 135mm(5.31") (H)

1.2.22 System I/O Outlet

- Two 9-pin D-Sub male connectors, COM1/2 for RS-232/422/485
- One 15-pin D-Sub female connector for VGA
- Two 10/100Mbps Ethernet with Magnetic Isolation Protection
- 4-port IEEE802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE) with Magnetic Isolation Protection
- Two USB 2.0 connectors
- Two DC Powers input with terminal block.

<u>NOTE</u> *All specifications and images are subject to change without notice.*
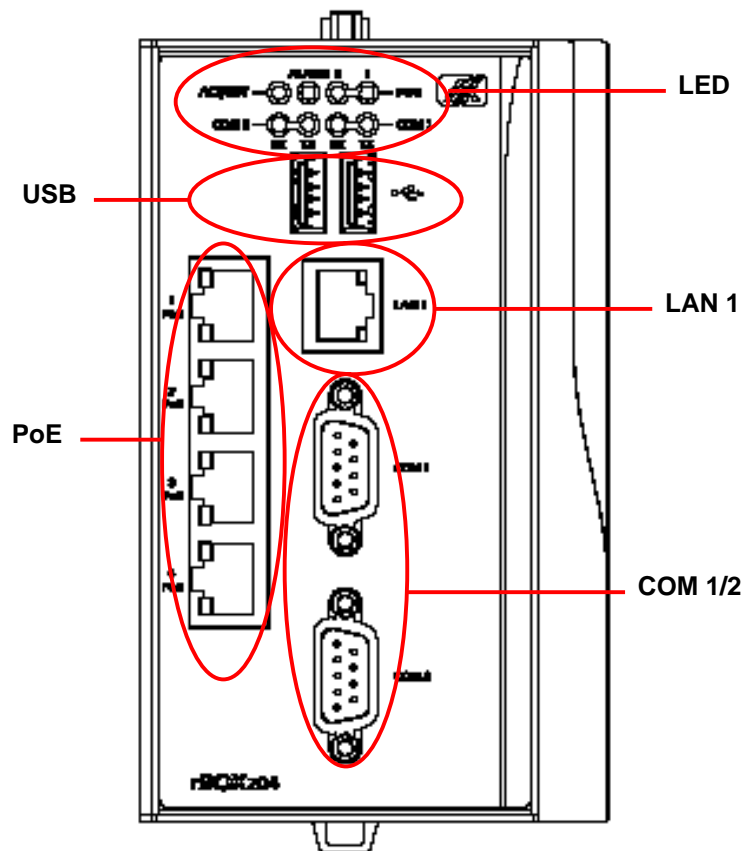
1.3   Dimensions

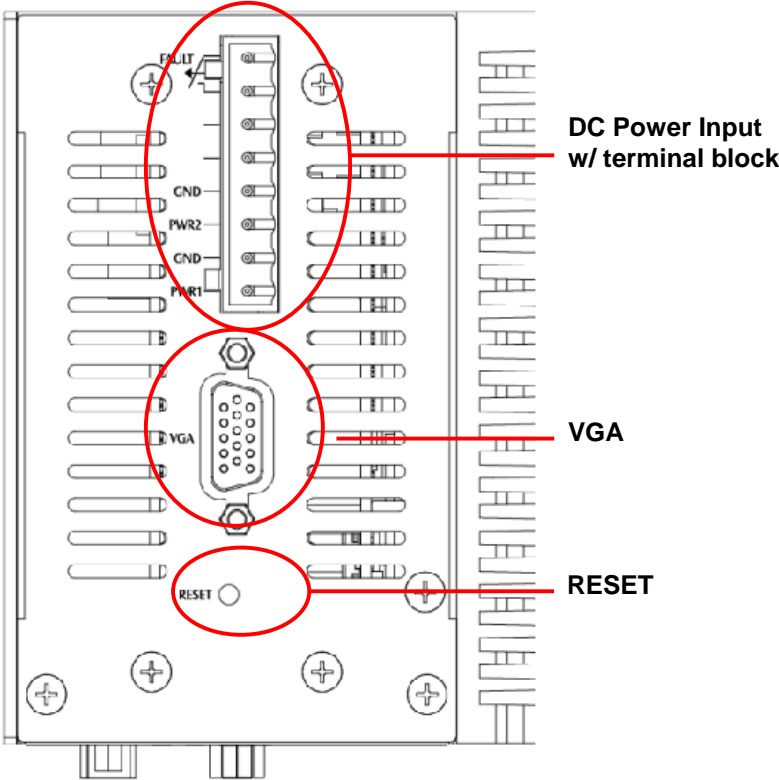The following diagrams show you dimensions and outlines of the
rBOX204-FL.
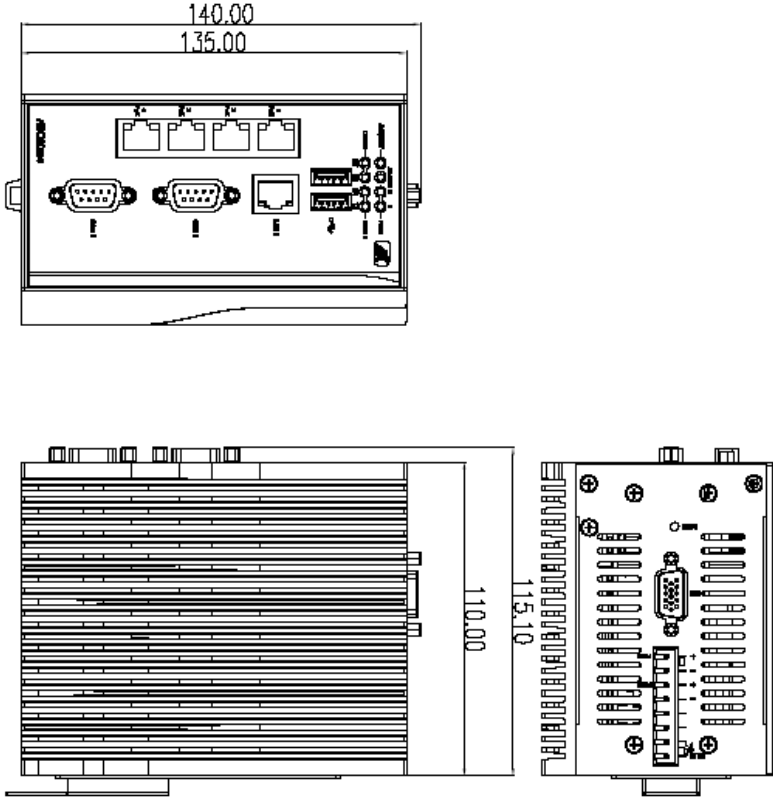
1.4 I/O Outlets

The following figures show you I/O outlets on front view and top view of the **rBOX204-FL**.

● **Front View**

● **Top View**

DC Power Input
w/ terminal block

VGA

RESET

1.5   Packing List

The package bundled with your **rBOX204-FL** should contain the following items:

- rBOX204-FL System Unit x 1
- CD x 1 (For Driver and User's Manual)
- Power terminal block x1
- Din-rail kit x1
- Screws
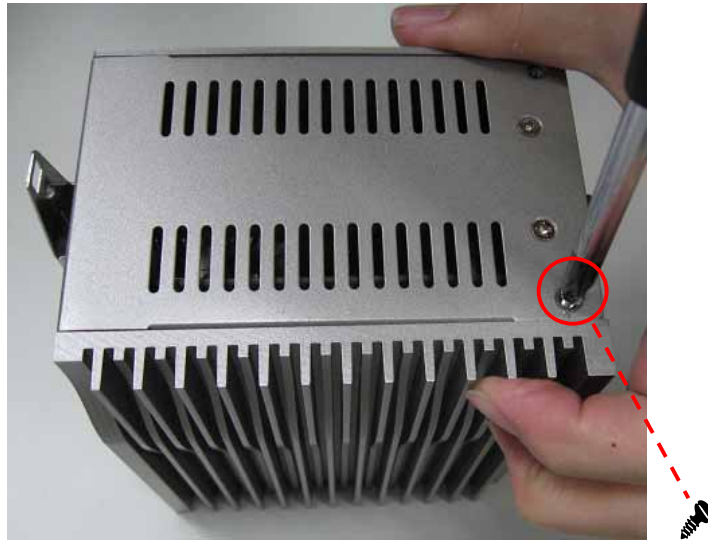- Quick Manual x1

CHAPTER 2
HARDWARE INSTALLATION

The **rBOX204-FL** is convenient for your various hardware configurations, such as Memory Module and CompactFlash^{TM} card. The chapter 2 will show you how to install the hardware. It includes:

2.1   Installing the Memory Module

Step 1   Turn off the system.

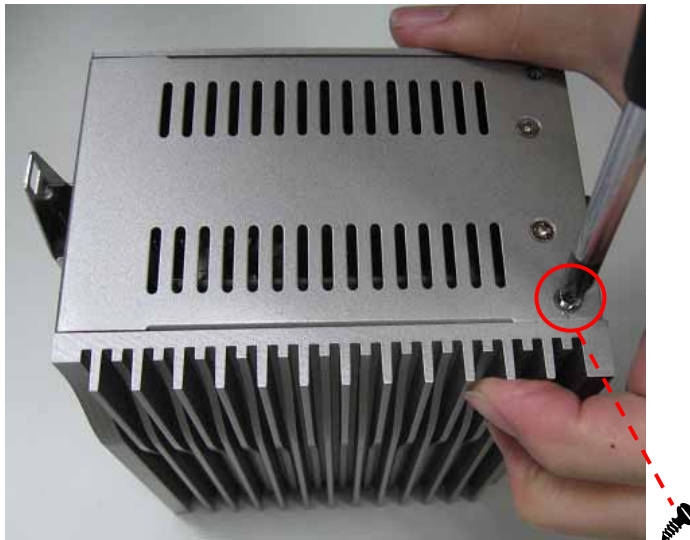**Step 2**   Loosen these screws, and remove the top cover from the system.

Step 3   Hold one side of the module, and insert the gold colored contact into the socket. Push the module down.

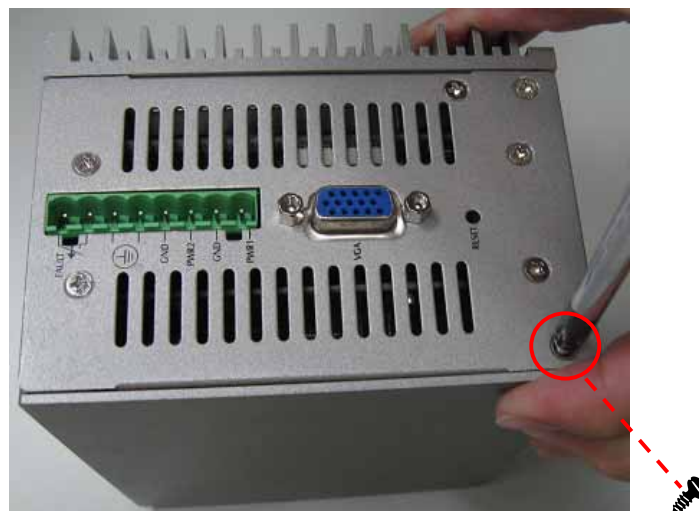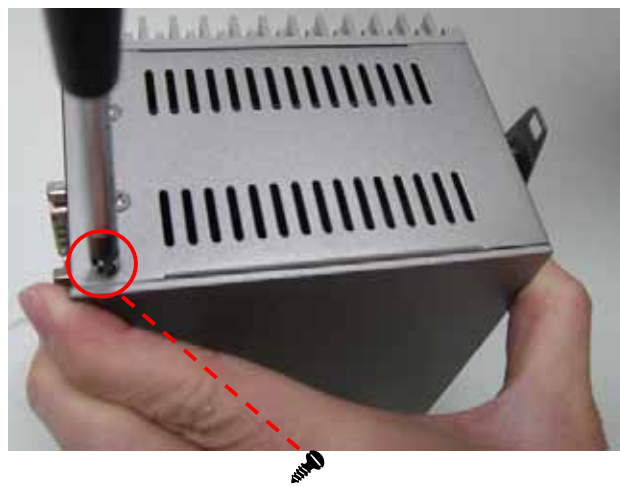**Step 4**   The memory module is locked by two latches on the sides.

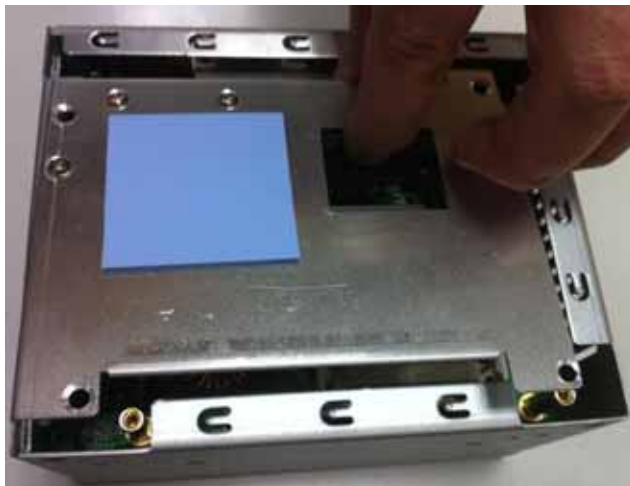**Step 5**   Put the cover back to the system, and fasten screws tight close the chassis.
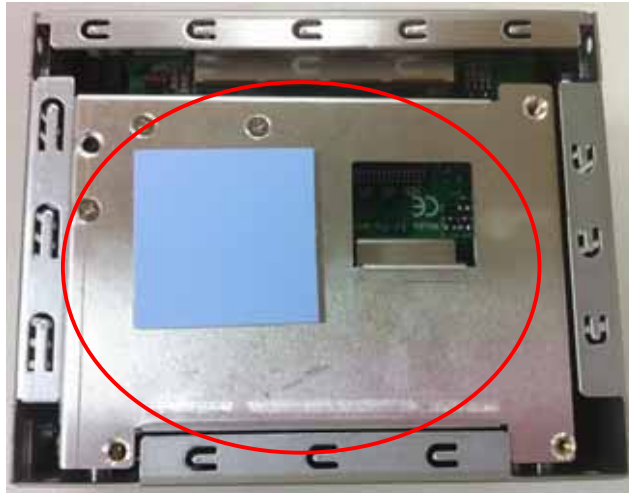
2.2   Installing the CompactFlash^{TM} Card

Step 1   Turn off the system.
Step 2   Loosen these screws, and remove the cover from the system.

Step 3   Loosen these screws anda remove the Thermal & CompactFlash^{TM} fixing bracket from the system.
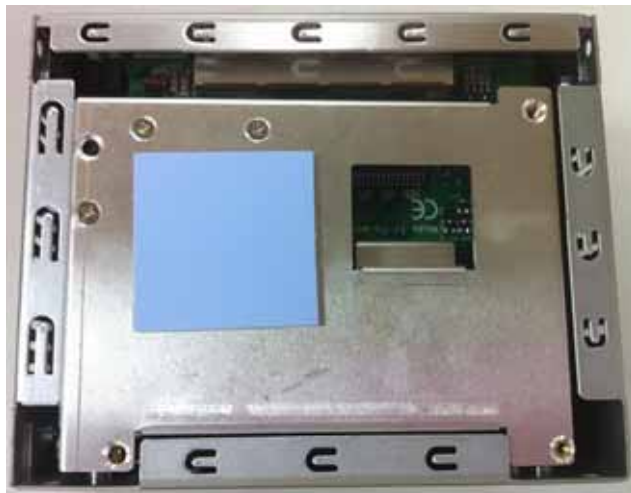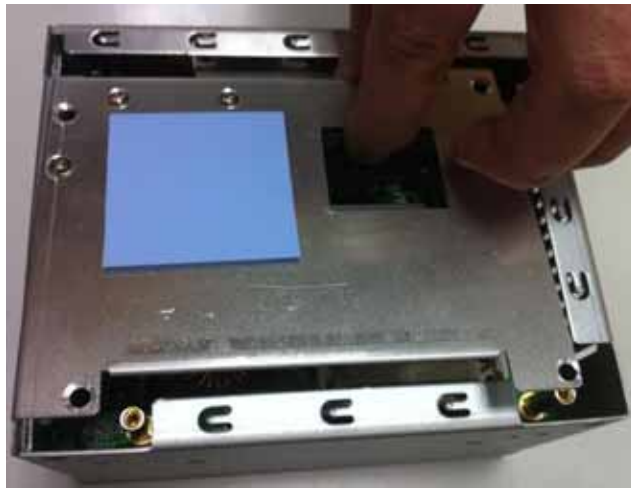
Step 4   Insert the CompactFlash^{TM} card into the socket until it is firmly seated.

Step 5   Put the Thermal & CompactFlash^{TM} fixing bracket back to the system, and fasten screws tight close the Thermal & CompactFlash^{TM} fixing bracket..

Step 6 Put the cover back to the system, and fasten screws tight close the chassis.
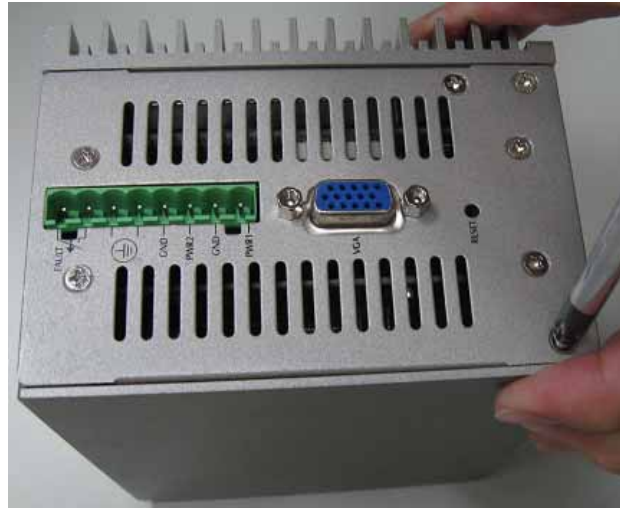
2.3   Installing Din-rail Mounting

The **rBOX204-FL** provides Din-rail Mounting that customers can install as below:

Step 1   Prepare Din Mount assembling components (screws and bracket) ready.

Step 2   Assembly the bracket to the system, and fasten screws tight.

NOTE *Please notice the Din-rail holes with Wall-mounting holes while assembly the bracket to system.*

2.4   Installing Wall Mounting (optional)

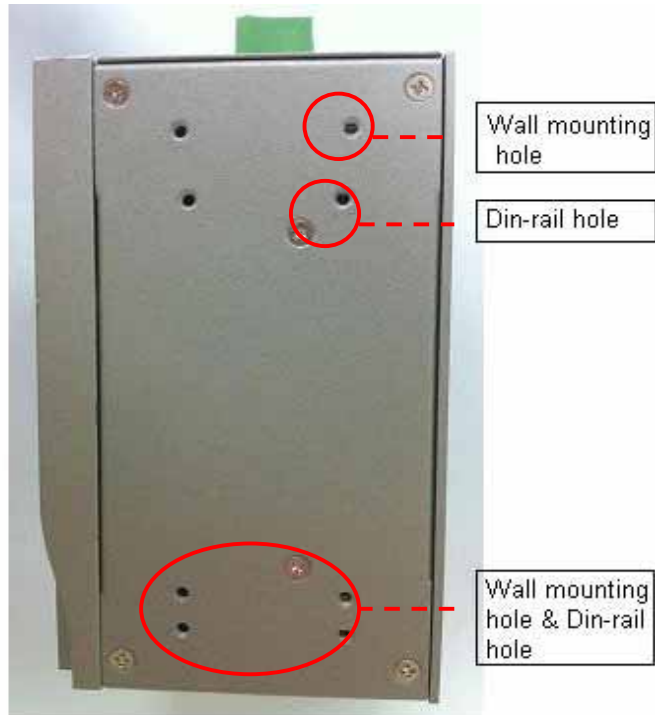The **rBOX204-FL** provides Wall Mounting that customers can install as below:

Step 1   Prepare Wall Mount assembling components (screws and bracket) ready.

Step 2   Assembly the bracket to the system, and fasten screws tight.

NOTE *Please notice the Din-rail holes with Wall-mounting holes while assembly the bracket to system.*
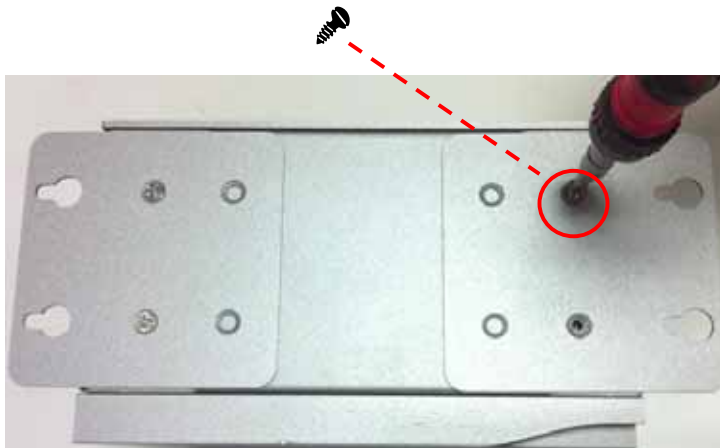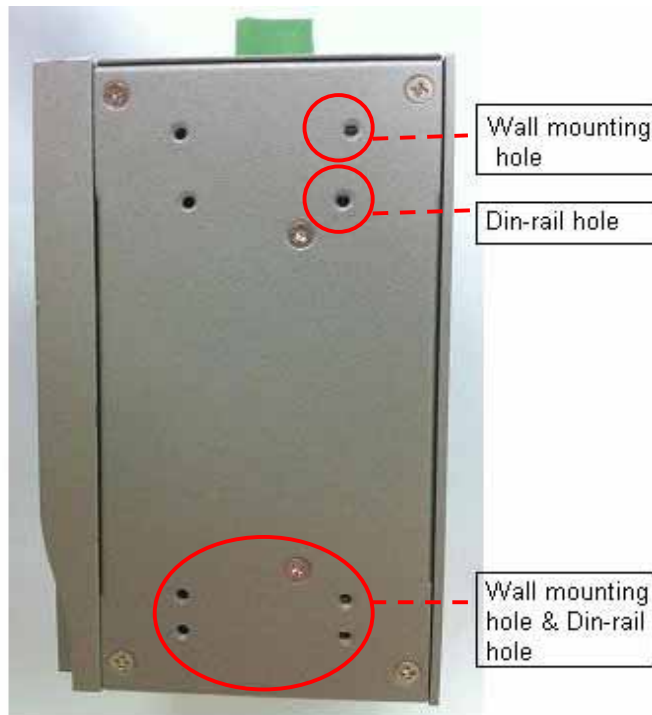
CHAPTER 3

PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in a battery-backed RAM (CMOS RAM) that retains the Setup information each time the power is turned off.

3.1   Entering Setup

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

TO ENTER SETUP PRESS DEL KEY

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

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

3.2   Control Keys

Up arrow	Moves cursor to the previous item
Down arrow	Moves cursor to the next item
Left arrow	Moves cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quits and deletes changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exits current page and returns to Main Menu
PgUp/"+" key	Increases the numeric value or makes changes
PgDn/"–" key	Decreases the numeric value or makes changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Item Help
F3 key	Reserved
F4 key	Reserved
F5 key	Restores the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Reserved
F7 key	Loads the optimized default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Menu in BIOS
F10 key	Saves all the CMOS changes, only for Main Menu

3.3   Getting Help

● **Main Menu**
   The on-line 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 up a small help window that describes the
   appropriate keys to use and the possible selections for the
   highlighted item. To exit the Help Window press <F1> or <Esc>.

3.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.
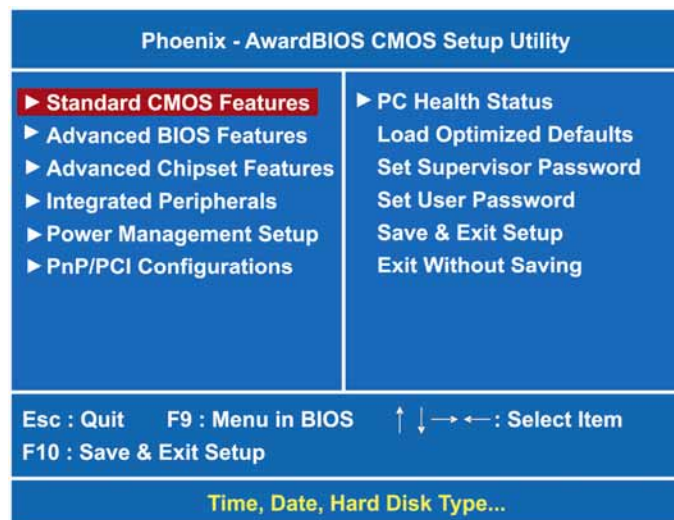
**NOTE** *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

3.5   Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.
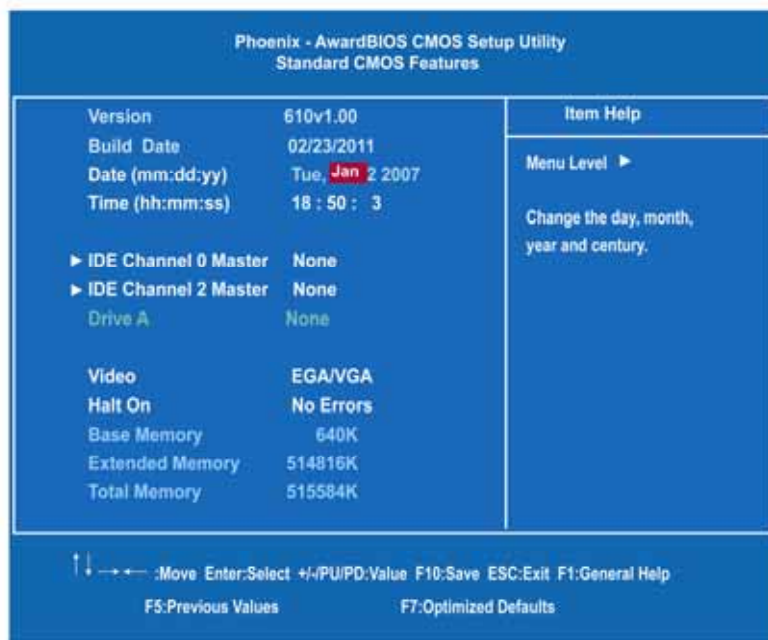
- ● **Date**
  The date format is <day>, <month> <date> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
month	The month, Jan through Dec.
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
year	The year, depends on the year of BIOS

● **Time**

The time format is <hour> <minute> <second> accepting either functions key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

NOTE *If system is power failure, the date and time will come back to **previous setup**.*

● **IDE Primary Master / Primary Slave**

The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 users definable types are for Enhanced IDE BIOS. Type 1 to Type 45 is predefined. Type User is user-definable.

Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

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

If the controller of HDD interface is SCSI, select "None".

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

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

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

● **Video**

Select the display adapter type for your system.

● **Halt On**

This field determines whether the system will halt or not if an error is detected during power up.

No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detect a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.

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

3.6   Advanced BIOS Features

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

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced BIOS Features

   First Boot Device         USB-HDD          Item Help
   Second Boot Device        HDD-1
   Third Boot Device         USB-CDROM      Menu Level ▶
   Boot Other Device         Enabled
   Boot Up NumLock Status    On             Select Your Boot
   Gate A20 Option           Fast           Device Priority
   Security Option           Setup
   Console Redirection       Enabled
   Baud Rate                 9600
   Agent Connect via         NULL
   Agent after boot          Enabled
   Small Logo(EPA) Show      Disabled
   Optimized Default Select  BIOS Optimized
   Display Board ID Message  Disabled


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

NOTE **The BIOS default setting of the system is "Previous Setup".** *It means that if the system is power failure or power loss, the system will come back to previous setup while be re-boot.*

If you want to change the BIOS setting, please set up from **"Advanced BIOS Features"**

Then, to select "BIOS Optimized" or "Previous Setup" under "Optimized Default Select". Further to save the selection **(System will execute about 15 seconds)**

Finally, please **shut down** *the system, then* **re-boot** *it, the system will come back to your changed Optimized Default Select.*

● **First/Second/Third Boot Device**
These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes *LS120,HDD0~1,CDROM,USB-ZIP,USB-CDROM,USB-HDD,LAN.*.

● **Boot Other Device**
This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is *"Enabled"*.

● **Boot Up NumLock Status**
Selects power on state for NumLock. The default value is *"On"*.

● **Gate A20 Option**
The default value is *"Fast"*.

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

● **Security Option**
This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	The system will not boot and access to Setup will be denied if the incorrect password is 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.

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

● **Console Redirection**

This item allows you to enable or disable the BIOS boot up and redirect to console port feature. The default setting is "Enable". The choice: Enable, Disable

● **Baud Rate**

This item allows you to setup the data transfer rate for the console port. The default value is 9600.

The choice: 9600, 19200, 38400, 57600 and 115200

● **Agent Connect via**

This item is just highlight the routing between console port with PC client.

The default value should be Null.

● **Agent after boot**

This item allows you to enable or disable the agent after boot. The choice: disable, enable

● **Small Logo (EPA) Show**
If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

● **Optimized Defaault Select**

This item support BIOS CMOS back up function..

● **Display Board ID Message**

Enable or disabled board ID message.

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

3.7   Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.
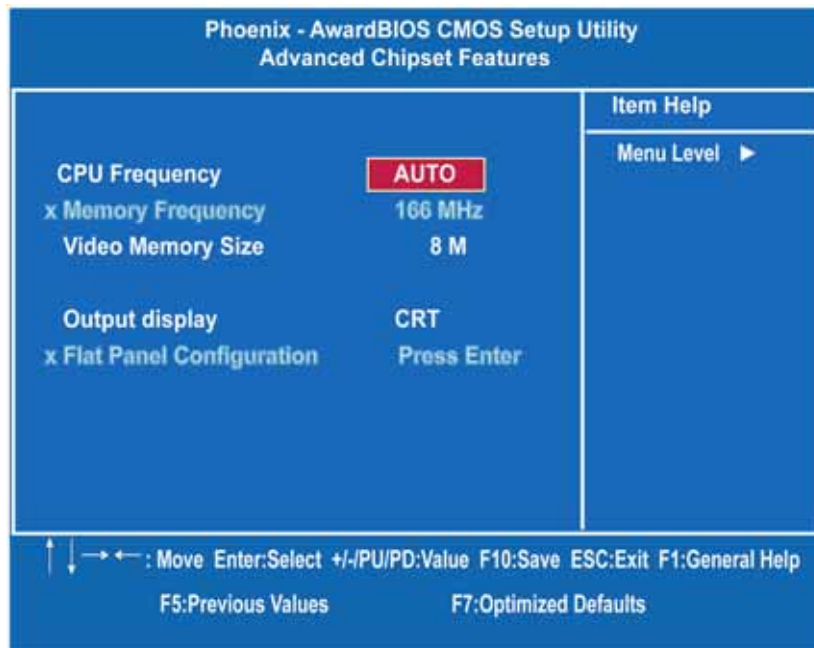
- **CPU Frequency**
  Use this item to set the CPU Frequency with these options: Auto, 333MHz, 400MHz, 433MHz and 500MHz. The default setting is "*Auto*".

- **Memory Frequency**

  It can automatically detect the memory frequency type.

- **Video Memory Size**
  The options available are [8M] [16M] [32M] [64M] [128M] [254M].

- **Output Display (CRT Only)**
  This item is to select Display Device that the screen will be shown.
  But its default is CRT Only and cannot be modified.

- **Flat Panel Configuration**
  Press Enter to set the following items.
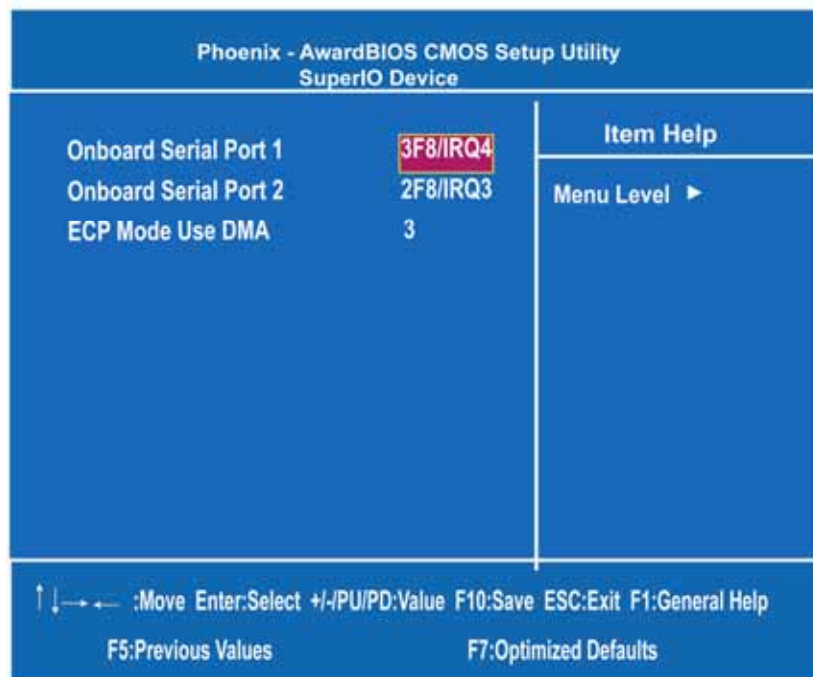

Press <Esc> to return to the Main Menu page.

3.8   Integrated Peripherals

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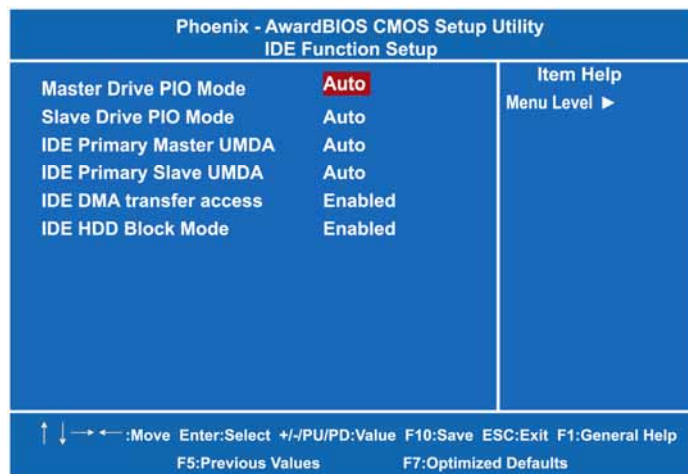
● **SuperIO Device**

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

```
          Phoenix - AwardBIOS CMOS Setup Utility
                       SuperIO Device

                                            Item Help
  Onboard Serial Port 1        3F8/IRQ4
  Onboard Serial Port 2        2F8/IRQ3     Menu Level  ▶
  ECP Mode Use DMA               3




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

➢ **Onboard Serial Port 1/2**
Select an address and corresponding interrupt for the serial port. There are several options for your selection, *3F8/IRQ4, 2F8/IRQ3,* etc.

➢ **ECP Mode Use DMA**
Select a DMA channel for the parallel port while using the ECP mode.

● **IDE Function Setup**

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

```
            Phoenix - AwardBIOS CMOS Setup Utility
                        IDE Function Setup

  Master Drive PIO Mode       Auto          Item Help
  Slave Drive PIO Mode        Auto       Menu Level  ▶
  IDE Primary Master UMDA     Auto
  IDE Primary Slave UMDA      Auto
  IDE DMA transfer access     Enabled
  IDE HDD Block Mode          Enabled




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

➢ **Master/Slave Drive PIO**
These items let you set a PIO mode for each IDE device that the onboard IDE interface supports. In Auto mode, the system automatically determines the best mode for each device.

➢ **IDE Primary 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 the hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

➢ **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.

➢ **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.

● **Onboard Device**

Scroll to this item and press <Enter> to view the sub menu to configure the Onboard Device.
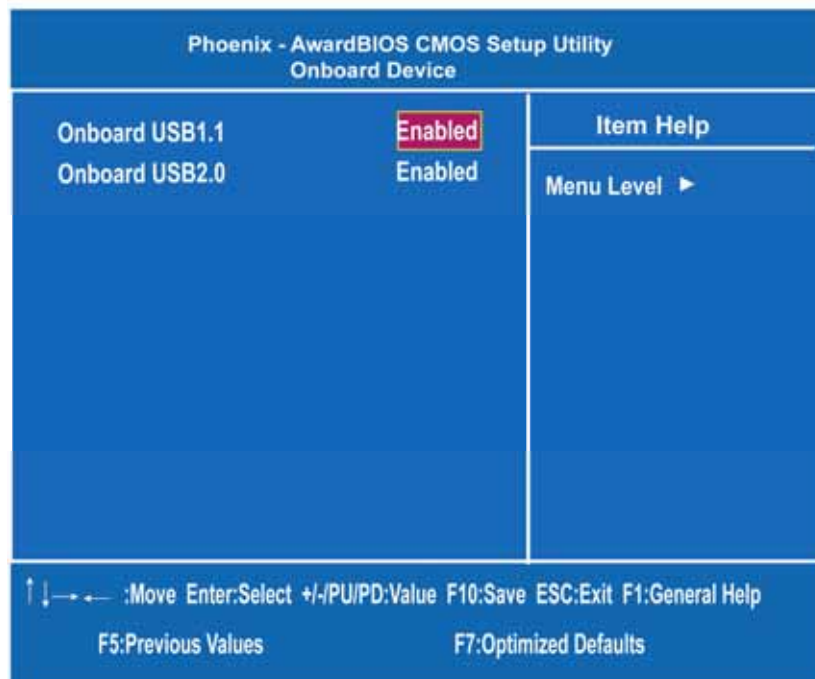
➢ **Onboard USB1.1**
Enable this item if you are using the onboard USB1.1 in the system. You should disable this item if a higher-level controller is added.

> **Onboard USB 2.0**
> Enable this item if you are using the onboard USB2.0 controller in the system.

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

● **COM1/COM2 Port Type**

The item support to select com port to RS232, RS422,RS485 mode
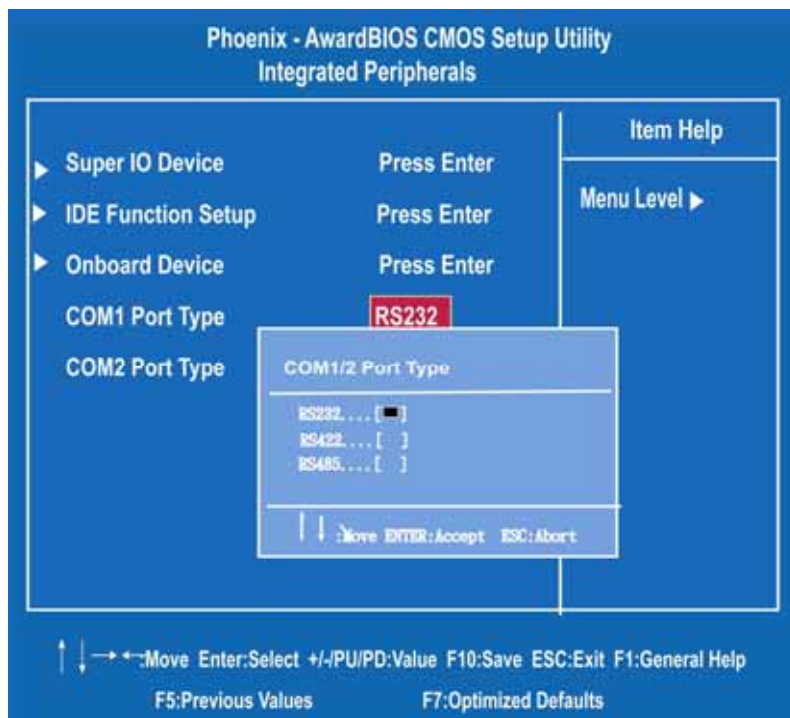
3.9   Power Management Setup

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
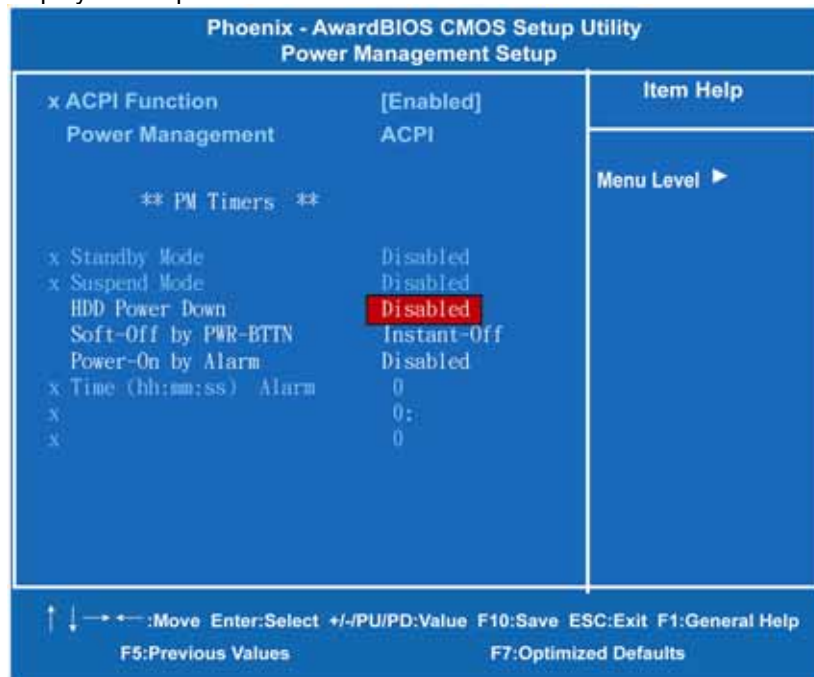
● **ACPI Function**

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

● **Power Management**

This option allows you to select the type of power Management.
The function is always ACPI.

● **Standby Mode**

After the selected period of system inactivity (1 minute to 1 hour),
the fixed disk drive and the video shut off while all other devices
still operate at full speed. The default value is "Disabled".

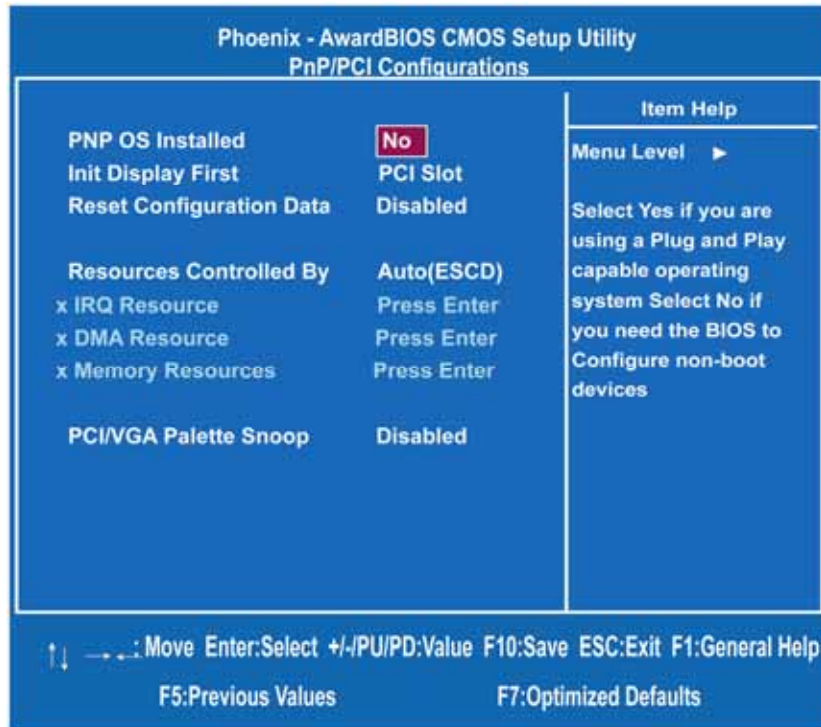| **Disabled**	System will never enter STANDBY mode.
1/2/4/6/8/10/20/30/4 0 Min/1 Hr	Defines the continuous idle time before the system entering STANDBY mode. If any item defined in (J) is enabled & active, STANDBY timer will be reloaded.

● **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/2 0/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, 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.

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

3.10   PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations

                                                  Item Help

  PNP OS Installed             No        Menu Level    ►
  Init Display First           PCI Slot
  Reset Configuration Data     Disabled  Select Yes if you are
                                         using a Plug and Play
  Resources Controlled By      Auto(ESCD) capable operating
  x IRQ Resource               Press Enter system Select No if
  x DMA Resource               Press Enter you need the BIOS to
  x Memory Resources           Press Enter Configure non-boot
                                         devices
  PCI/VGA Palette Snoop        Disabled


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

● **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 can not boot. Options are: "*Enabled, Disabled*".

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

3.11 PC Health Status

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

```
              Phoenix - AwardBIOS CMOS Setup Utility
                        PC Health Status

                                                  Item Help

   Current CPU    Temp         40°C/ 104°F     Menu Level    ►
   Current System Temp         31°C/  87°F
   Current System Temp         35°C/  95°F
   Vcore                       1.26V
   3.3V                        3.29V
   +12 V                       11.90V
   5VSB (V)                    5.08V
   VCC  (V)                    5.08V
   VBAT (V)                    0.16V




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

● **System Component Characteristics**
  These read-only items show you information about the system's current operating status, and the functions of the hardware thermal sensor monitoring the chipset blocks and system temperatures to ensure a stable system.
  System Temperature
  CPU Temperature
  CPU Voltage

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

3.12 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.
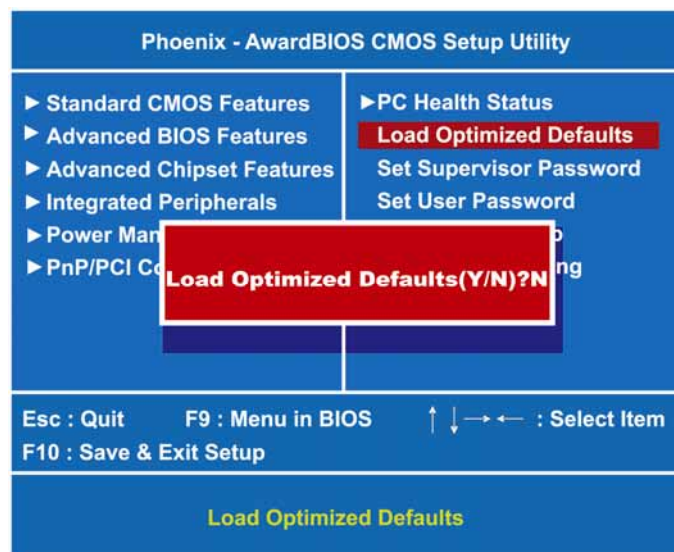
To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

3.13 Set Supervisor/User Password

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

1. **Supervisor password:** can enter and change the options of the setup menus.
2. **User password:** just can enter but do not have the right to change the options of the setup menus.

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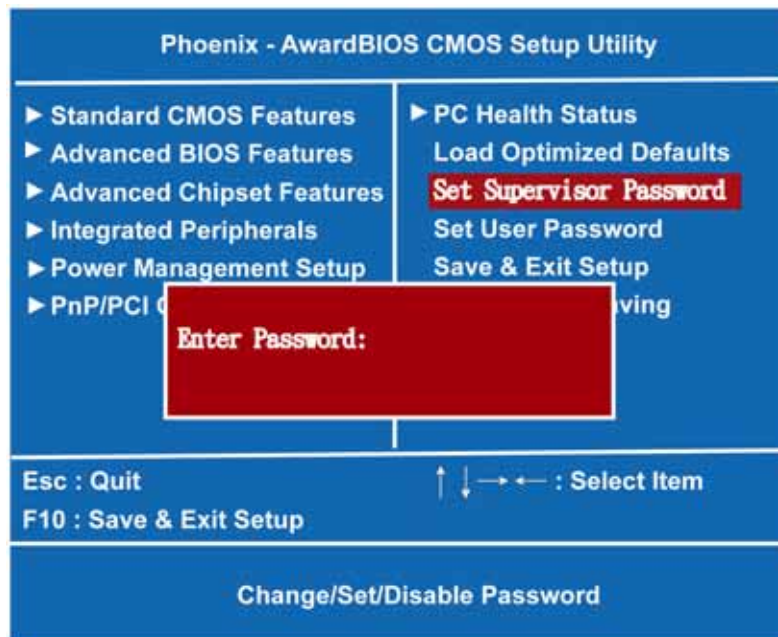
ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being 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 Setup. This prevents any unauthorized person 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 determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

3.14 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brings you back to the **Previous Setup utility.**
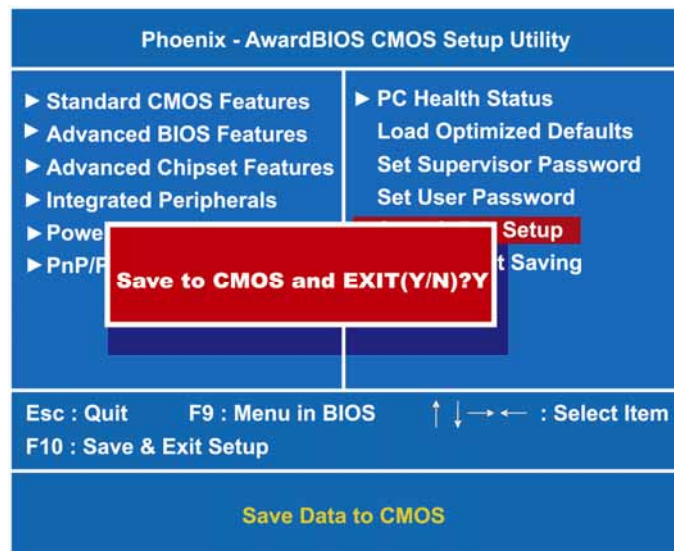
3.15 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications and come back to the **Previous Setup utility**. Typing "N" will return you to Setup utility.
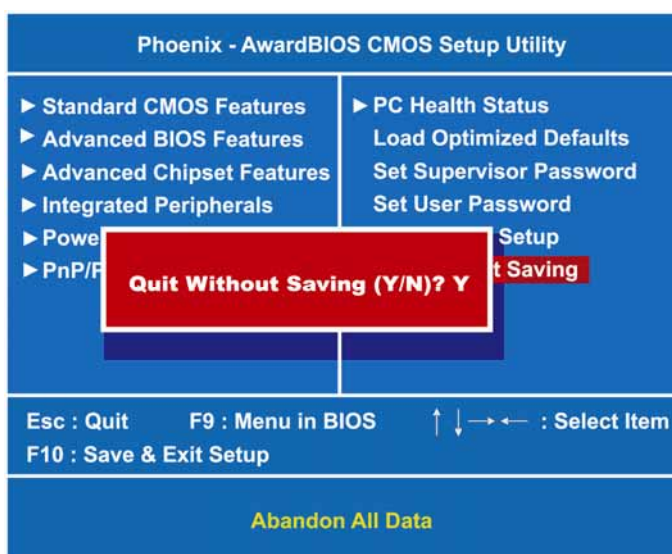
CHAPTER 4
INSTALLATION OF DRIVERS

4.1 INSTALLATION OF VGA DRIVER

4.1.1 My Computer→ Press the right key of Mouse
→Properties→Hardware→Device Manager→Display
adapters→Update Driver→Install from a list or specific
location→Include this location in the search→Browse→Select
GeodeLX_XP_XPe_Graphics_v3.03.06→Custom→ Press "**OK**"
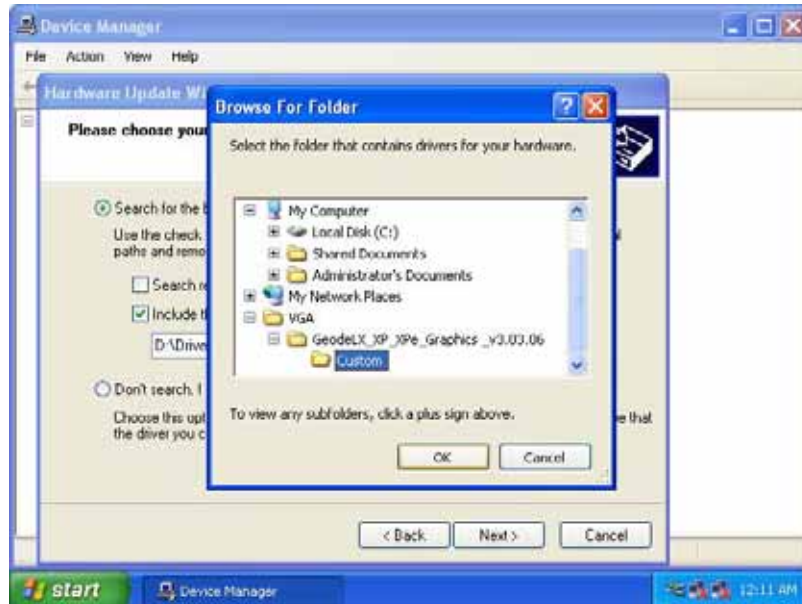
4.1.2　Choose "**Advanced Micro Devices Win 2K/XP Graphics Driver**" → Press "**Next**".
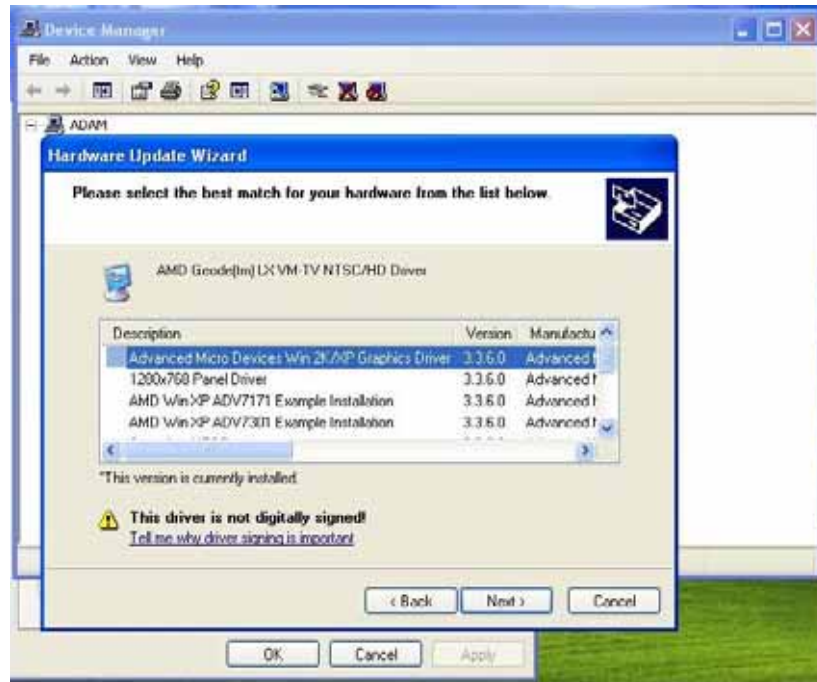
4.1.3 Choose "**Continue Anyway**".
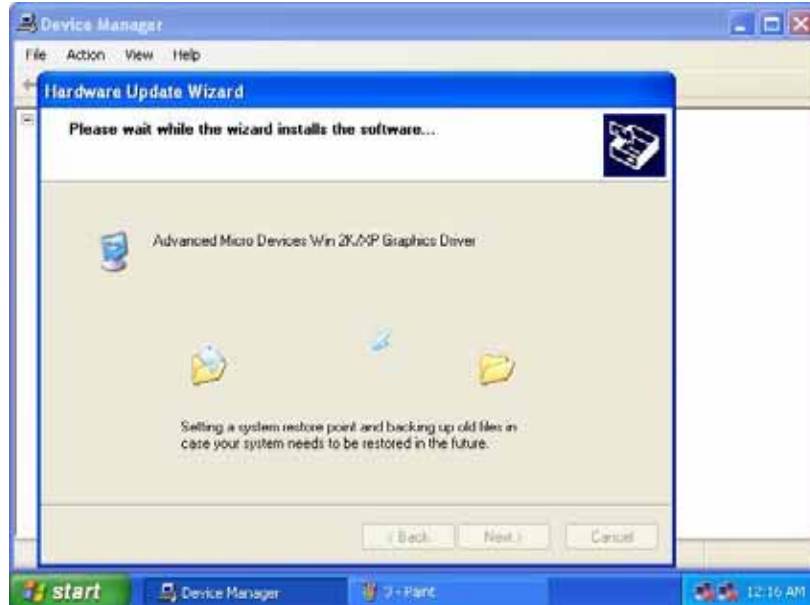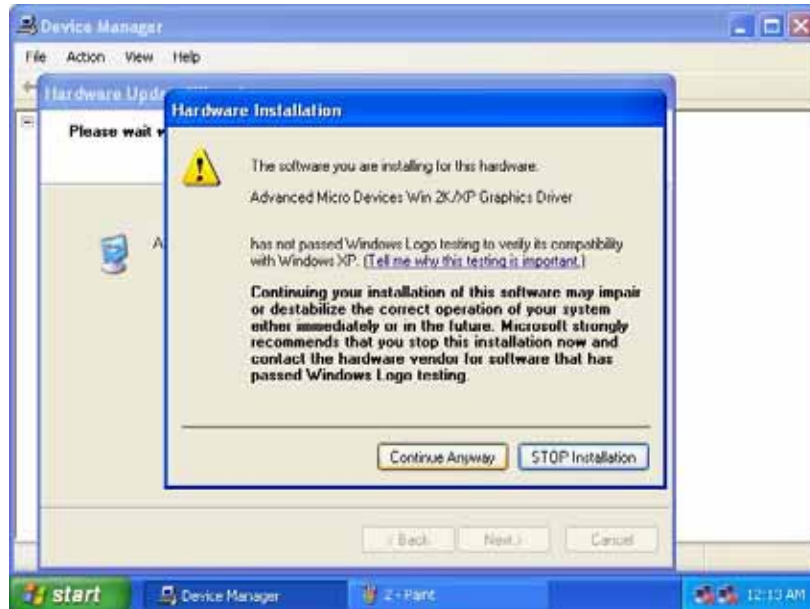
4.1.4 Browse
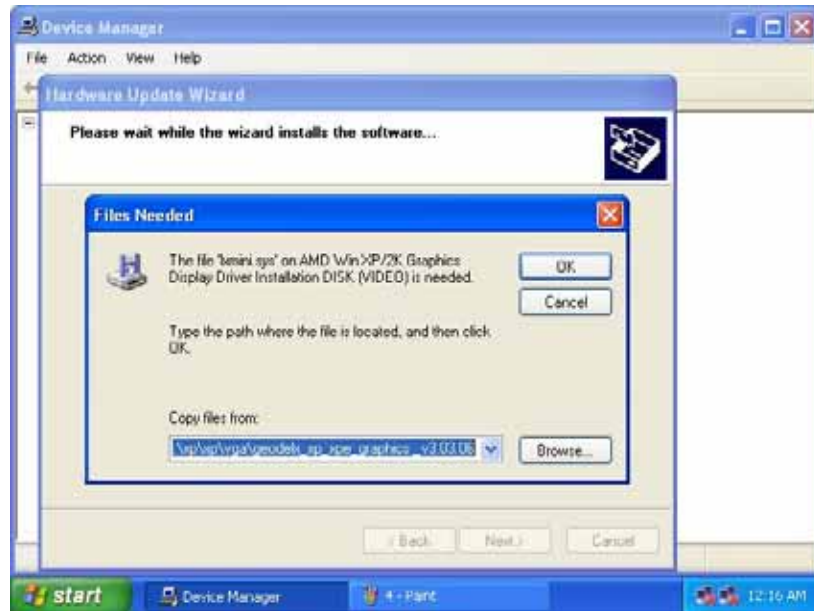
4.1.5 Choose the **lxmini** of
GeodeLX_XP_XPe_Graphics_v3.03.06 → Press "**Open**"
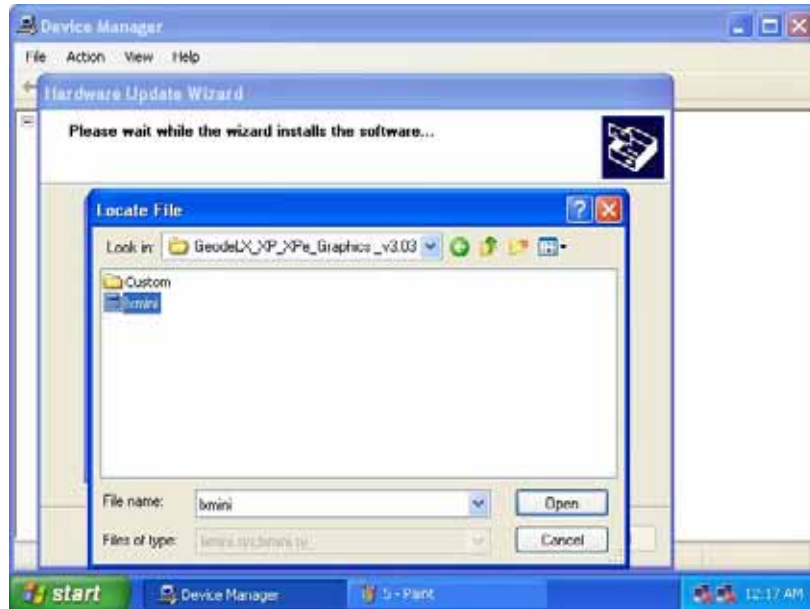
4.1.6 Finish the install.

4.1.7 Check the driver has been installed ok which appears "**Advanced Micro Devices Win 2K/XP Graphics Driver**".
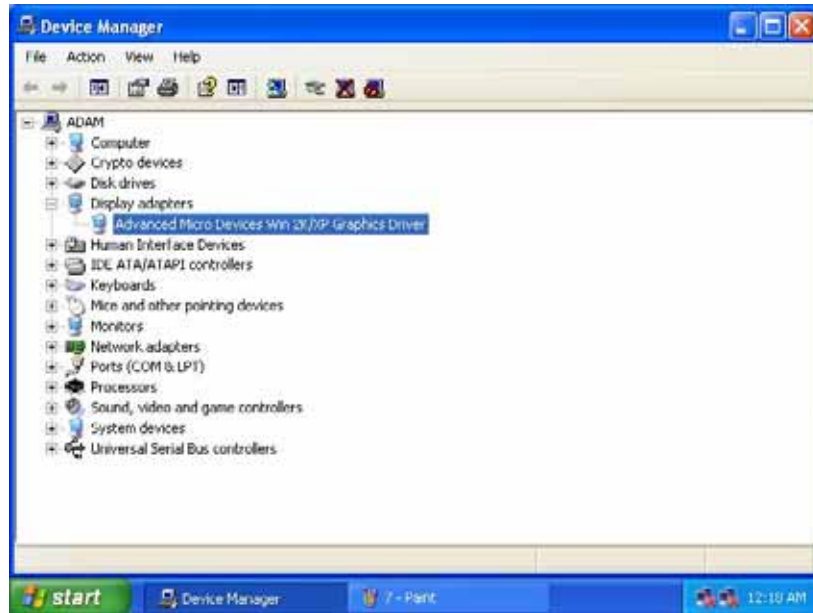
NOTE   **Please go on executing the LAN Driver Update,
then system will have more advanced functions.**

4.2   INSTALLATION OF LAN DRIVER UPDATE

4.2.1   My Computer   Press the right key of Mouse
→Properties   Hardware   Device Manager   Network
adapters   Update Driver (Refer below Picture-1)

(Picture-1)
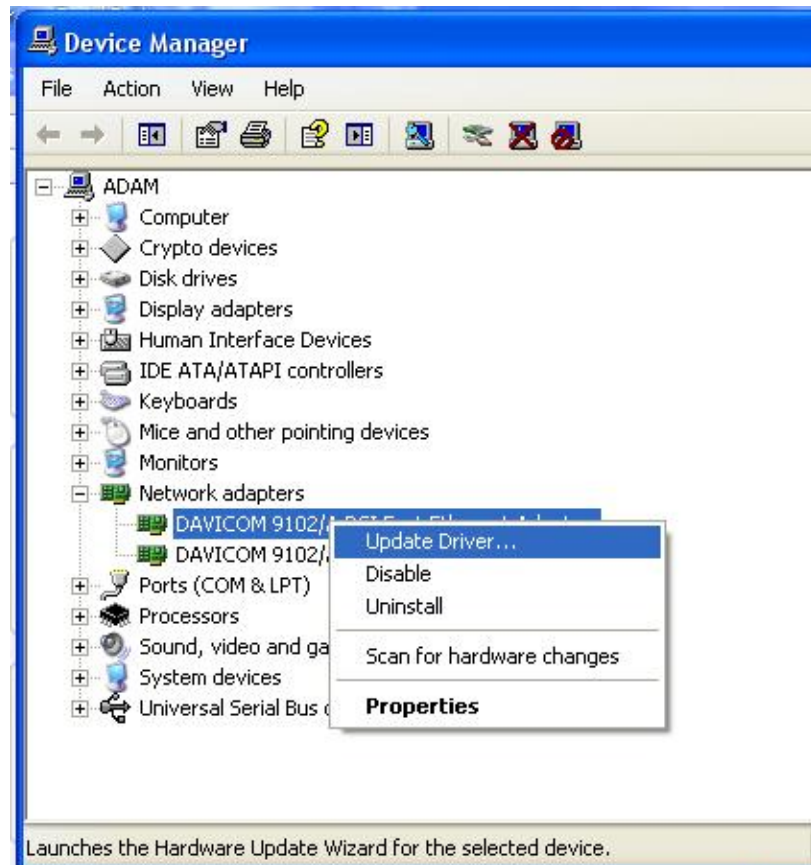
4.2.2 Install from a list or specific location   Include this
location in the search (Pls refer below Picture-2)

(Picture-2)

4.2.3 Don't search I will choose the driver to install   "Next"
(Pls refer below Picture-3)

(Picture-3)
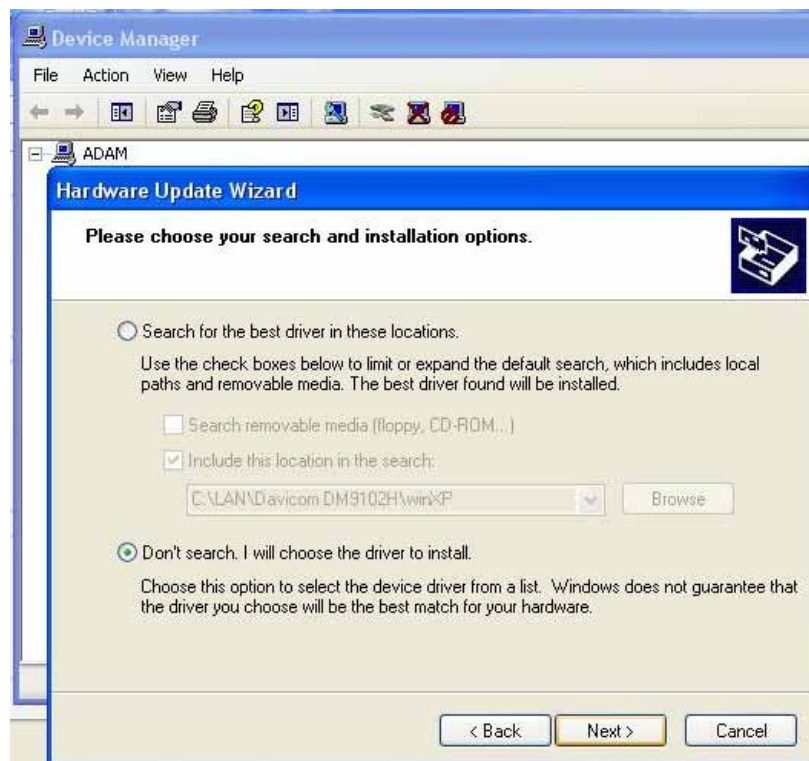
4.2.4   Select "Have Disk.." (Pls refer below Picture-4)

(Picture-4)
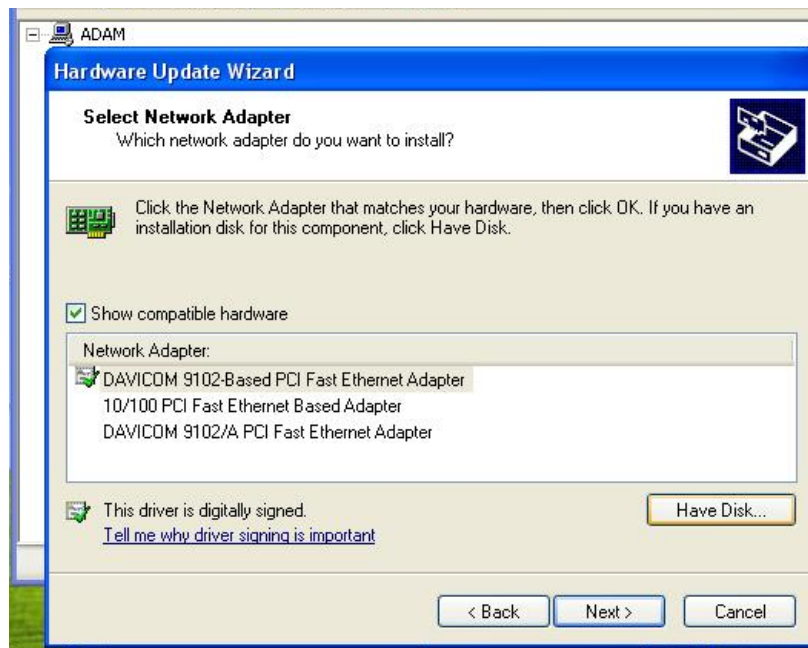
4.2.5 Select "Browse.." (Pls refer below Picture-5)

(Picture-5)
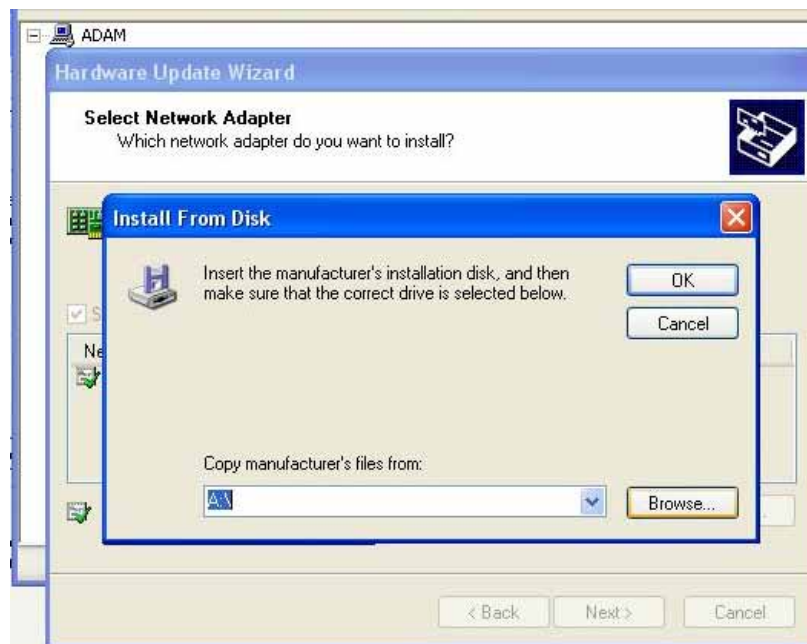
4.2.6 Choose the file location loop on CD file as follow

E:\Drivers\LAN\Davicom DM9102H\winXP\netdmA (Pls refer below Picture-6)

(Picture-6)
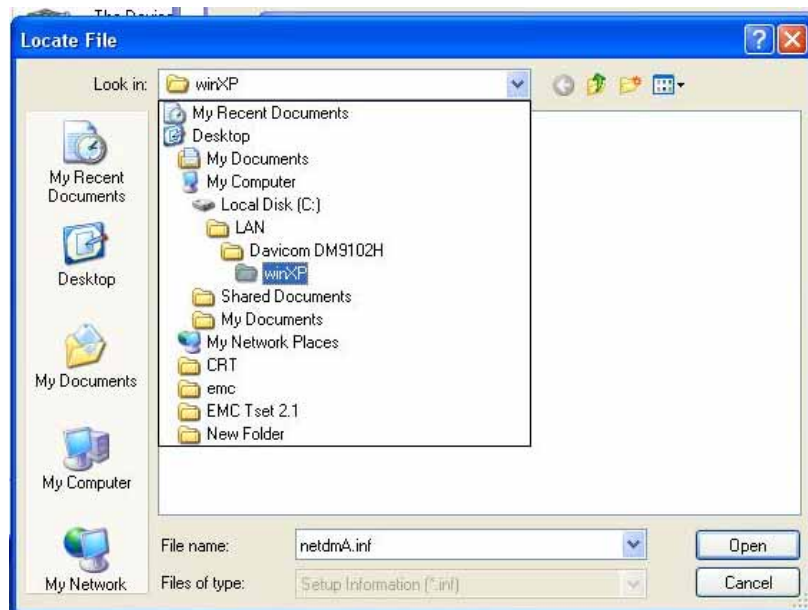
4.2.7 Select "OK" (Pls refer below Picture-7)

(Picture-7)

4.2.8 Choose DAVICOM 9102/A PCI Fast Ethernet Adapter ''Next'' (Pls refer below Picture-8)

(Picture-8)

4.2.9 Select "Continue Anyway" (Pls refer below Picture-9)

(Picture-9)

4.2.10 Select "Finish" (Pls refer below Picture-10)

(Picture-10)

**4.2.11** Select "Properties" (Pls refer below Picture-11)

(Picture-11)
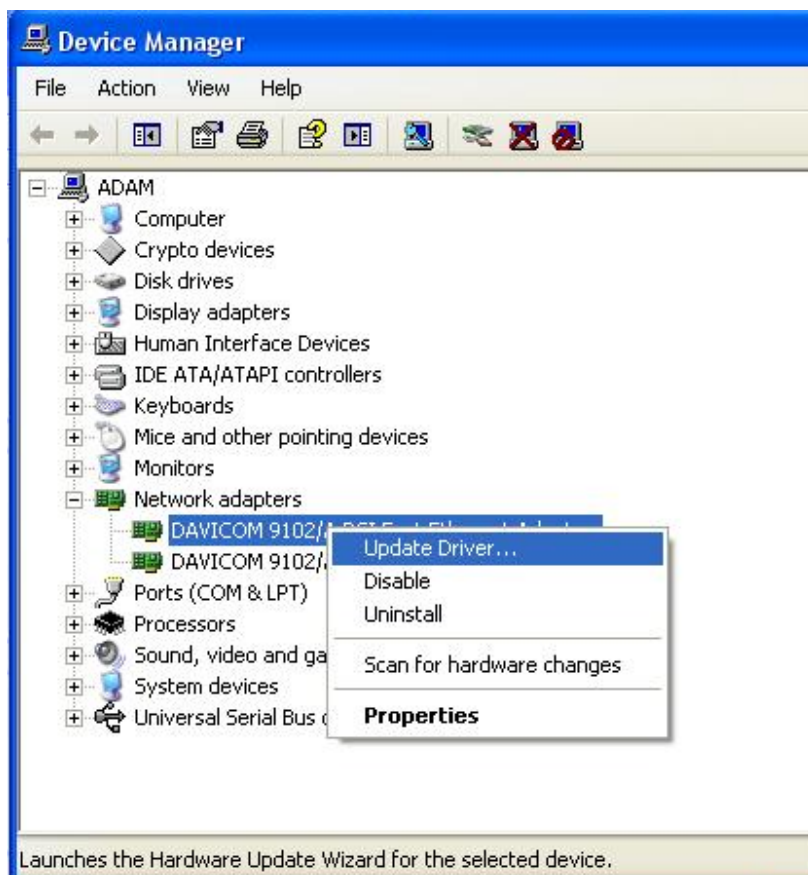
4.2.12 Check the Advance WakeUp on APM Mode Value is Disable (Pls refer below Picture-12)

(Picture-12)
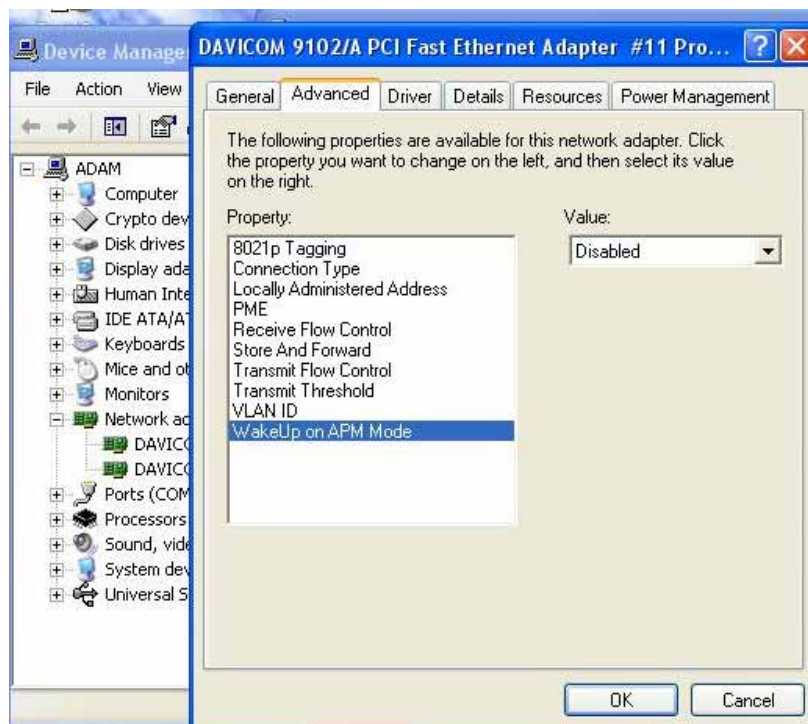
4.3   Entertainment Encryption/Decryption Controller install

4.3.1   My Computer   Press the right key of Mouse
→Properties   Hardware   Device Manager   Other
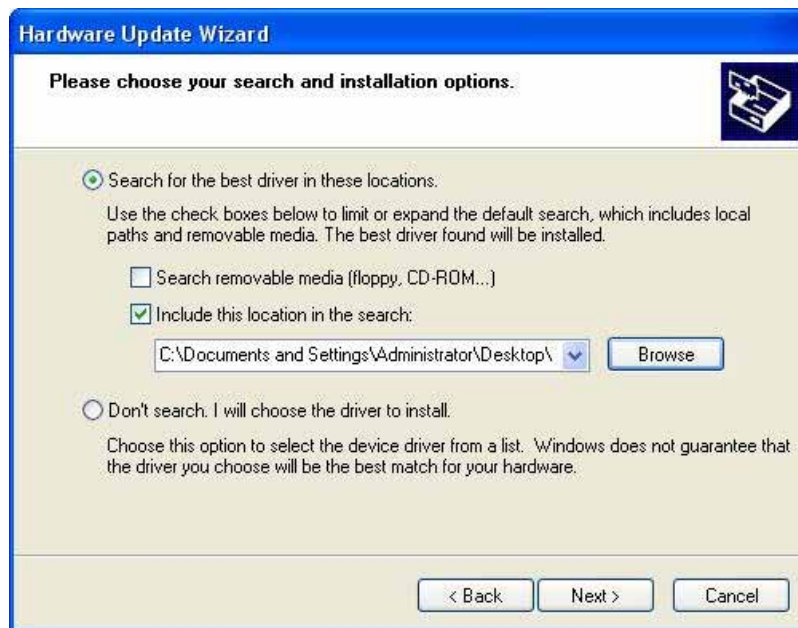devices   Entertainment Encryption/Decryption
Controller   Update Driver
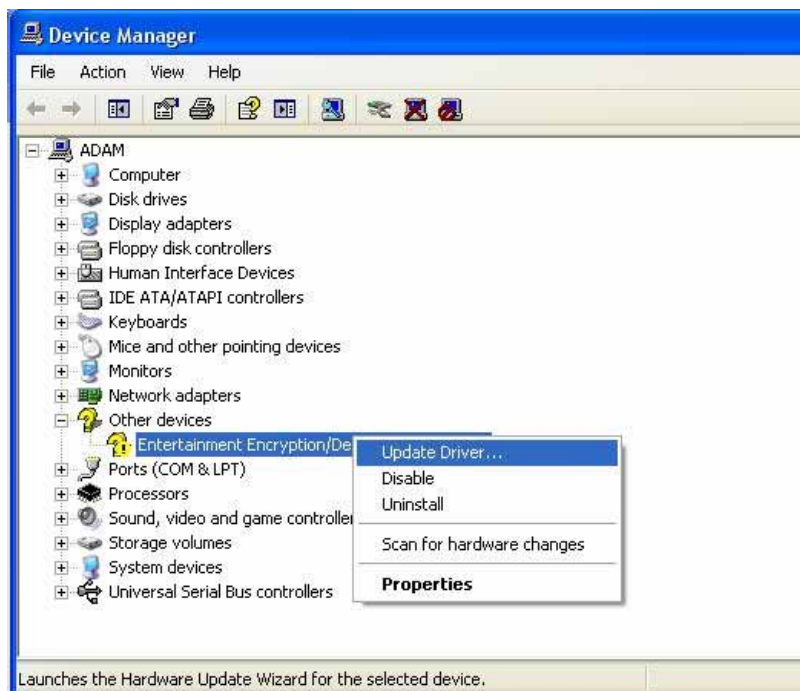
4.3.2   As follow this figure choose and click "Next"

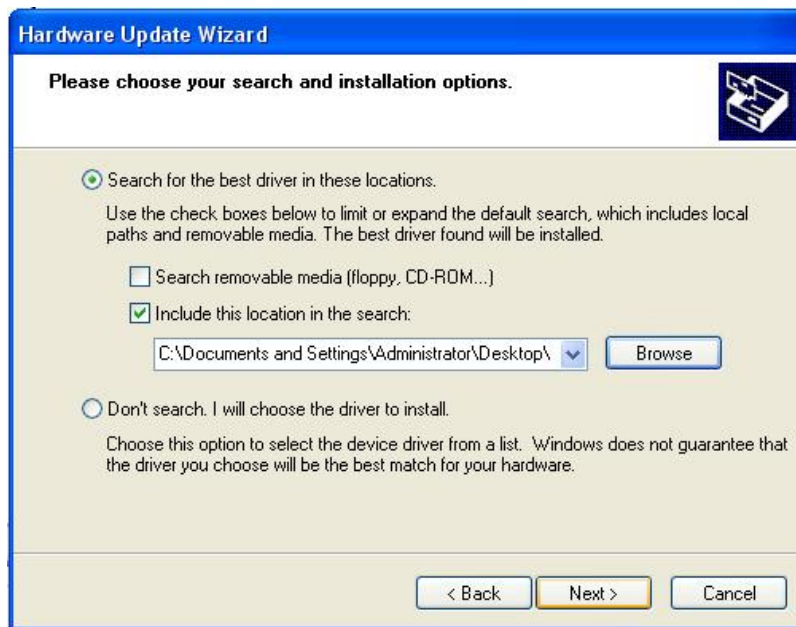**4.3.3**   As follow this figure choose and click "Next"

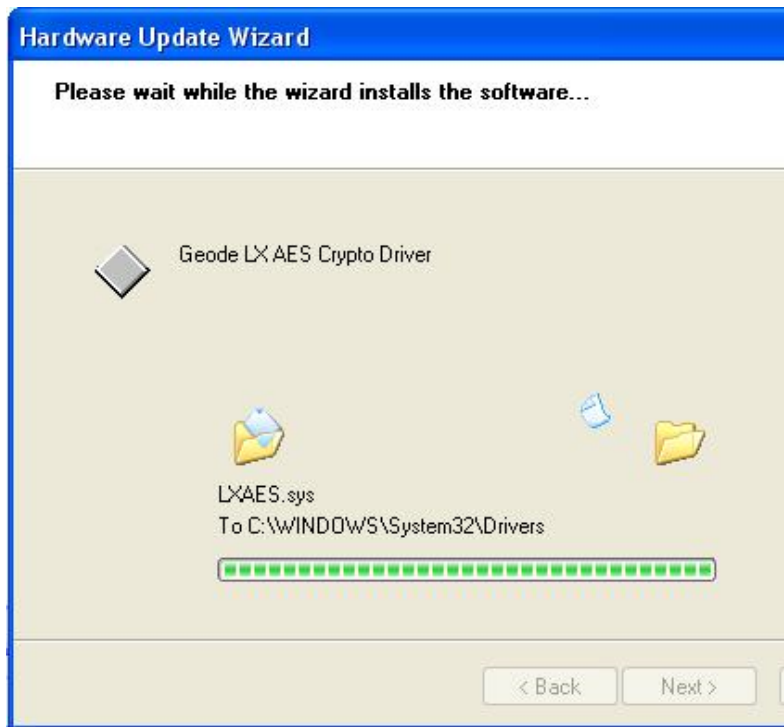**4.3.4** Choose the Include this location in the search and click "Browse".

4.3.5 Select the file "GeodeLX_XP_WDM_AES_v2.01.01" from your driver source and click "OK".

4.3.6 Follow the step 4 and click "Next".

4.3.7 Waiting for the drive install finished.

4.3.8 Check the Crypto devices has installed.