AXIOMTEK

rBOX201-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 rBOX201-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 rBOX201-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 rBOX201-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
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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Table of Contents

CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the rBOX201-FL. The Chapter 1 includes the following sections:

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

1.1   General Description

The rBOX201-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 rBOX201-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 rBOX201-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 rBOX201-FL series provides programmers with a friendly environment for developing application software at a lower cost.

The rBOX201-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 and no internal cabling design
> 2. Wide temperature operation of -40℃ - +70℃
> 3. 1 isolated DIO (4 IN/OUT) for rBOX201-6COM
> 4. Supports 2 Ethernets with Magnetic Isolation Protection
> 5. 2 Watchdog Timers
> 6. LED Indicators (Power, Alarm, Ready/Active, COM (TXD,RXD))
> 7. Wireless (3G or GPRS)
> 8. SNMP V1/V2c
> 9. Support one CompactFlash™
> 10. 2 power paths with terminal block and 12–48VDC
> 11. Din-rail mounting
> 12. Wall mounting (optional)
> 13. Meet safety agency requirements (UL508, UL60950) & passed heavy industrial EMI/EMS testing (ex: EN61000-6-4, EN61000-6-2)

> ➢ Embedded O.S. Supported

> The rBOX201-FL not only supports Windows® XP, but also supports embedded OS, such as Windows® XP embedded, Windows® CE 6.0 and Linux. For storage device, the rBOX201-FL supports one type II CompactFlash™ slot.

> ➢ Intelligent AXView & SNMP V1/V2c

> The rBOX201 features SNMP V1/V2c support for secured network management. To streamline implementation of management applications, Axiomtek has launched exclusive "AXView" monitoring software package for customers to build their own management systems easily and quickly. Axiomtek AXView also contains a variety of easy-to-use management utilities, agent services and libraries. For more product information, please visit our global website on Axiomtek AXView

> ***http://axiomtek.com/products/ListProductType.asp?ptype1=209&ptype2=229***

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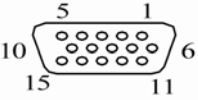
1.2.4 System Memory
- One 200-pin SO-DIMM support DDR400 up to 1GB

1.2.5 Graphics Chip
- AMD ALXD800 internal graphic controller
- DB15 VGA port
- VGA IO Pin Define :

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N.C.	5	GND	6	DETECT
7	GND	8	GND	9	VCC
10	GND	11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

1.2.6   Video Memory
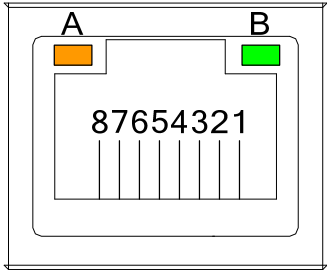
■ Share Memory max. up to 256MB

1.2.7   LAN

■ 2 LAN (LAN1, LAN2)
  ・ FE Davicom DM9102HI, 2 x 10/100Mbps LAN w/Magnetic Isolation Protection 1.5KV

  ・LED definition: Active LED (Yellow flashing), 10 LAN LED (NO Light), 100 LAN LED (Green Light)
■ LAN Pin Define :

FE(10M/100M)

Pin	Signal	
1	Tx+(Data transmission positive)	
2	Tx-(Data transmission negative)	
3	Rx+(Data reception positive)	
4	RJ45 termination	
5	RJ45 termination	
6	Rx- (Data reception negative)	
7	RJ45 termination	
8	RJ45 termination	
A	Active LED(Yellow)	
B	100 LAN LED(Green)	
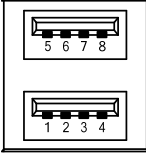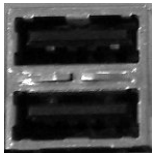
1.2.8   Storage

■ 1 x CompactFlash TypeII

1.2.9   **USB**

- 2 x USB2.0
- With power distribution control and over current protection
- USB Pin Define :

Pin	Signal USB Port 0	Pin	Signal USB Port 1	
1	USB VCC (+5V level)	5	USB VCC (+5V level)	
2	USB #0_D-	6	USB #1_D-	
3	USB #0_D+	7	USB #1_D+	
4	Ground (GND)	8	Ground (GND)	

- USB power (5V) distribution control.

    Some program and sample code for USB power distribution control are offered in Windows and Linux.

    - Windows : Please refer it from our Axiomtek AXView which on Axiomtek's website directly.

    - Linux : Please refer it from our Axiomtek's website directly.

➢ **Axiomtek's website for AXView :**
http://axiomtek.com/products/ViewDownload.asp?View=1001

Axiomtek > Support > Download Center

◐ AXVIEW

AXVIEW- Monitoring Software Package

▶ Drivers

Date	Description	Version	File Size
2012/2/6	AxView utility for rbox series product	2.7.2	72,871.9KB

AXView Version → Sample Code → C (or C#) → AXView

📁 GetDi	📁 GetLEDStatus	📁 GetPowerSattus
📁 GetTemperature	📁 GetVoltage	📁 SetComPort
📁 SetDIInverte	📁 SetDO	📁 SetLED
📁 SetUSBPowerDisable	📁 SetWatchDog	

➢ **Axiomtek's website for Linux :**
http://axiomtek.com/products/ViewDownload.asp?View=923

● rBOX201-6COM

rBOX201-6COM- DIN-rail Fanless Embedded System with AMD LX800 + CS5536AF, 6 Isolated COM and 1 Isolated DIO (4-IN/OUT)

▶ BIOS

Date	Description	Version	File Size
2012/3/8	BIOS	A.101	455.9KB

▶ Drivers

Date	Description	Version	File Size
2012/4/16	BSP for Linux	1.1.0	15.1KB

▶ Mechanical

Date	Description	Version	File Size
2012/3/20	rBOX201-6COM-OD-20120201B0.pdf	N/A	84.5KB

USB Power Distribution Control Sample code:

● **Windows:**

\rBOX201-FL\AXView Version 2.7.?\Sample
code\c\AXView\SetUSBPowerDisable\AXVIEW_DLL_Test.cpp

● **Linux:**

\rBox201-bsp-user-1.0.0\rbox201\src\librb100.c

int _rb201_usb_power(int number, int onoff)
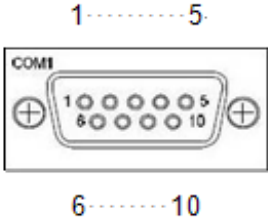
1.2.10 COM

- 6 ports DB9 Pin Define RS-232/422/485 (rBOX210-6COM)
  4 ports DB9 Pin Define RS-232/422/485 (rBOX210-4COM)
- ESD Protection 15KV
- Magnetic Isolation Protection 2KV
- COM1,COM2 speed up to 115.2kbps
- COM3-COM4 Serial Port Speed up to 921.6kbps (rBOX201-4COM)
  COM3-COM6 Serial Port Speed up to 921.6kbps
  (rBOX201-6COM)
- rBOX support jumper less design. All of the com port interface RS232/422/485 can be selected by BIOS menu or software program.
- It also supports Auto Flow Control in RS485 mode
- Serial Port Pin Define : (DB9 Male)

rBOX201

COM1/COM2

Pin	RS-232	RS-422	RS-485	
1	DCD	TX-	Data-	
2	RXD	TX+	Data+	
3	TXD	RX+	--	
4	DTR	RX-	--	
5	Ground	Ground	Ground	
6	DSR	--	--	
7	RTS	--	--	
8	CTS	--	--	
9	RI	--	--	

rBOX201

COM3/COM4/COM5/COM6

Doesn't support RI signal

Pin	RS-232	RS-422	RS-485	
1	DCD	TX-	Data-	
2	RXD	TX+	Data+	
3	TXD	RX+	--	
4	DTR	RX-	--	
5	Ground	Ground	Ground	
6	DSR	--	--	
7	RTS	--	--	
8	CTS	--	--	

- Some program and sample code for COM port interface type are offered in Windows and Linux.

  - Windows : Please refer it from our Axiomtek AXView which on Axiomtek's website directly.

  - Linux : Please refer it from our *Axiomtek's website* directly.

> ➤ **Axiomtek's website for AXView :**
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AXVIEW- Monitoring Software Package

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📁 SetDIInverte	📁 SetDO	📁 SetLED
📁 SetUSBPowerDisable	📁 SetWatchDog	

> ➢ **Axiomtek's website for Linux :**
> *http://axiomtek.com/products/ViewDownload.asp?View=923*

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rBOX201-6COM- DIN-rail Fanless Embedded System with AMD LX800 + CS5536AF, 6 Isolated COM and 1 Isolated DIO (4-IN/OUT)

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Date	Description	Version	File Size
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▶ Mechanical

Date	Description	Version	File Size
2012/3/20	rBOX201-6COM-OD-20120201B0.pdf	N/A	84.5KB

COM port interface selection Sample Code :

-Set COM port interface type(Windows, Linux)

● **Windows:**

-RS232/422/485 interface selection:

rBOX Series\rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetComPort\ AXVIEW_DLL_Test.cpp

● **Linux:**

-RS232/422/485 interface selection:

\rBox201-bsp-user-1.0.0\rbox201\src\librb100.c

int _rb201_set_comport(int number, int type)
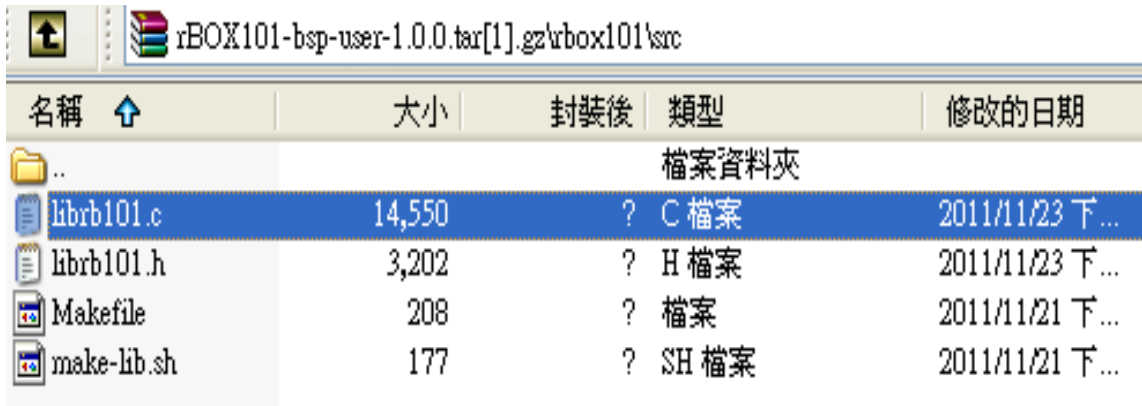
1.2.11 Power

- 2 power paths

- 2 power sources must be same voltage and DC input range 12-48V.

- 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

- DC Terminal Block

Pin	DC Signal Name	
1	AL-	
2	AL+	
3	SG	
4	SG	
5	GND	
6	DC2	
7	GND	
8	DC1	

NOTE: If 2 power sources aren't same voltage and the system will be possible damage.

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

1.2.12   WatchDog Timer (WDT)

■ rBox support two Watchdog timers. Those can cause system reset when timer expired.

■ WDT 1 : one step is 1sec, 255 levels

WDT 2 : one step is 250ms, 255 levels

■ Some program and sample code for two Watchdog timers are offered in Windows and Linux.

- Windows : Please refer it from our Axiomtek AXView which on *Axiomtek's website* directly.

- Linux : Please refer it from our *Axiomtek's website* directly.

➢ **Axiomtek's website for AXView :**
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● **AXVIEW**

AXVIEW- Monitoring Software Package

▶ Drivers

Date	Description	Version	File Size
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AXView Version → Sample Code → C (or C#) → AXView

➢ **Axiomtek's website for Linux :**
http://axiomtek.com/products/ViewDownload.asp?View=923

Watch Dog Timer Sample code:

-Super IO(Linux)

-CPLD(Windows, Linux)

● **Windows:**

-CPLD:

\rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetWatchDog\
AXVIEW_DLL_Test.cpp

● **Linux:**

\rBox201-bsp-user-1.0.0\rbox201\src\librb100.c

-Super IO:

int _rm820_WDT_enable(unsigned char scale, unsigned char timeout)

int _rm820_WDT_disable(void)

int _rm820_WDT_reload(void)

int _rm820_read_WDT_config(unsigned int *time)

-CPLD:

unsigned char _rb201_get_WDT_value(void)

int _rb201_WDT_enable(unsigned char timeout)

int _rb201_WDT_disable(void)

1.2.13 Digital I/O Connector and Pin Definition

- 4bit DI and 4bit DO
- 3KV optical isolation
- DIO Design Specification
- Some program and sample code for DIO are offered in Windows and Linux.
    - Windows: Please refer it from our Axiomtek AXView which on Axiomtek's website directly.
    - Linux : Please refer it from our *Axiomtek's website* directly.

> **Axiomtek's website for AXView :**
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AXView Version → Sample Code → C (or C#) → AXView

📁 GetDi	📁 GetLEDStatus	📁 GetPowerSattus
📁 GetTemperature	📁 GetVoltage	📁 SetComPort
📁 SetDIInverte	📁 SetDO	📁 SetLED
📁 SetUSBPowerDisable	📁 SetWatchDog	

➢ **Axiomtek's website for Linux :**
http://axiomtek.com/products/ViewDownload.asp?View=923

GPIO control

DI:

   - Get the DI register(Windows, Linux)

    - Set DI polarity(Windows)

DO:

   - Get DO register(Linux)

  - Set DO register(Windows, Linux)

DI/DO Sample Code :

● **Windows:**

-Set DI polarity:

rBOX Series\rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetDIInverte\ AXVIEW_DLL_Test.cpp

-Get DI:

\rBOX Series\rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\GetDi\ AXVIEW_DLL_Test.cpp

-Set DO:

\rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetDO\ AXVIEW_DLL_Test.cpp

● **Linux:**

\rBox201-bsp-user-1.0.0\rbox201\src\librb100.c

-Get DI:

int _ax93610_read_DI(unsigned char *data)

-Get DO:

int _ax93610_read_DO(unsigned char *data)

-Set DO:

int _ax93610_write_DO(unsigned char data)

■ **DIO Design Specification**

Digital Input	
Input Channels	4,source type
Input Voltage	0 to 24VDC
Digital Input Levels for Dry Contacts	Logic level 0:Close to GND
	Logic level 1:Open
Digital Input Levels for Wet Contacts	Logic level 0:+10V to +24V (DI To COM-)
	Logic level 1:+3V max.
Digital Output	
Output Channels	4,sink type
Output Current	Max. 200 mA per channel
On-state Voltage	24VDC nominal, open collector to 30V

■ **DIO 4 in/out of TB10 Female**
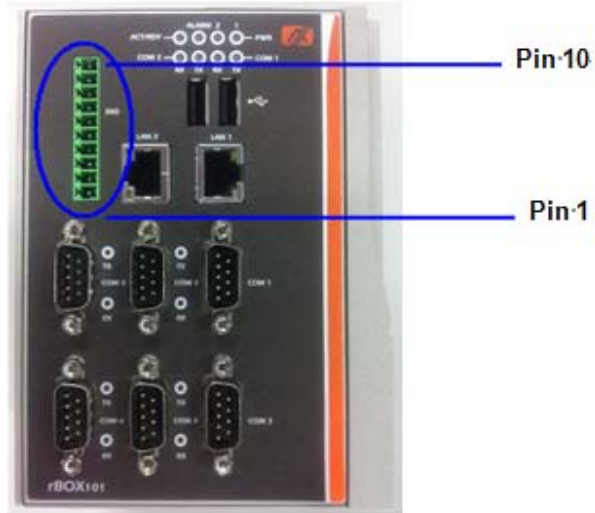
rBOX201 DIO Terminal Block

TB10 Pin No.	Signal name	Meaning
1	COM+	Plus Common for DIO
2	DI0	
3	DI1	
4	DI2	
5	DI3	
6	DO0	
7	DO1	
8	DO2	
9	DO3	
10	COM-	Minus Common for DIO

■ **DIO operation schematic diagram**

Reference 1.
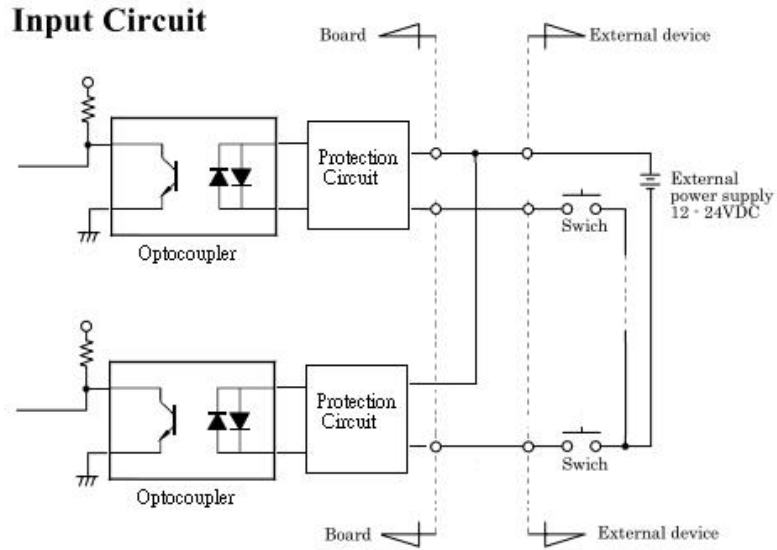
Reference 2.
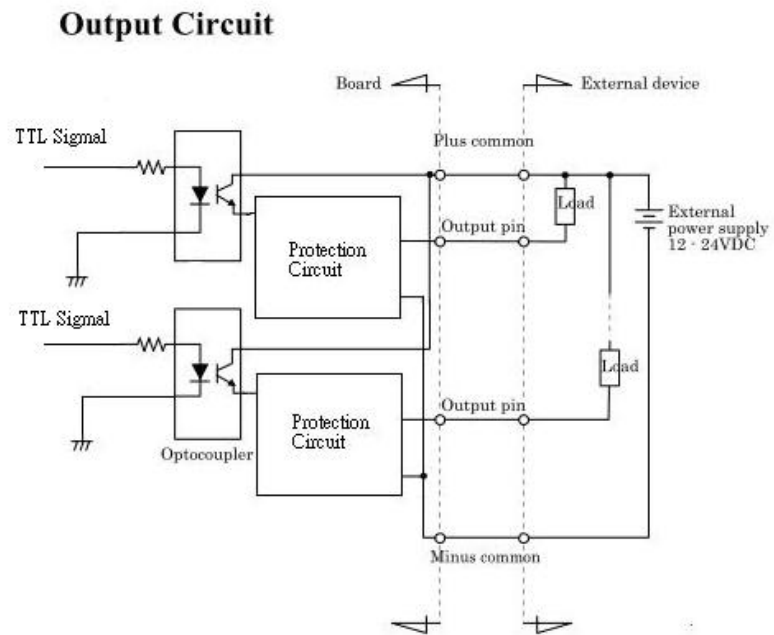
Reference 3

Digital Input Wiring
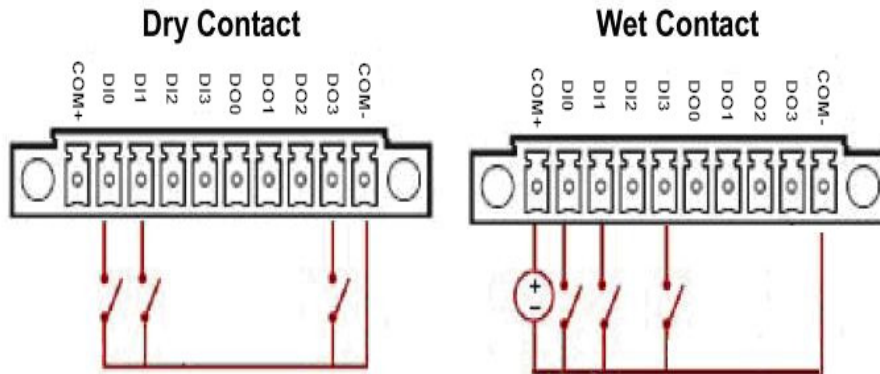
Note: If you are using wet contacts, you must connect **COM** to power.

Reference 4

Digital Output Wiring
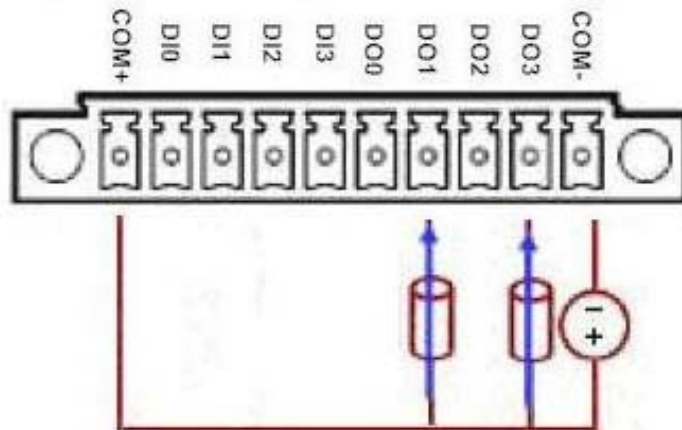
■ **SMBus Address & GPIO Pin Define**

- SMBus Address : 0b0100100X
- GPIO PIN define :

GPIO 0 → DI0

GPIO 1 → DI1

GPIO 2 → DI2

GPIO 3 → DI3

GPIO 4 → DO0

GPIO 5 → DO1

GPIO 6 → DO2

GPIO 7 → DO3

- SMBus to GPIO Schematic
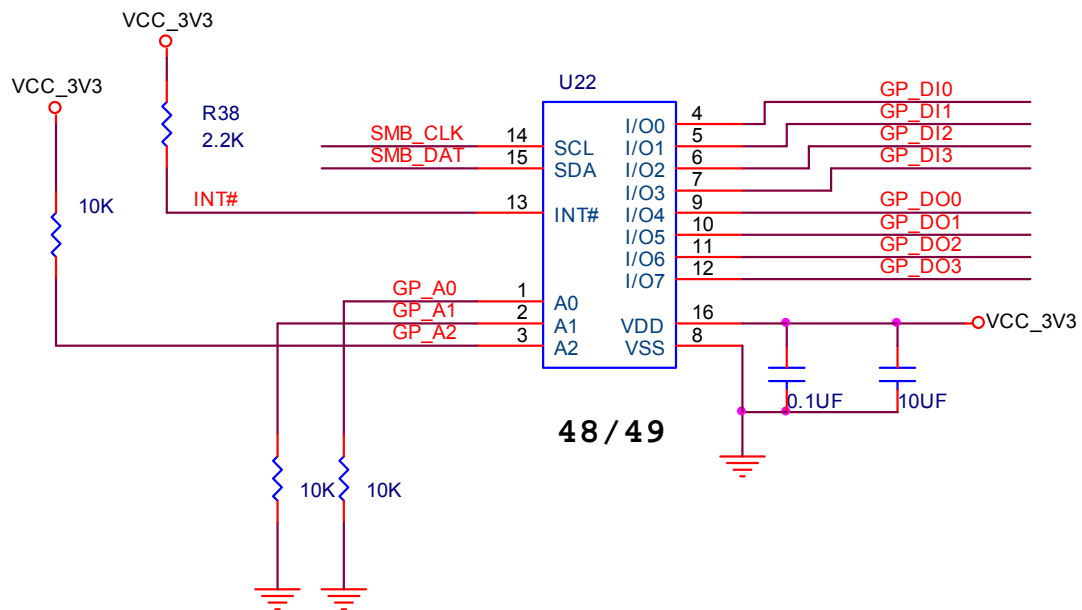
1.2.14 System LED

For maintenance issue, IO board 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.	Green	
DC PWR2	Indicate the DC2 input status. When the DC input is acceptable, the LED will ON.	Green	
Alarm	The LED will ON if having below condition. 1. DC PWR1 or PWR2 is lost. (default) 2. User define event. 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. - 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.	Yellow	
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 restarded.*

■   Some program and sample code for Alarm LED and Relay Output are offered in Windows and Linux.

- Windows : Please refer it from our Axiomtek AXView which on *Axiomtek's website* directly.

- Linux : Please refer it from our *Axiomtek's website* directly.

■   Alarm LED and Relay output Sample Code:

- Set Alarm LED and Relay status(Windows, Linux)

 - Get Alarm LED and Relay status(Windows, Linux)

- Get Power status(Windows, Linux)

● **Windows:**

-Get the LED status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\GetLEDStatus\AXVIEW_DLL_Test.cpp

-Set the LED status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetLED\AXVIEW_DLL_Test.cpp

-Get Power Status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\GetPowerSattus\ AXVIEW_DLL_Test.cpp

● **Linux:**

\rBox201-bsp-user-1.0.0\rbox201\src\librb100.c

-Get the LED status:

int _rb201_get_power_usr_alarm_status(void)

-Set the LED status:

int _rb201_power_alarm_ctl(int onoff)

-Get Power Status:

int _rb201_read_power_status(int number)

> ➢ **Axiomtek's website for AXView :**
http://axiomtek.com/products/ViewDownload.asp?View=1001

Axiomtek > Support > Download Center

◉ AXVIEW

AXVIEW- Monitoring Software Package

▶ Drivers

Date	Description	Version	File Size
2012/2/6	AxView utility for rbox series product	2.7.2	72,871.9KB

AXView Version → Sample Code → C (or C#) → AXView

GetDi   GetLEDStatus   GetPowerSattus

GetTemperature   GetVoltage   SetComPort

SetDIInverte   SetDO   SetLED

SetUSBPowerDisable SetWatchDog

➢ **Axiomtek's website for Linux :**

http://axiomtek.com/products/ViewDownload.asp?View=923

● rBOX201-6COM

rBOX201-6COM- DIN-rail Fanless Embedded System with AMD LX800 + CS5536AF, 6 Isolated COM and 1 Isolated DIO (4-IN/OUT)

▶ BIOS

Date	Description	Version	File Size
2012/3/8	BIOS	A.101	455.9KB

▶ Drivers

Date	Description	Version	File Size
2012/4/16	BSP for Linux	1.1.0	15.1KB

▶ Mechanical

Date	Description	Version	File Size
2012/3/20	rBOX201-6COM-OD-20120201B0.pdf	N/A	84.5KB

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.
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

- The rBox can support two DC power source. When lost one of them will cause Alarm LED on and trigger Relay out for remote notice.
- We also provide the register for user to define their event for trigger the Alarm LED and Relay. Alarm LED and Relay output have the same activity depend on DC status and register control.
- 1 relay output
- Relay output with 0.5A @ 30VDC
- Event : Power Fail and User define
- Some program and sample code for Alarm LED and Relay Output are offered in Windows and Linux.

  - Windows : Please refer it from our Axiomtek AXView which on *Axiomtek's website* directly.

  - Linux : Please refer it from our *Axiomtek's website* directly.

> **Axiomtek's website for AXView :**
http://axiomtek.com/products/ViewDownload.asp?View=1001

Axiomtek > Support > Download Center

● AXVIEW

AXVIEW- Monitoring Software Package

▶ Drivers

Date	Description	Version	File Size
2012/2/6	AxView utility for rbox series product	2.7.2	72,871.9KB

AXView Version ➔ Sample Code ➔ C (or C#) ➔ AXView

📁 GetDi	📁 GetLEDStatus	📁 GetPowerSattus
📁 GetTemperature	📁 GetVoltage	📁 SetComPort
📁 SetDIInverte	📁 SetDO	📁 SetLED
📁 SetUSBPowerDisable	📁 SetWatchDog	

Axiomtek's website for Linux :
http://axiomtek.com/products/ViewDownload.asp?View=923

❷ rBOX201-6COM

rBOX201-6COM- DIN-rail Fanless Embedded System with AMD LX800 + CS5536AF, 6 Isolated COM and 1 Isolated DIO (4-IN/OUT)

▶ BIOS

Date	Description	Version	File Size
2012/3/8	BIOS	A.101	455.9KB

▶ Drivers

Date	Description	Version	File Size
2012/4/16	BSP for Linux	1.1.0	15.1KB

▶ Mechanical

Date	Description	Version	File Size
2012/3/20	rBOX201-6COM-OD-20120201B0.pdf	N/A	84.5KB

Alarm LED and Relay output Sample Code:

- Set Alarm LED and Relay status(Windows, Linux)

- Get Alarm LED and Relay status(Windows, Linux)

- Get Power status(Windows, Linux)

● **Windows:**

-Get the LED status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\GetLEDStatus\AXVIEW_DLL_Test.cpp

-Set the LED status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\SetLED\AXVIEW_DLL_Test.cpp

-Get Power Status:

rBOX201-FL\AXView Version 2.7.?\Sample code\c\AXView\GetPowerSattus\ AXVIEW_DLL_Test.cpp

● Linux :

-Get the LED status:

int _rb201_get_power_usr_alarm_status(void)

-Set the LED status:

int _rb201_power_alarm_ctl(int onoff)

-Get Power Status:

int _rb201_read_power_status(int number)

➥ **rBOX Alarm Application:**

Troubleshooting is very important in many applications.

In the rBox series we can provide three kinds of way for troubleshooting.

- Alarm LED
- Relay out
- SNMP through AXView

1. Maintenance Staff can check the Alarm LED for basic troubleshooting
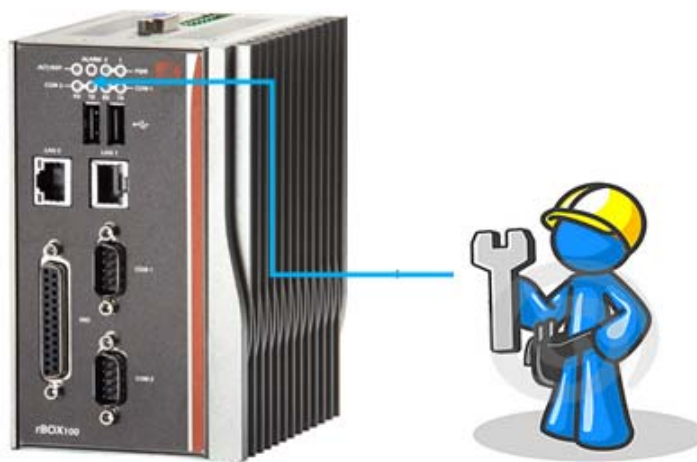
2. Relay output

Below is a very simple application for remote notice use relay and lamp.

a) Normal

The simplest relay is the

b) Warning

The simplest relay is the
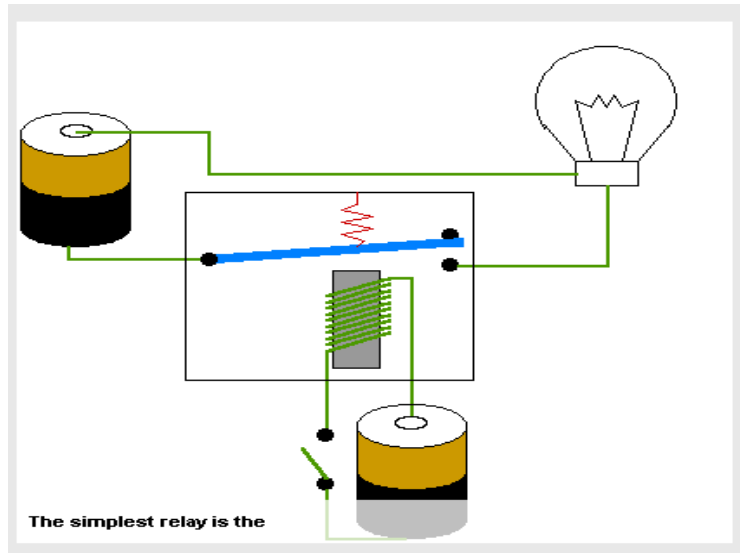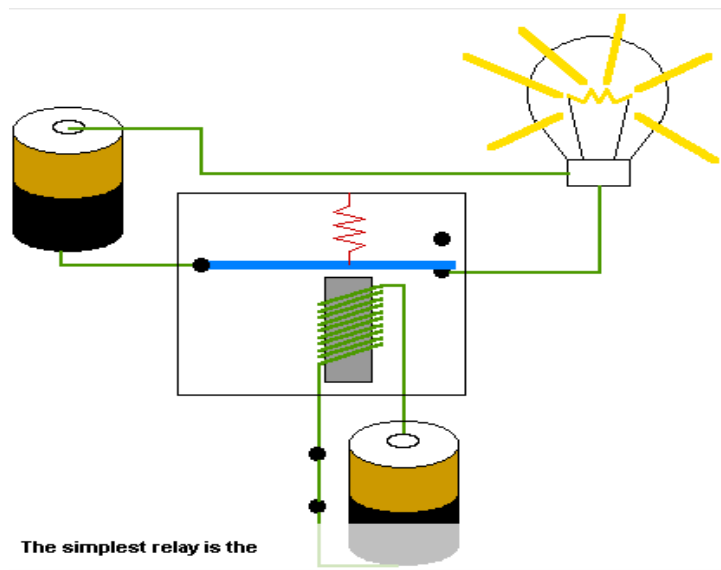
c) Relay wiring of rBox
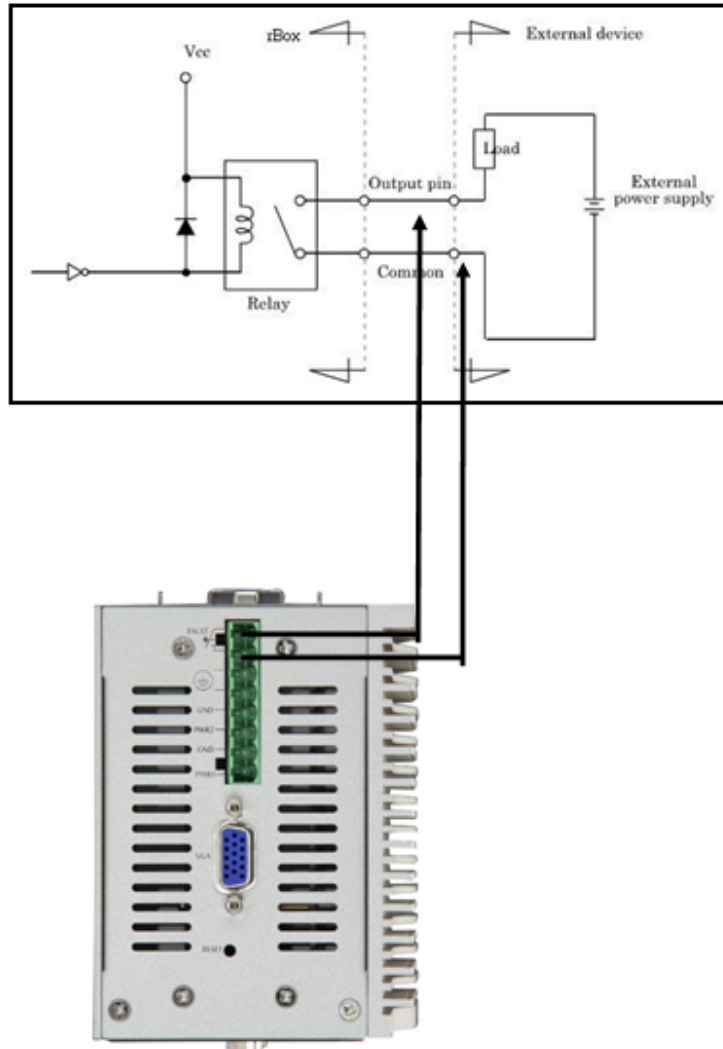
3. SNMP
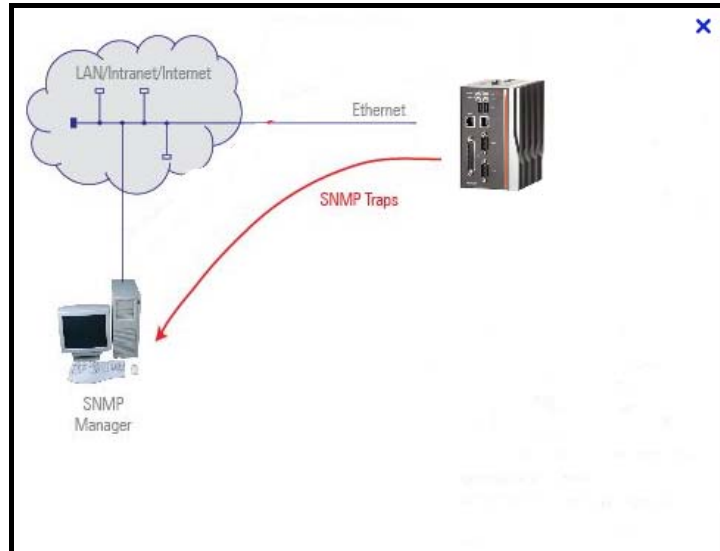
1.2.16   Wireless (3G, GPRS)
■   1 x Mini Card (Support USB only)
■   1 x SIM Socket on board

1.2.17   Reset Bottom
■   1 x Reset bottom

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

1.2.18   Operation Temperature
■   -40℃ ~ +70℃ (-40 ºF ~ +158ºF), with W.T. (Memory & CF)

1.2.19   Storage Temperature
■   -45℃ ~ +85℃ (-49 ºF ~ +185ºF)

1.2.20   Humidity
■   5% ~ 95% (non-condensation)

1.2.21   Weight
■   1.38 kg (3 lb) for rBOX201-4COM

1.2.22   Dimensions

- 81mm(3.18") (W) x110mm(4.33") (D) x135mm(5.31") (H)
  for rBOX201-4COM

- 100.6mm(3.18") (W) x110mm(4.33") (D) x135mm(5.31") (H)
  for rBOX201-6COM

1.2.23   System I/O Outlet

- 6 (or 4) 9-pin D-Sub male connectors, COM1~COM6   (rBOX201-6COM) or COM1~COM4 (rBOX201-4COM) for RS-232/422/485

- One 15-pin D-Sub female connector for VGA

- Two 10/100Mbps Ethernet with Magnetic Isolation Protection

- Two USB 2.0 connectors

- One isolated DIO (4 IN/OUT) for (rBOX201-6COM)

- Two DC Powers Input with terminal block

- Alarm Contact

- Wireless (3G or GPRS)

NOTE   All specifications and images are subject to change without notice.

1.3   Dimensions

The following diagrams show you dimensions and outlines of the rBOX201-6COM-FL and rRBOX201-4COM-FL.

■ rBOX201-6COM-FL
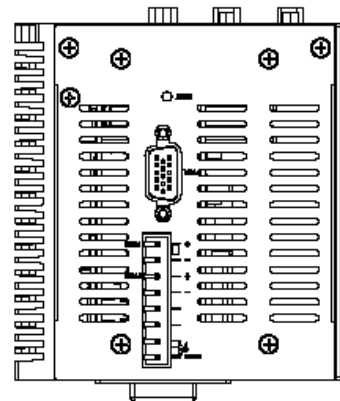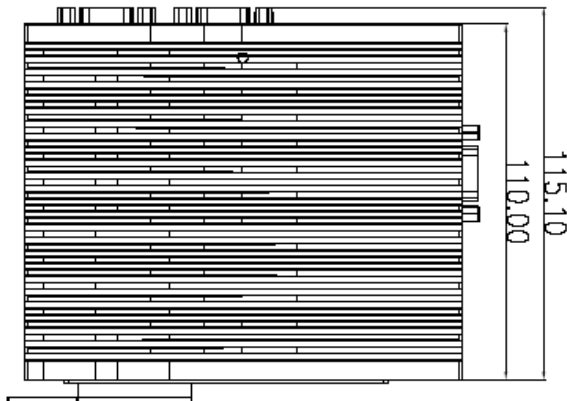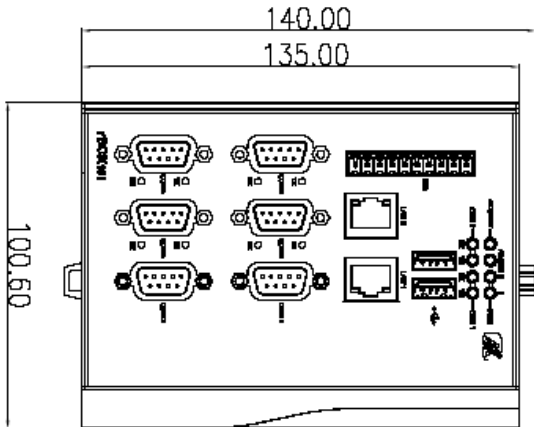
■ **rRBOX201-4COM-FL**
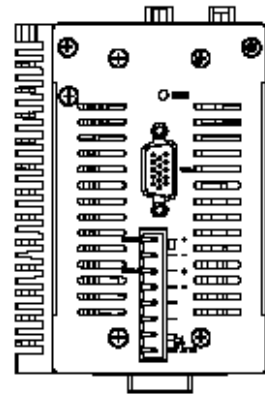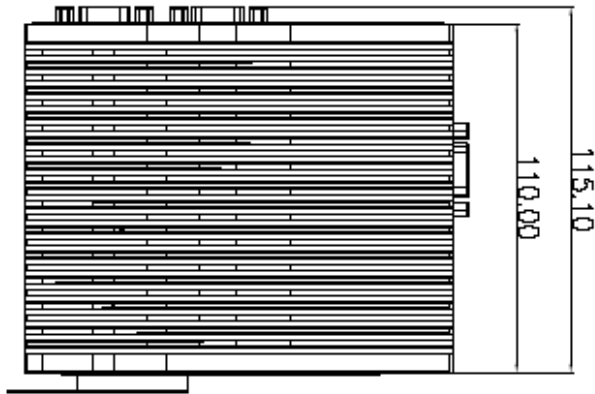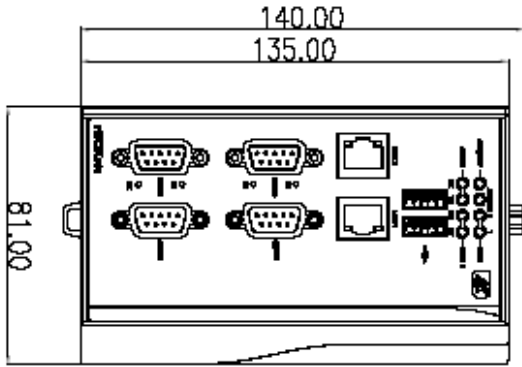
1.4 I/O Outlets

The following figures show you I/O outlets on front view and top view of the rBOX201-6COM-FL and rBOX201-4COM.

● **Front View**

rBOX201-6COM-FL
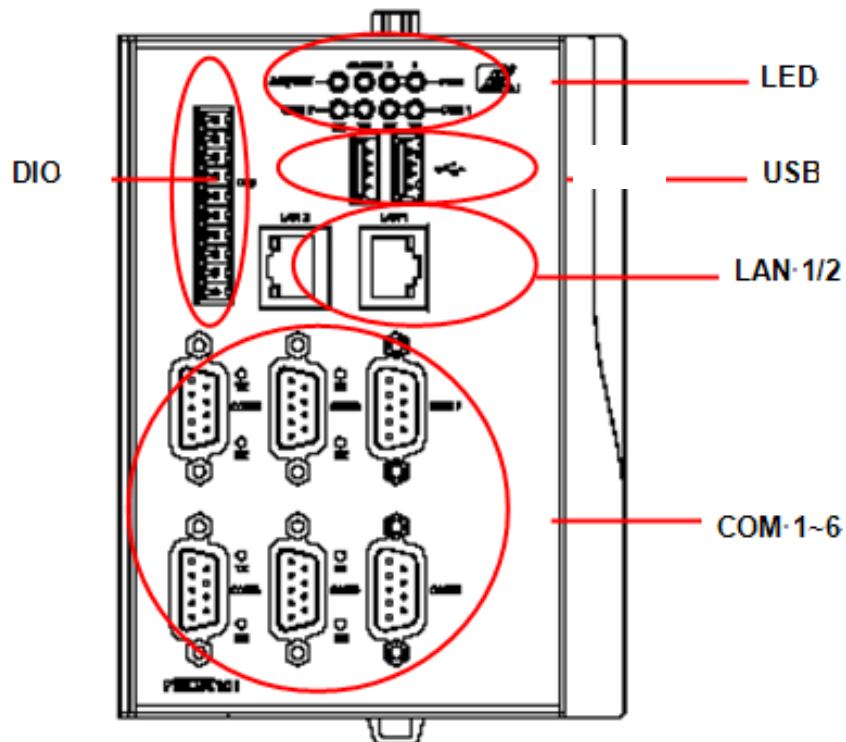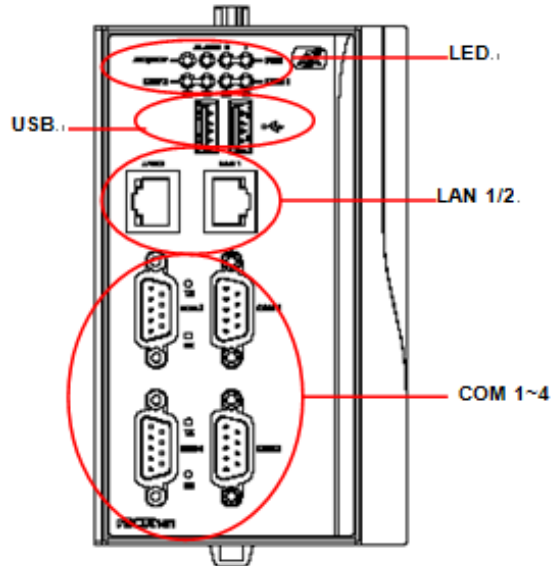
rBOX201-4COM

● **Top View**

rBOX201-6COM-FL
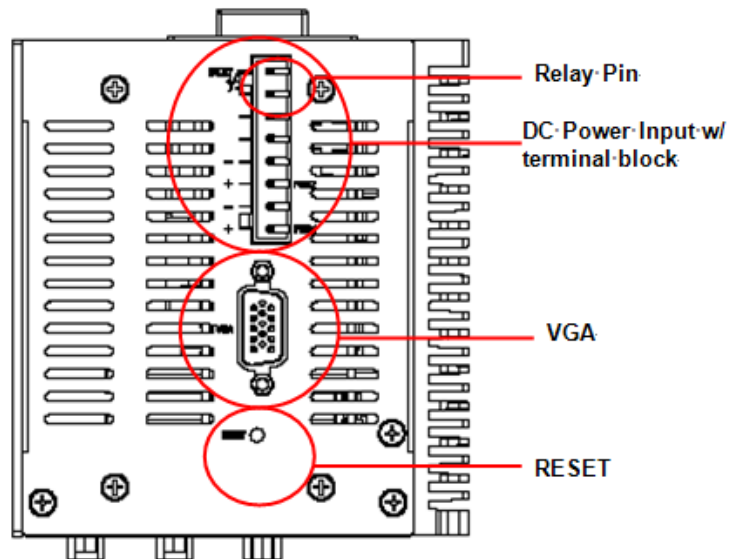
rBOX201-4COM
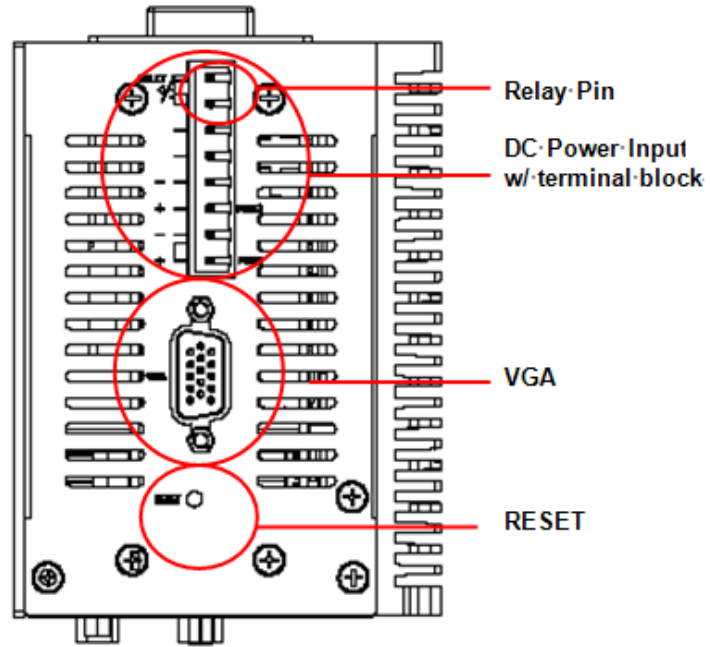
1.5   Packing List

The package bundled with your rBOX201-FL should contain the following items:

- rBOX201-FL System Unit x 1
- DVD x 1 (For Driver and User's Manual)
- Power terminal block x1
- DIO female connector x1 (rBOX201-6COM)
- Din-rail kit x1
- Screws
- Quick Manual x1

MEMO:

CHAPTER 2
HARDWARE INSTALLATION

The rBOX201-FL is convenient for your various hardware configurations, such as Memory Module and CompactFlash™ 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.
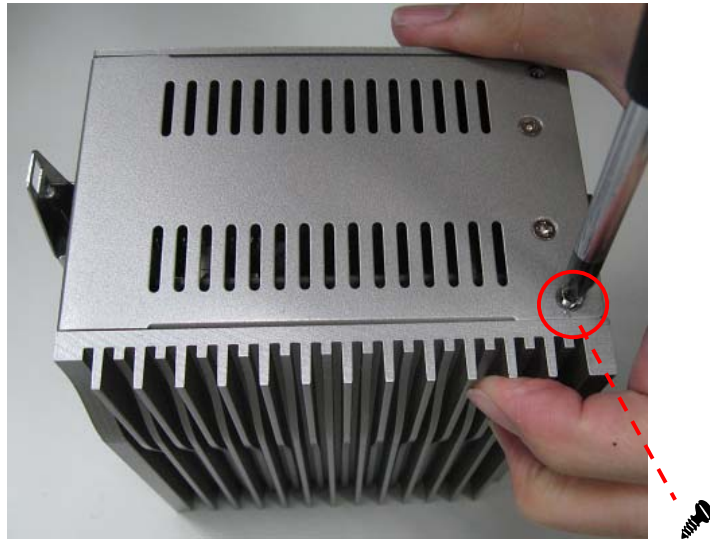
Step 3 Hold one side of the module, and insert the gold colored contact into the socket. Push the module down.

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 CompactFlashTM Card

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

Step 3   Locate the CompactFlash^{TM} socket.

Step 4   Loosen these screws and remove the CompactFlash^{TM} fixing bracket.
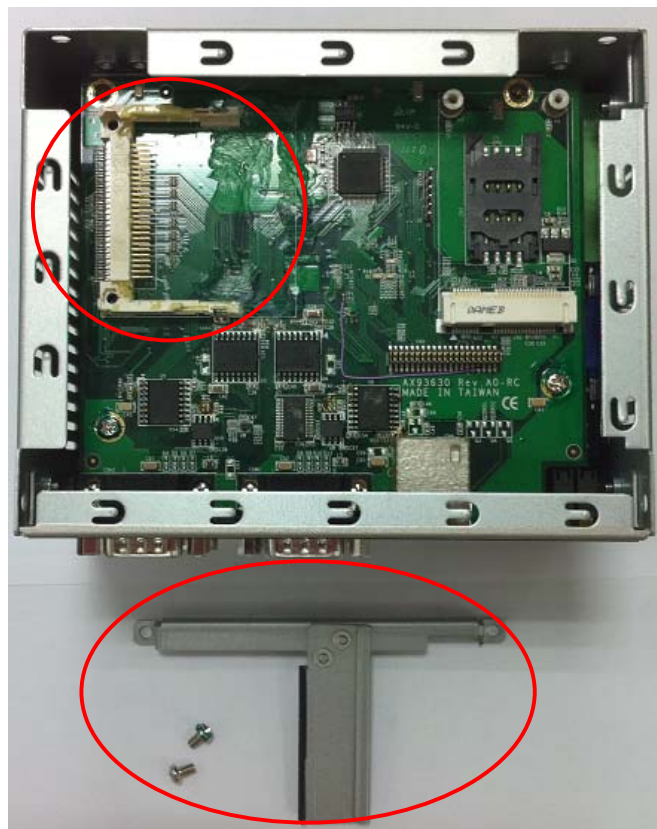
Step 5   Insert the CompactFlash^{TM} card into the socket until it is firmly seated.

Step 6 Put the CompactFlash^{TM} fixing bracket back to the system, and fasten screws tight close the CompactFlash^{TM} fixing bracket.
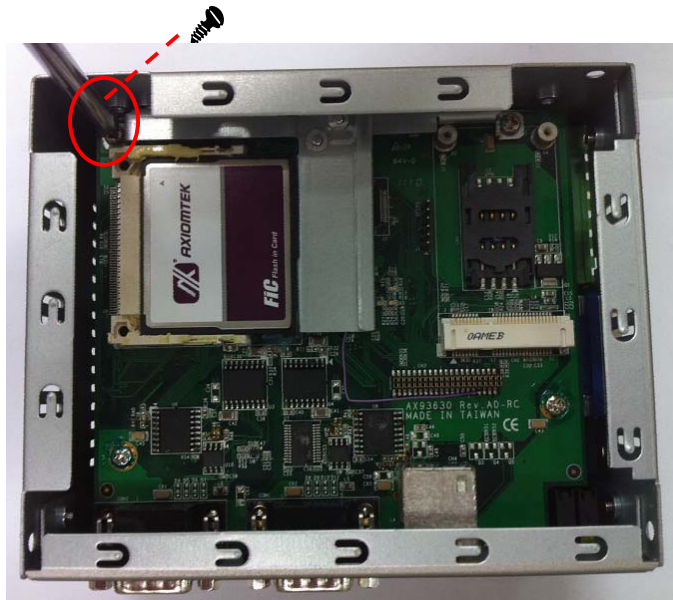
Step 7 Put the cover back to the system, and fasten screws tight close the chassis.

2.2.1   Installing Din-rail Mounting

The rBOX201-FL provides Din-rail Mount 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.***

Hardware Installation

NOTE   The Din-rail hole drawing for rBOX201-6COM-FL is listed below:
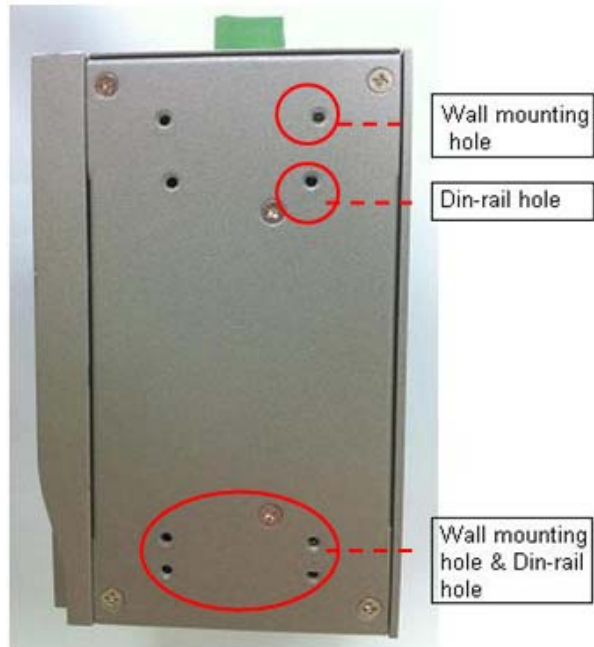
NOTE: **The Din-rail hole drawing for rBOX201-4COM-FL is listed below:**
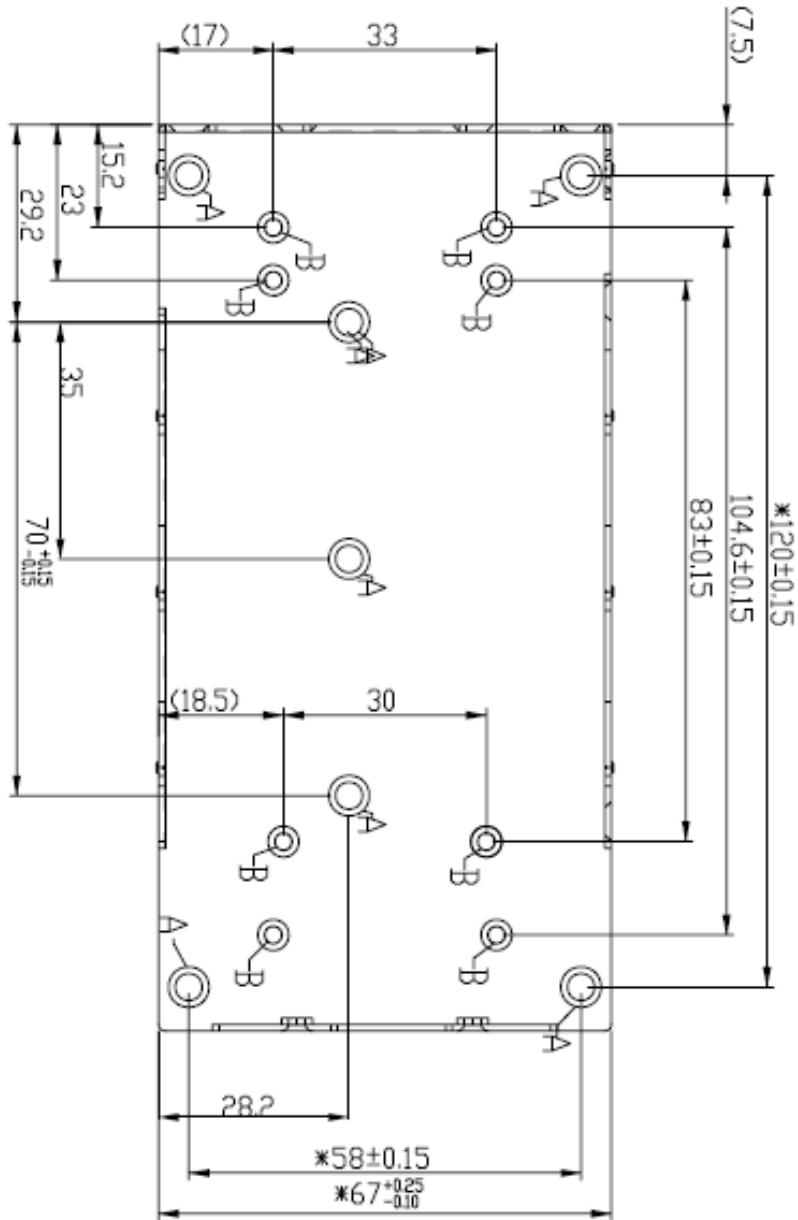
NOTE   *The Din-rail kit drawing is listed below:*
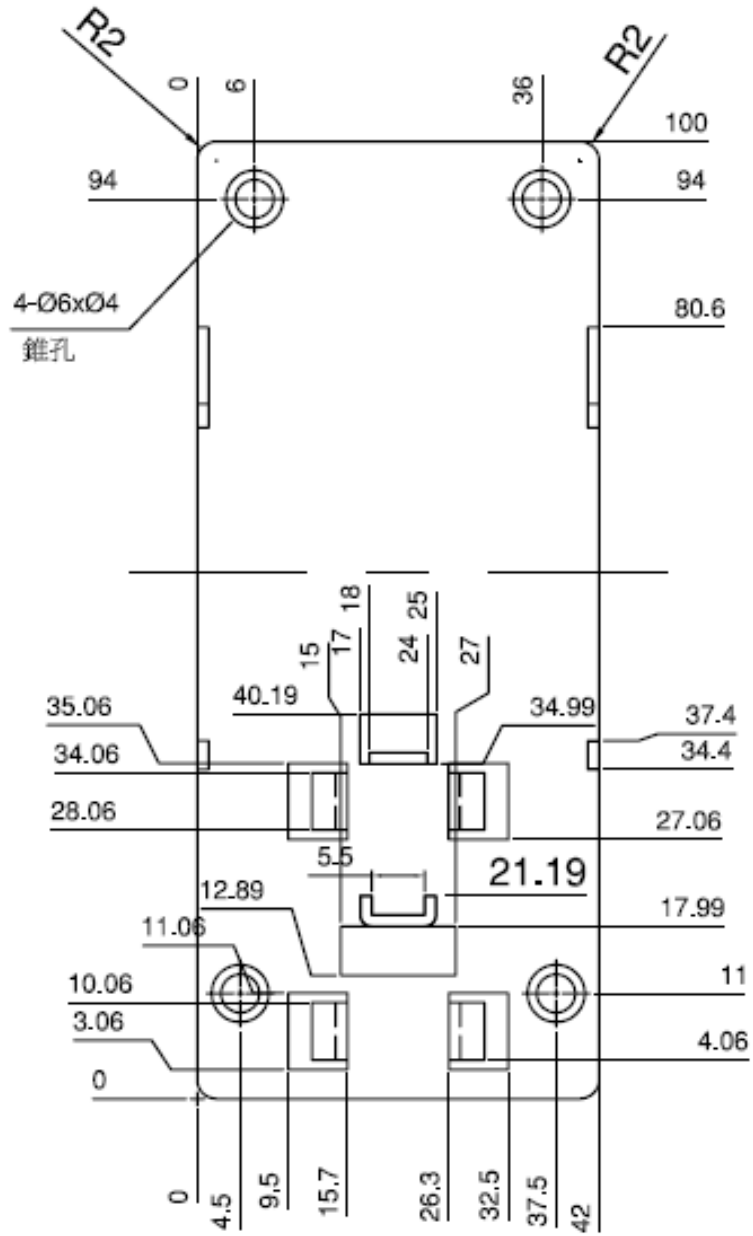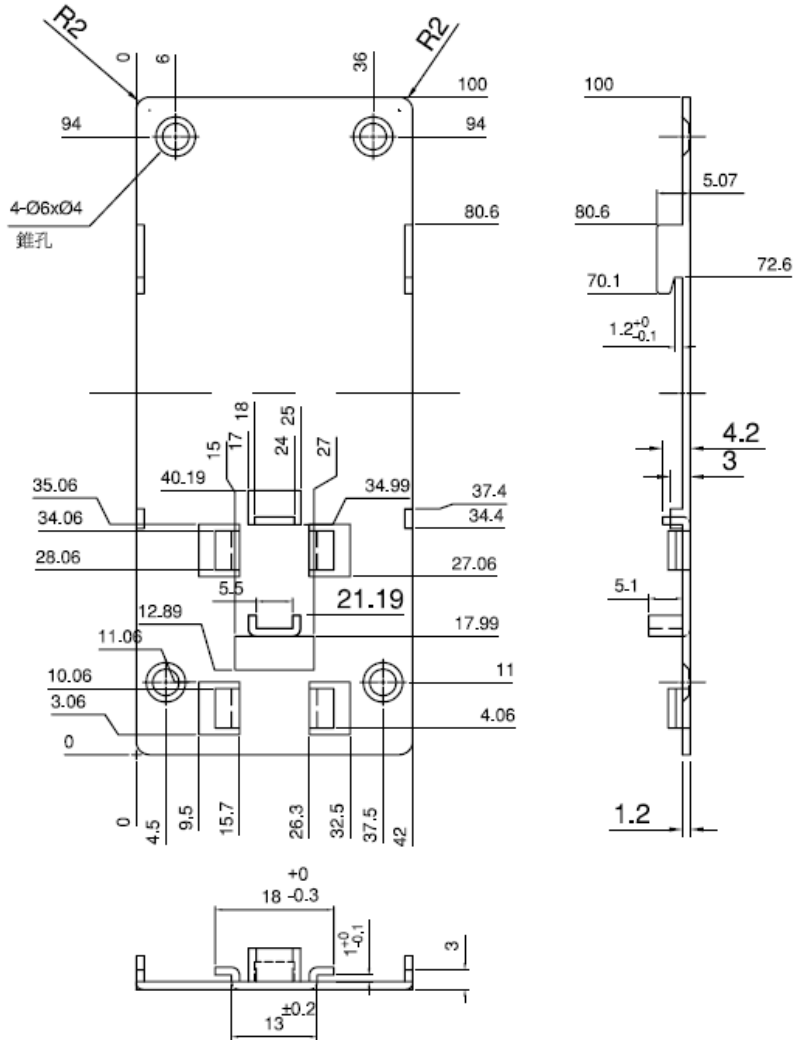
2.2.2 Setting up rBOX by Din-rail mounting

The rBOX set up by Din-rail mounting as below:

Step 1 Fixing the rail firstly.
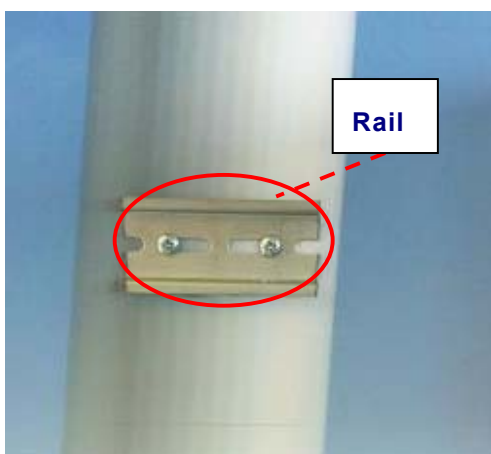
Step 2   Set up the rBOX on the rail by Din-rail mounting

2.3   Installing Wall Mounting (optional)

The rBOX 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.
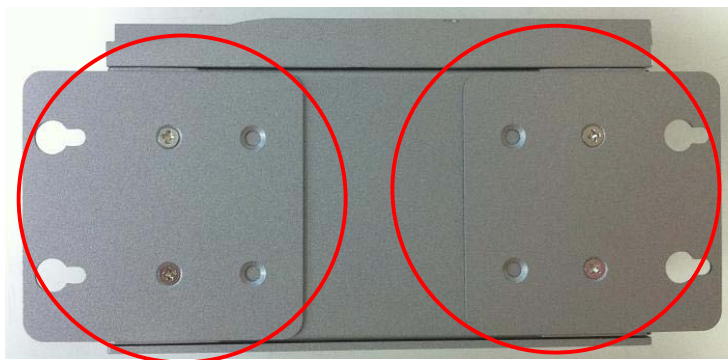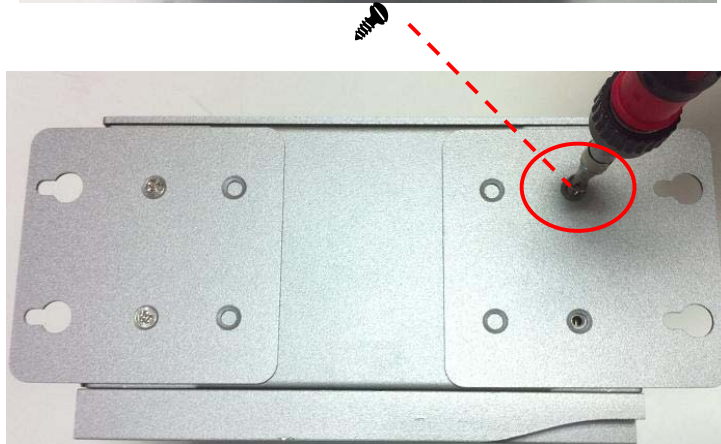
NOTE: **Please notice the Din-rail holes with Wall-mounting holes while assembly the bracket to system.**
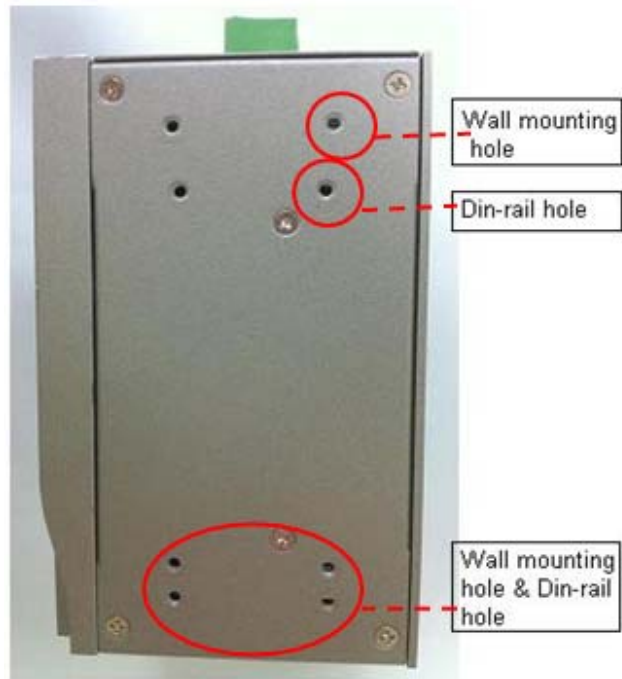
CHAPTER 3
PHOENIX-AWARD BIOS UTILITY

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

Phoenix - AwardBIOS CMOS Setup Utility

```
► Standard CMOS Features        ► PC Health Status
► Advanced BIOS Features          Load Optimized Defaults
► Advanced Chipset Features       Set Supervisor Password
► Integrated Peripherals          Set User Password
► Power Management Setup          Save & Exit Setup
► PnP/PCI Configurations          Exit Without Saving

Esc : Quit        F9 : Menu in BIOS        ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup

Time, Date, Hard Disk Type...
```

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.*

NOTE: *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.
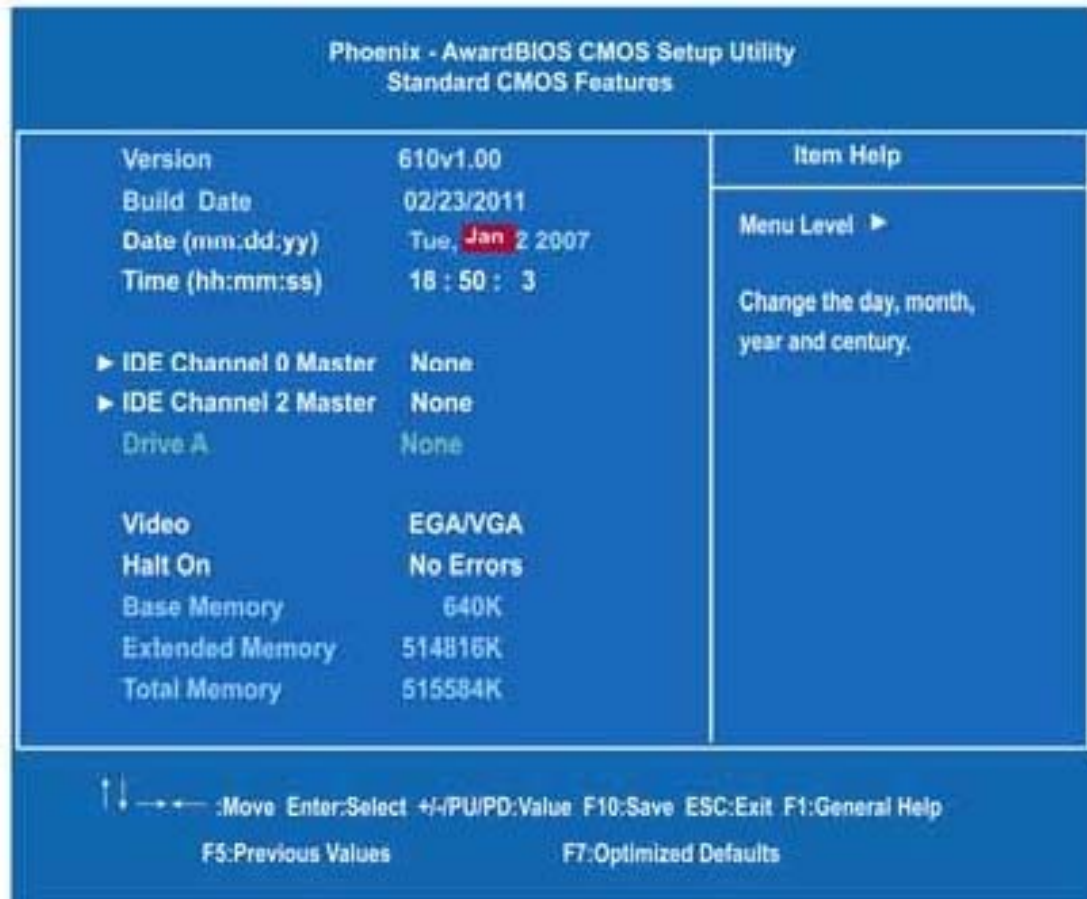
> ➢ **Date**

The date format is <day> <month> <date> <year>.

> ➢ **Time**

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

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 while powering up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for 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, to set up some system features according to your preference.
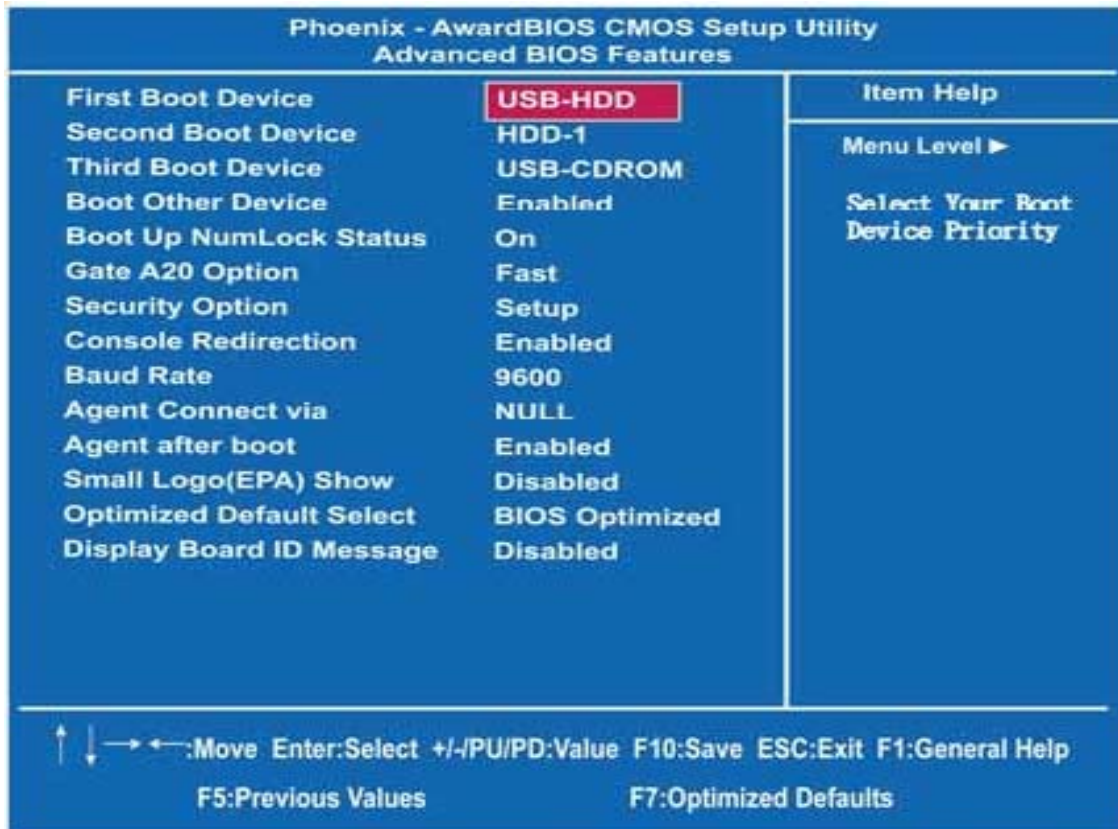
NOTE: The BIOS default setting of the system is "Previous Setup". It means that if the system is power failure or power loss, the system will come back to previous setup while be re-boot.

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.
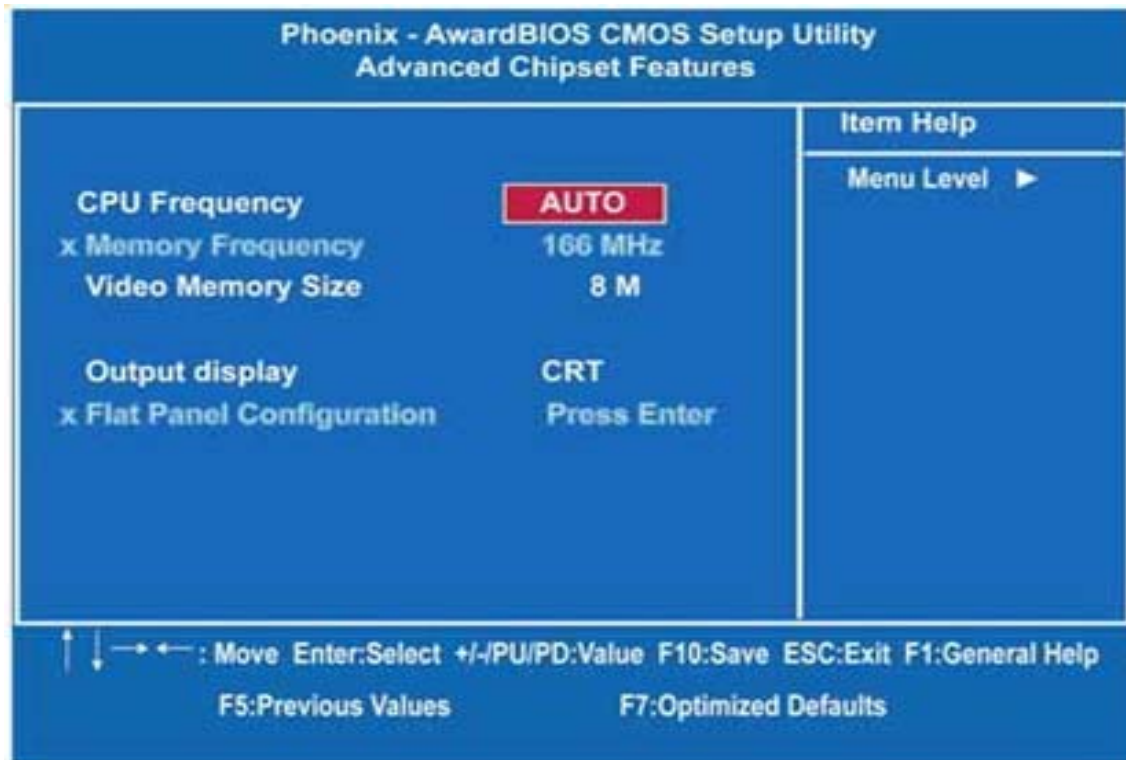
> **CPU Frequency**

  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.
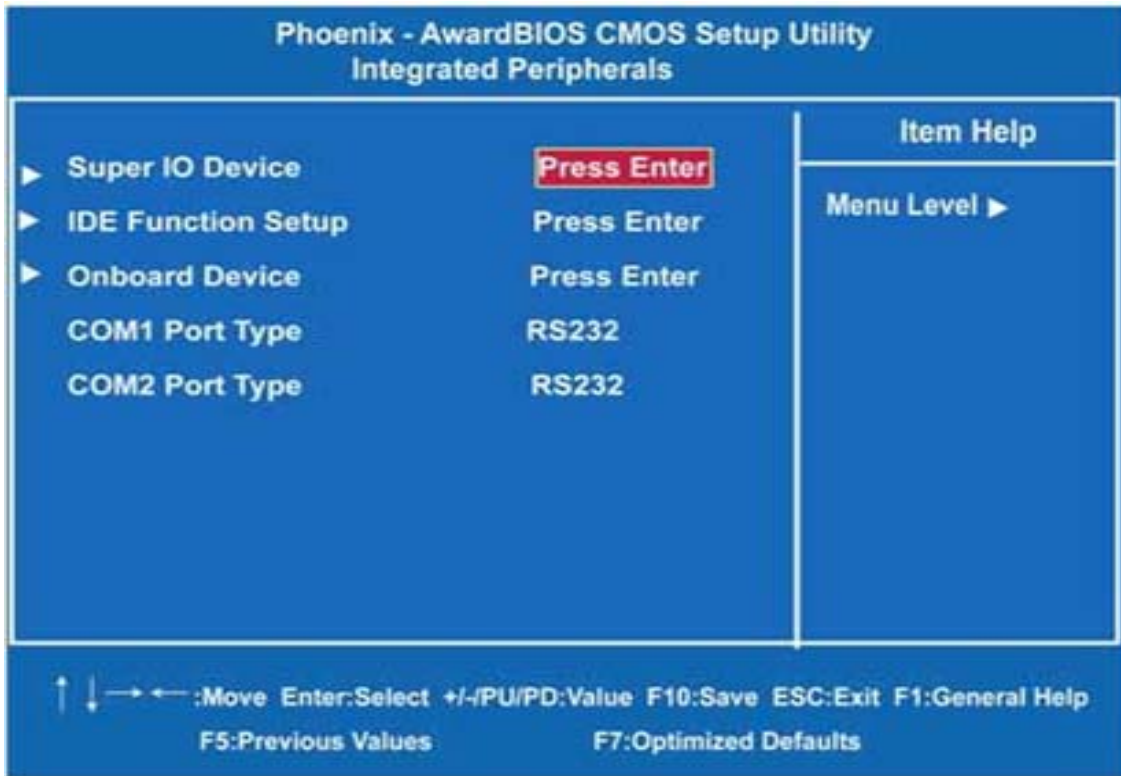
● **SuperIO Device**

Scroll to this item and press <Enter> to view the sub menu to
configure the Super IO Device.
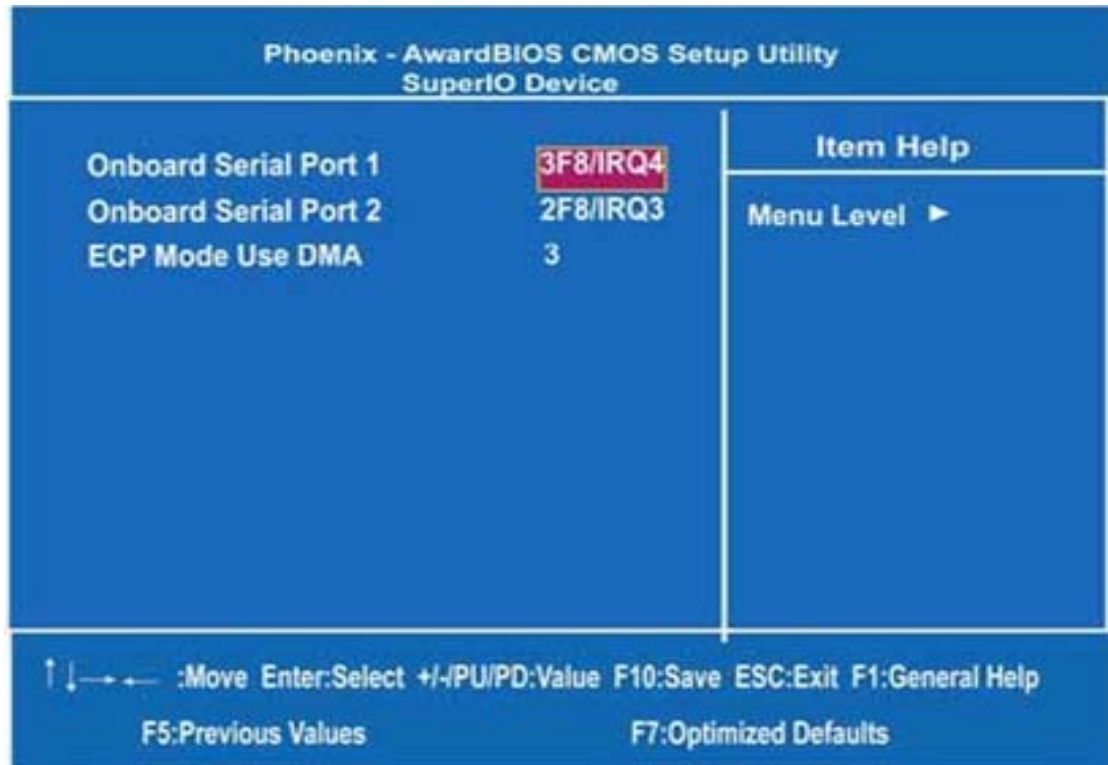
➢ **Onboard Serial Port 1/2**

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.

➢ **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.
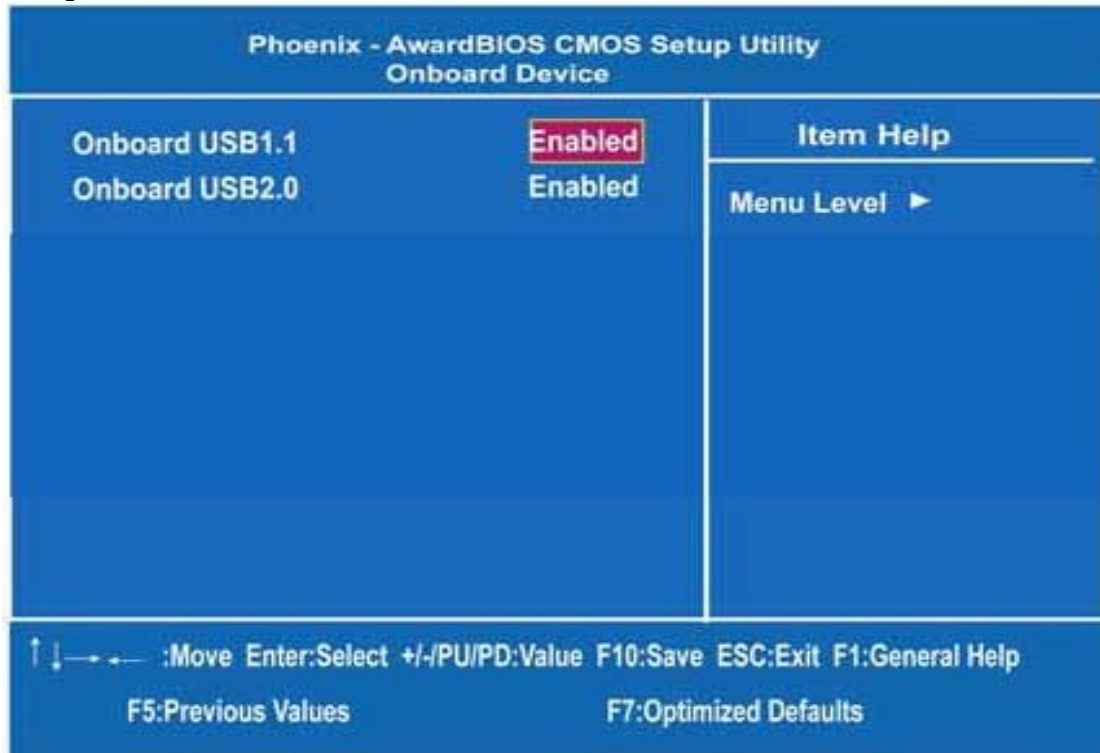
➢ **Onboard USB1.1**

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.

● **COM Port Interface Type**

➢ COM Port 1~6 (for rBOX201-6COM),

➢ COM Port 1~4 (for rBOX201-4COM)

The default setting for all COM Ports are RS232, you can change the default setting by selecting the value you want in each COM Port Type.
Press <ESC> to return to the Integrated Peripherals page.

```
        Phoenix - AwardBIOS CMOS Setup Utility
                Integrated Peripherals

 ▶ OnChip IDE Device          [Press Enter]          Item Help
 ▶ Onboard Device             [Press Enter]
 ▶ SuperIO Device             [Press Enter]      Menu Level    ▶
 ▶ COM Port Interface Type    [Press Enter]
 ▶ PCI Express Root Port Func [Press Enter]
 ▶ USB Device Setting         [Press Enter]
   Onboard Lan Boot ROM       [Disabled]




 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

● **Onboard Lan Boot ROM**

Use this item to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up. Its default is *disable*.

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 inactivity.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                 Power Management Setup

 x ACPI Function            [Enabled]          Item Help
   Power Management          ACPI
                                             Menu Level  ▶
       ** PM Timers **

 x Standby Mode              Disabled
 x Suspend Mode              Disabled
   HDD Power Down            Disabled
   Soft-Off by PWR-BTTN      Instant-Off
   Power-On by Alarm         Disabled
 x Time (hh:mm:ss) Alarm        0
 x                             0:
 x                             0



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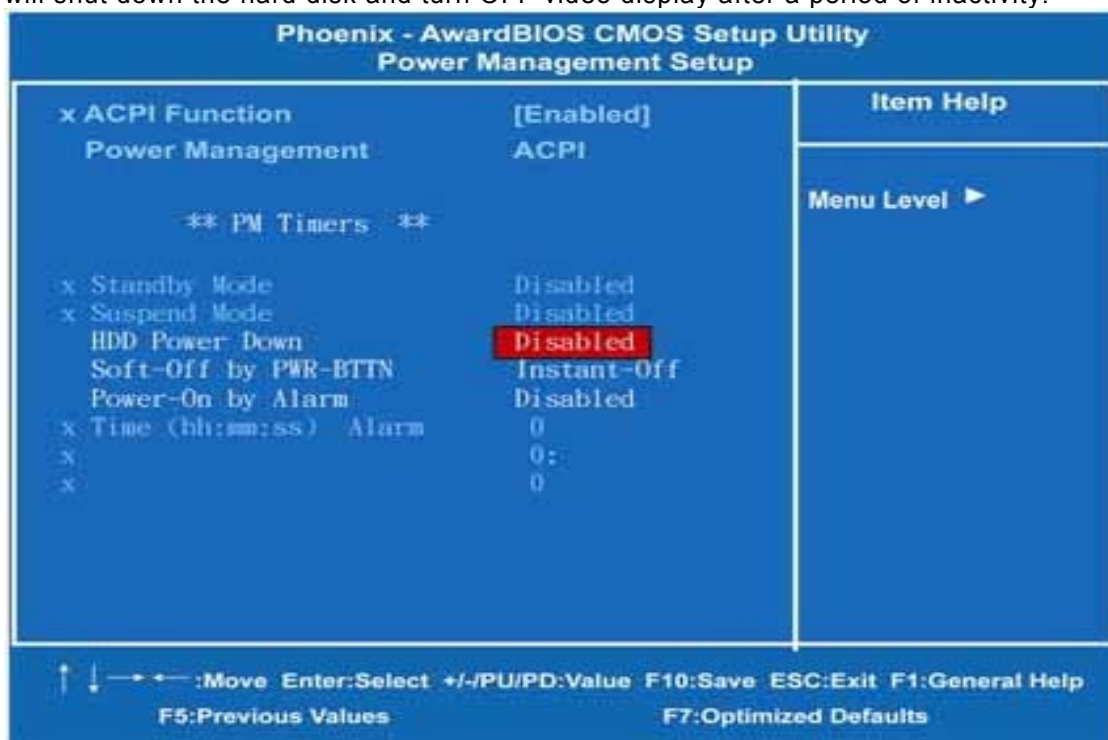
➢ **ACPI Function**

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".

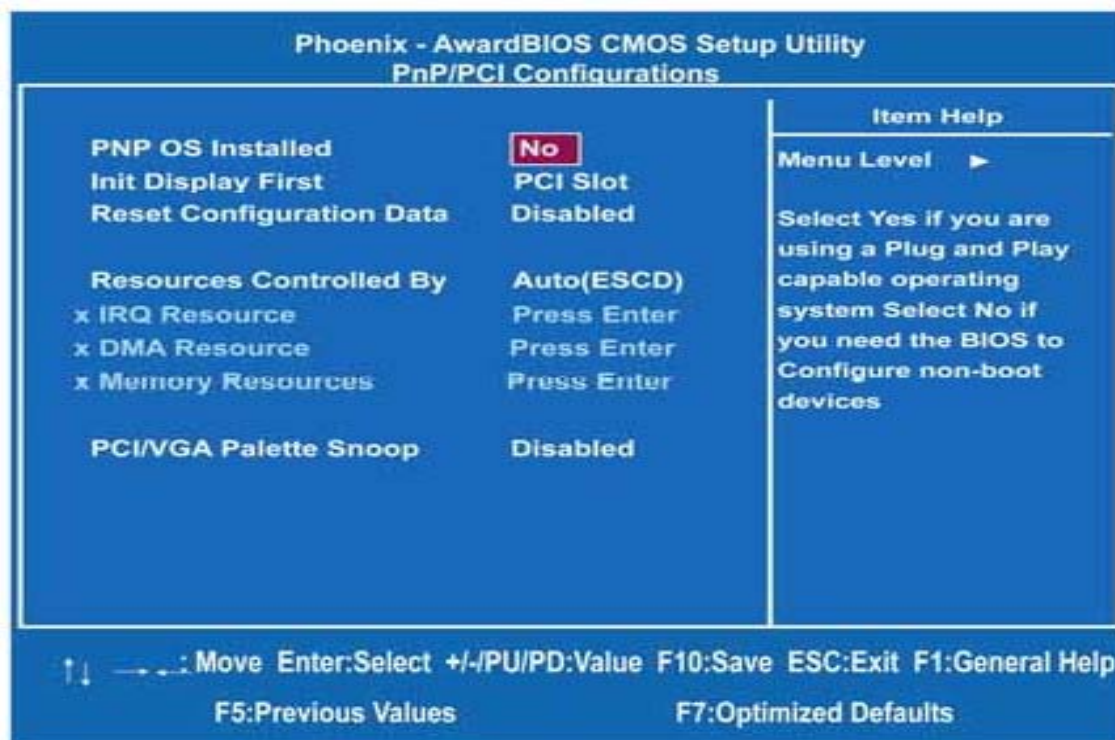| Disabled↵	System will never enter SUSPEND mode↵
1/2/4/6/8/10/2↵ 0/30/40↵ Min/1 Hr↵	Defines the continuous idle time before the system↵ entering SUSPEND mode.↵ If any item defined in (J) is enabled & active,↵ SUSPEND timer will be reloaded↵

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

```
           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
```
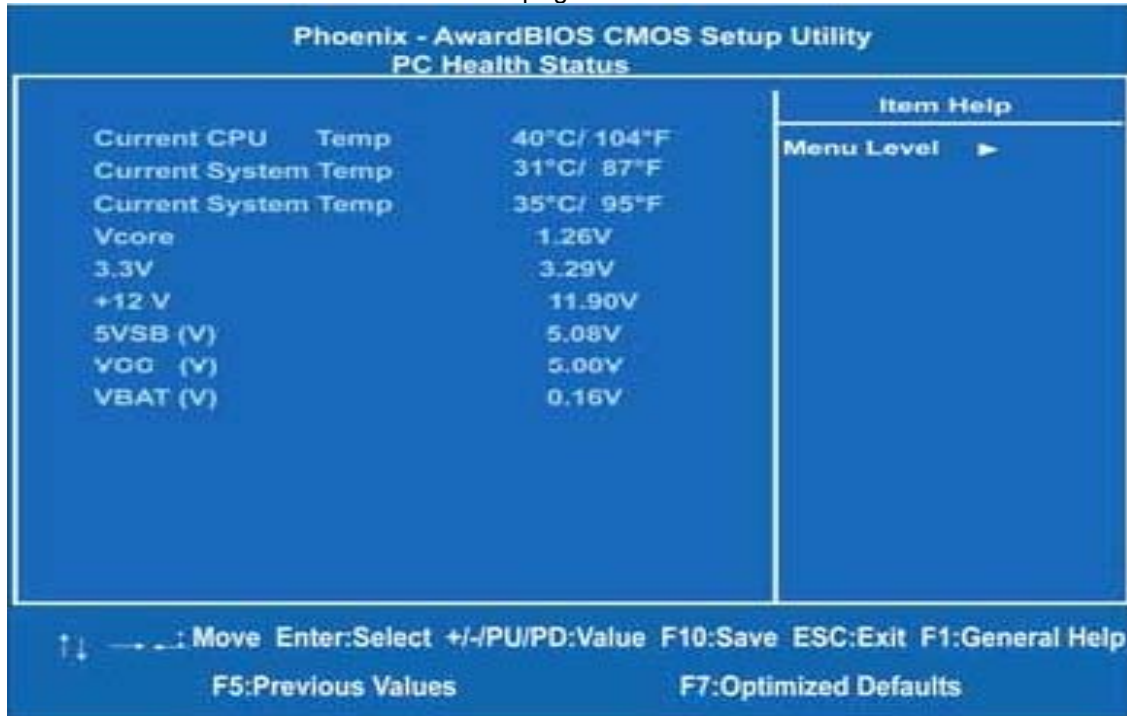
➢ **Reset Configuration Data**

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: Enabled, Disabled.

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

3.11 PC Health Status

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

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

```
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)                     5.00V
    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**

3.12 Load Optimized Defaults

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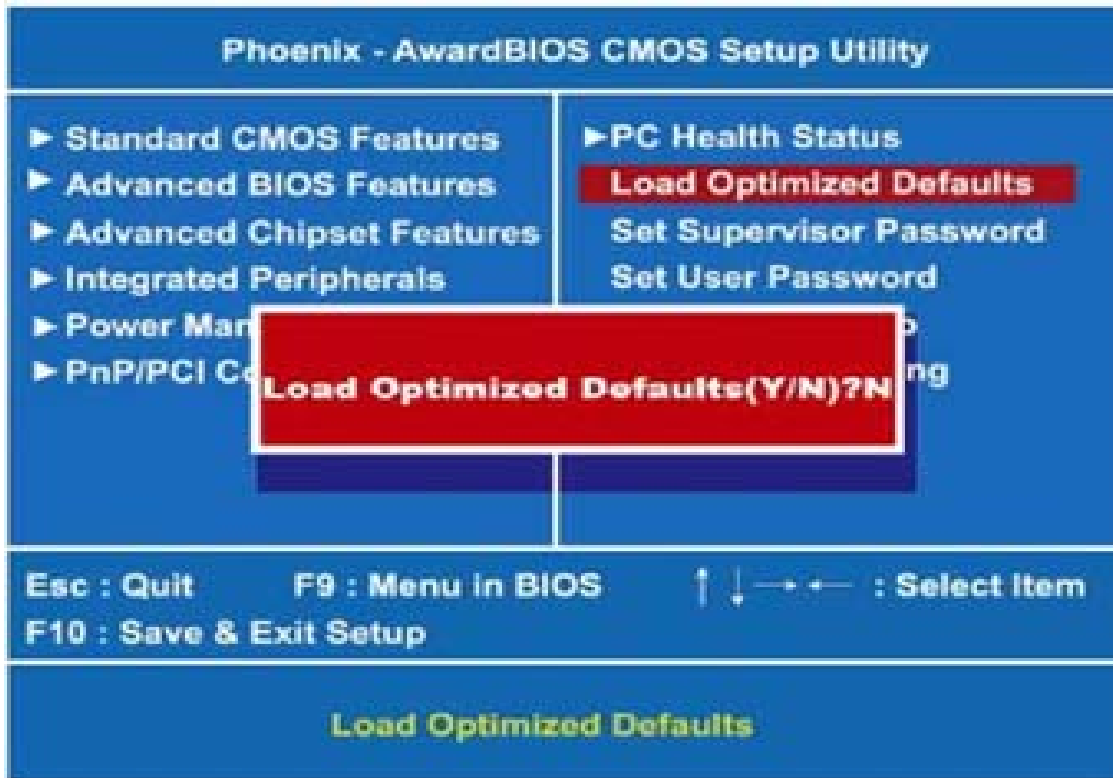

To load CMOS SRAM with SETUP default values, please enter "Y". If not, please enter "N".

3.13 Set Supervisor/User Password

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

1. **Supervisor password:** You can enter and change the options on the setup menu.

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

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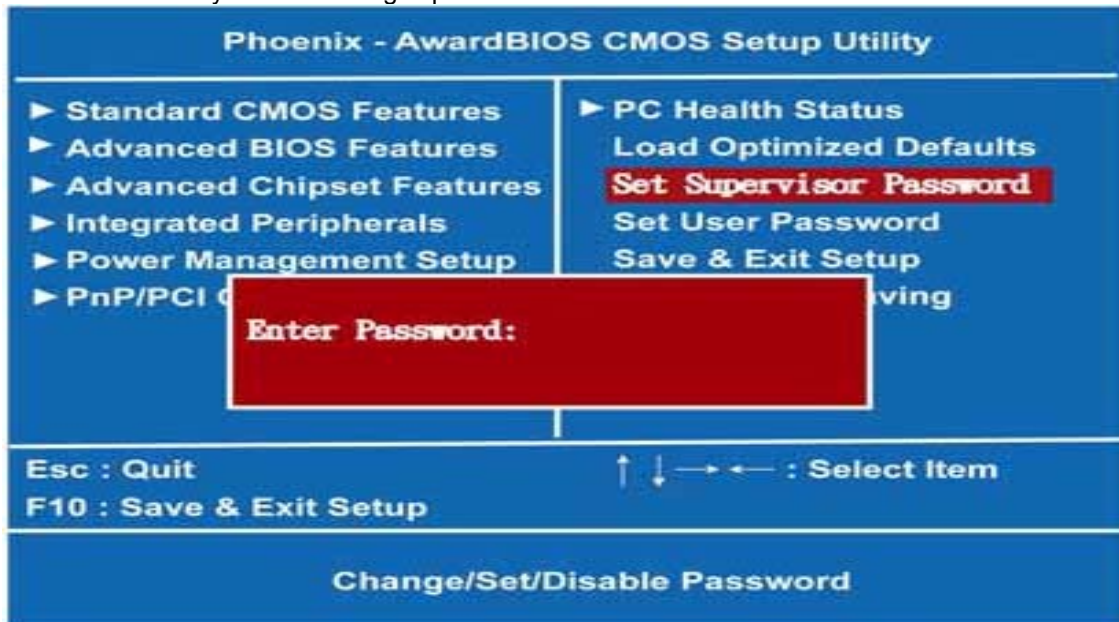
> ➢ **ENTER PASSWORD**

>   Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password. To disable the password, just press <Enter> when you are prompted to enter a password. A message will confirm the password is getting disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

> ➢ **PASSWORD DISABLED**

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

>   Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer. You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering

the Setup.

3.14 Save & Exit Setup

This section allows you to determine whether or not to accept your modifications. Type "Y" to quit the setup utility and save all changes into the CMOS memory. Type "N" to bring you back to the Previous Setup utility.
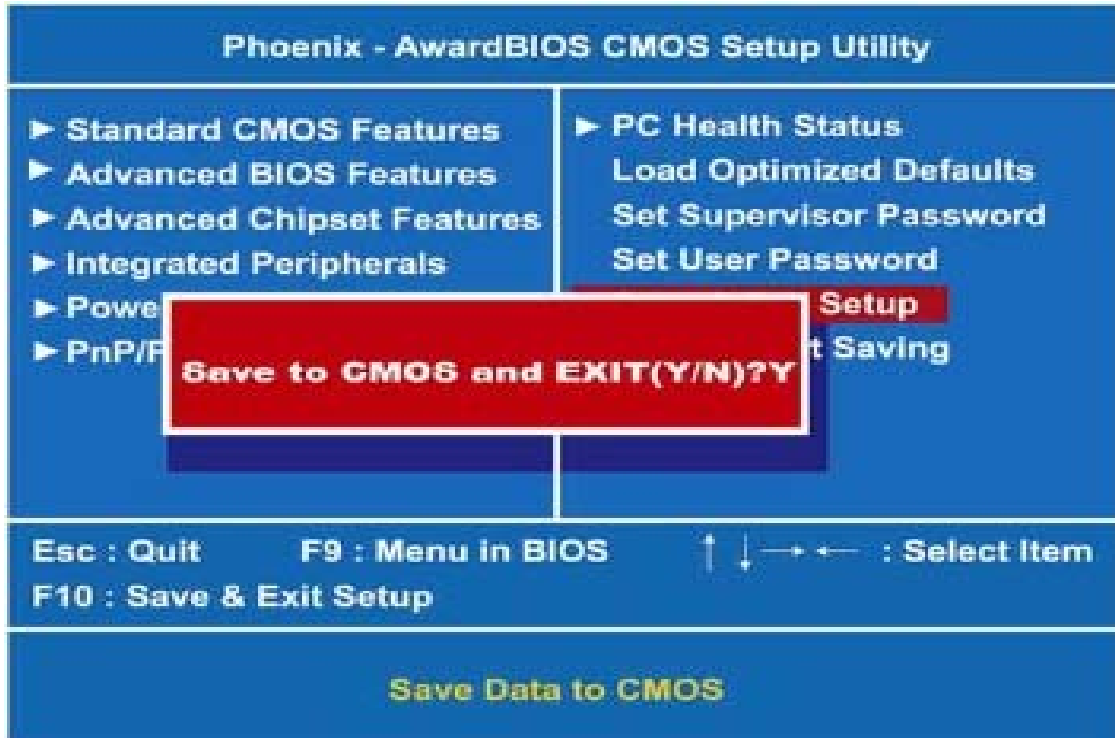
3.15 Exit Without Saving

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

<div align="right">
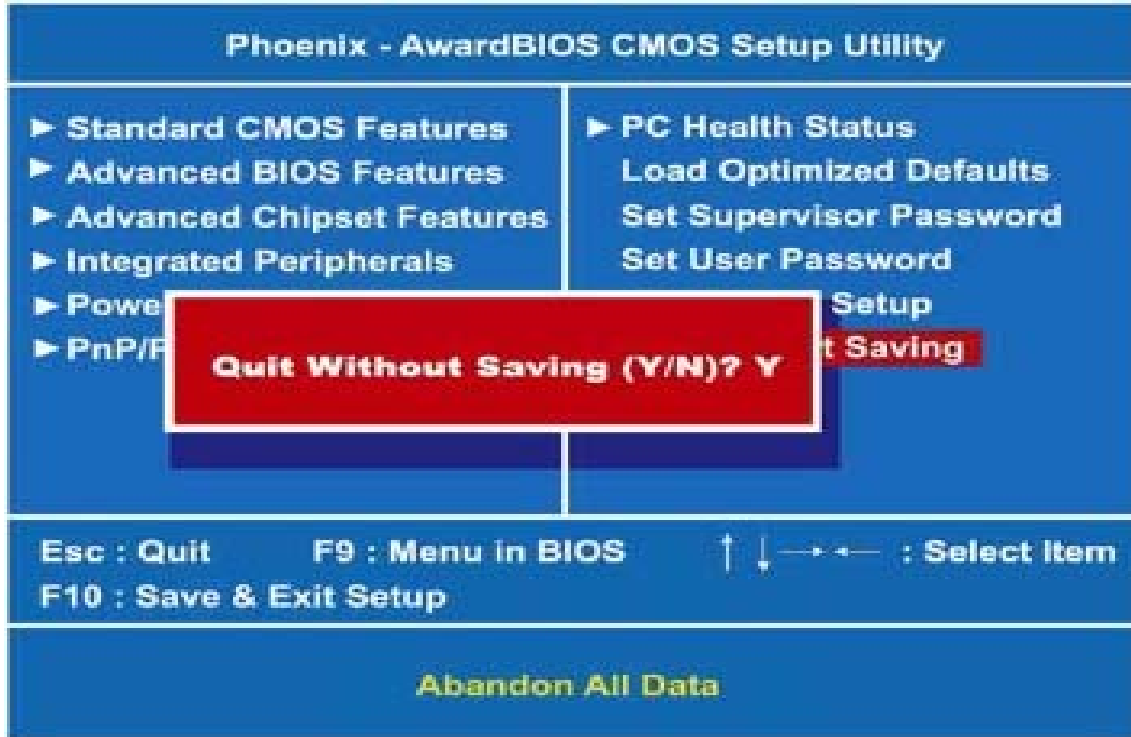
CHAPTER 4
INSTALLATION OF DRIVERS

</div>

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".**
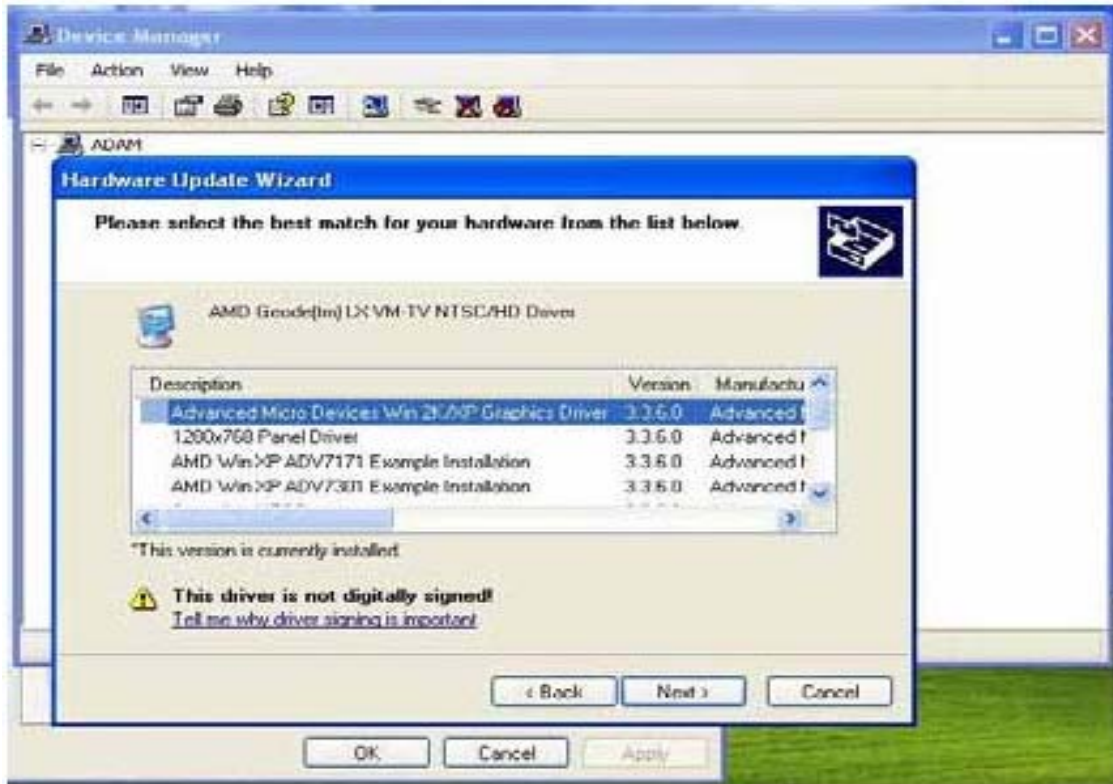
▪ **4.1.3 Choose "Continue Anyway".**
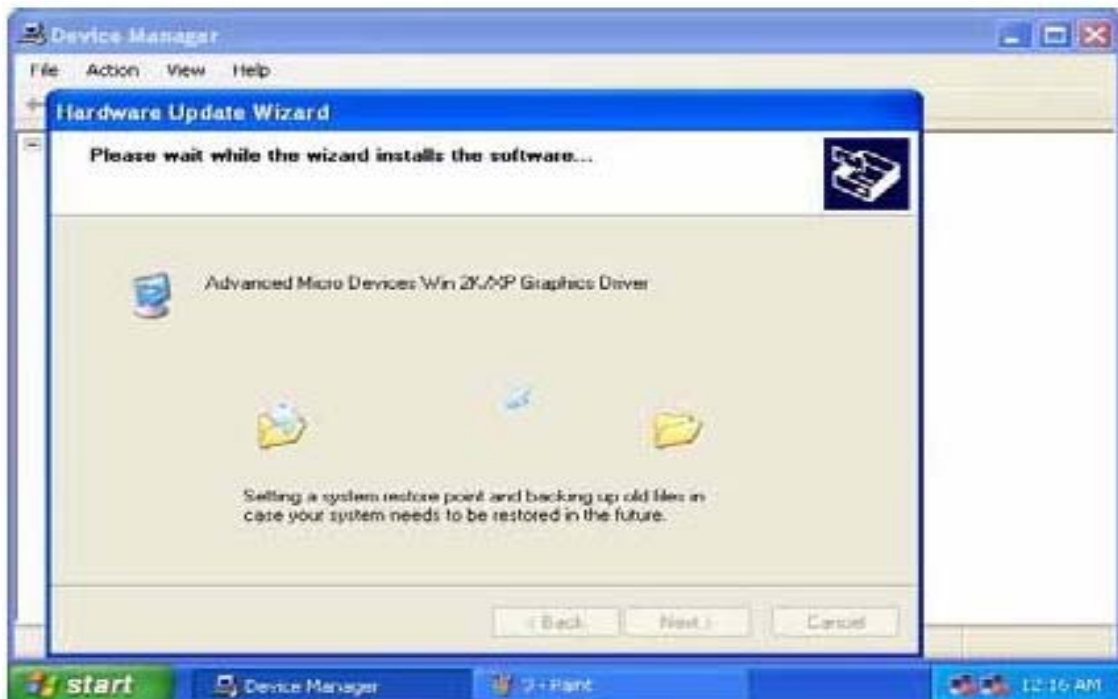
▪ **4.1.4 Browse**

▪ **4.1.5 Choose the lxmin**i

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 Updated

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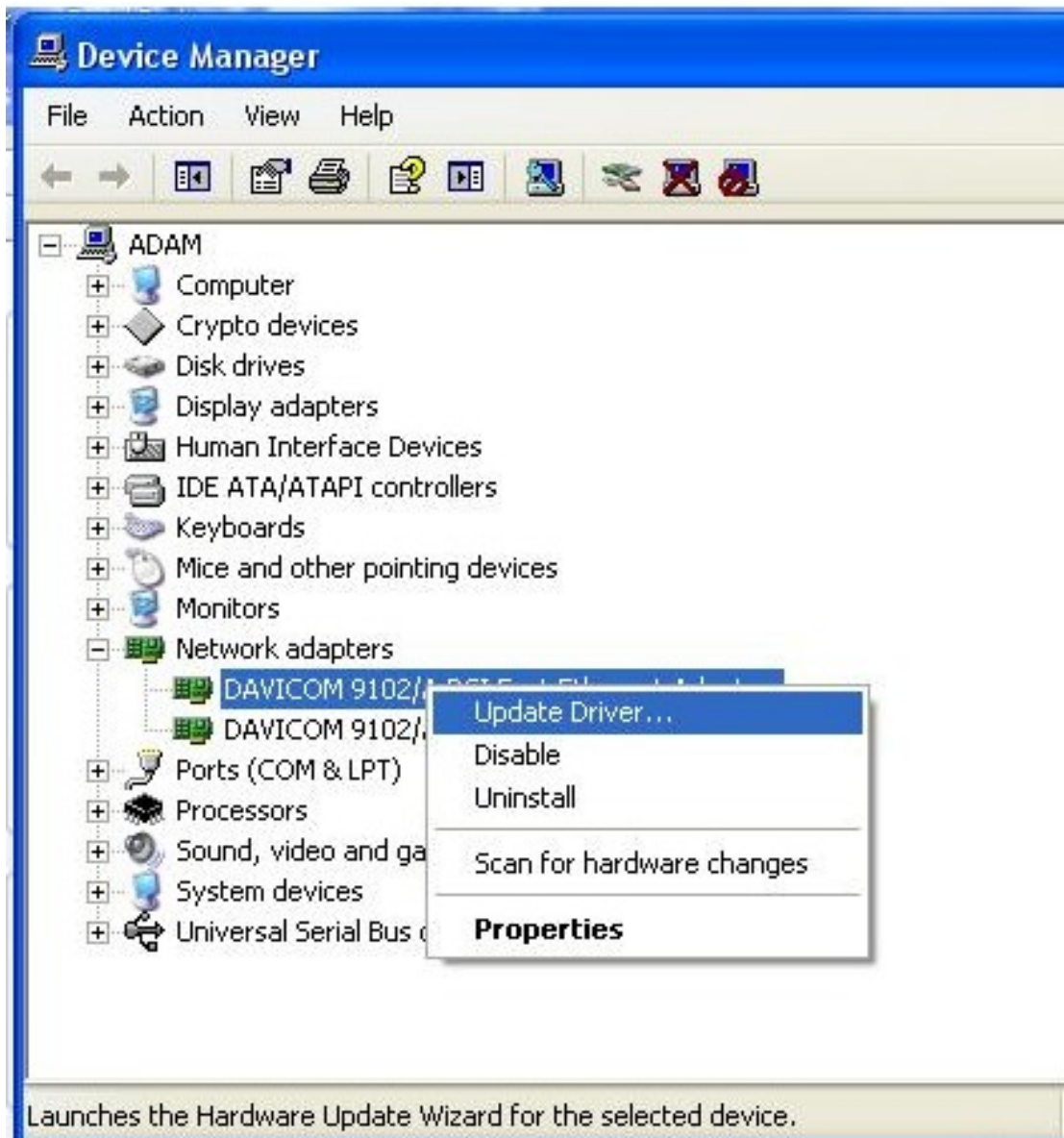
▪ **4.2.2 Install from a list or specific location →Include this location in the search (Pls refer below Picture-2)**

(Picture-2)

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

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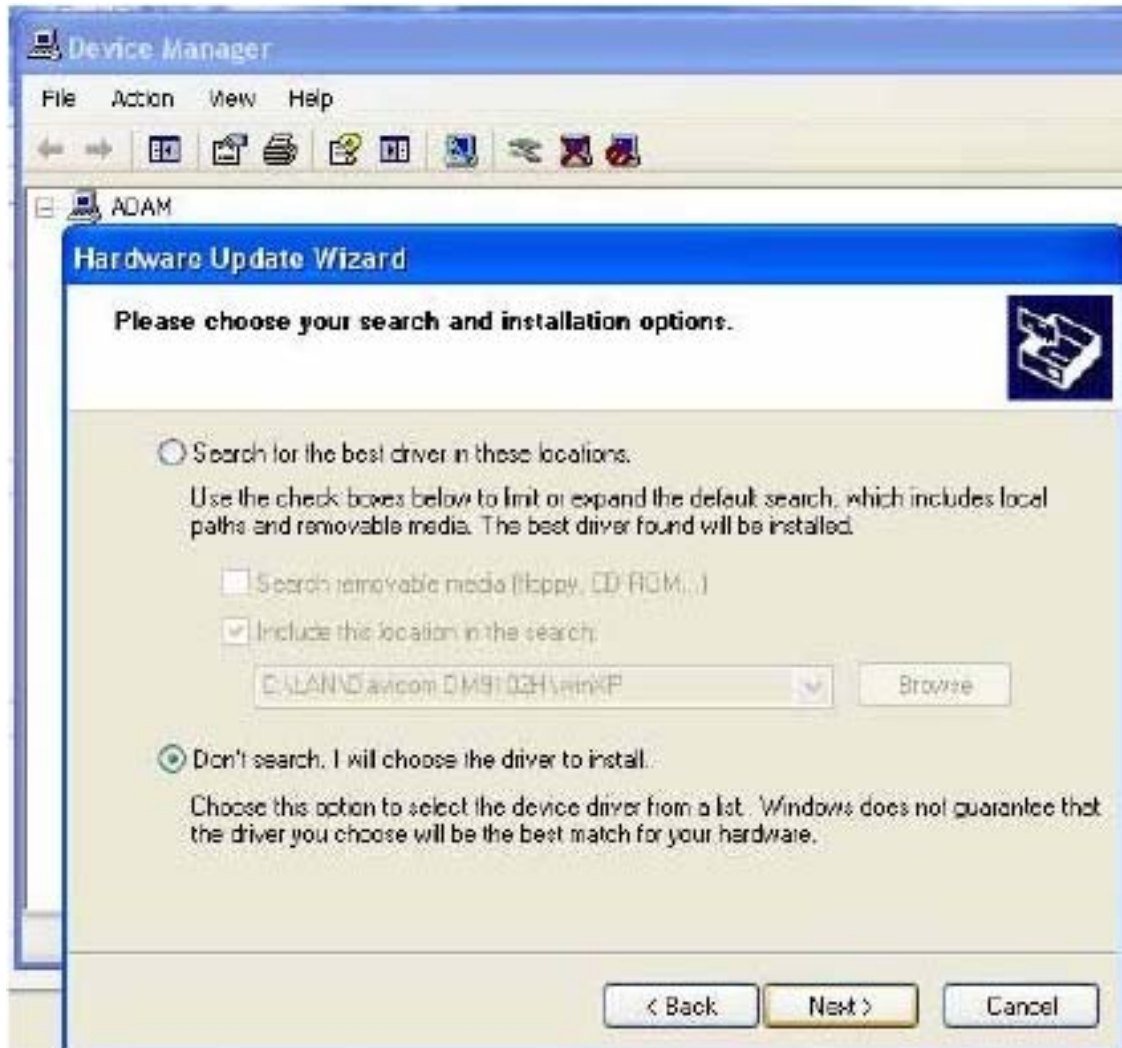
▪ **4.2.4 Select "Have Disk.." (Pls refer below Picture-4)**

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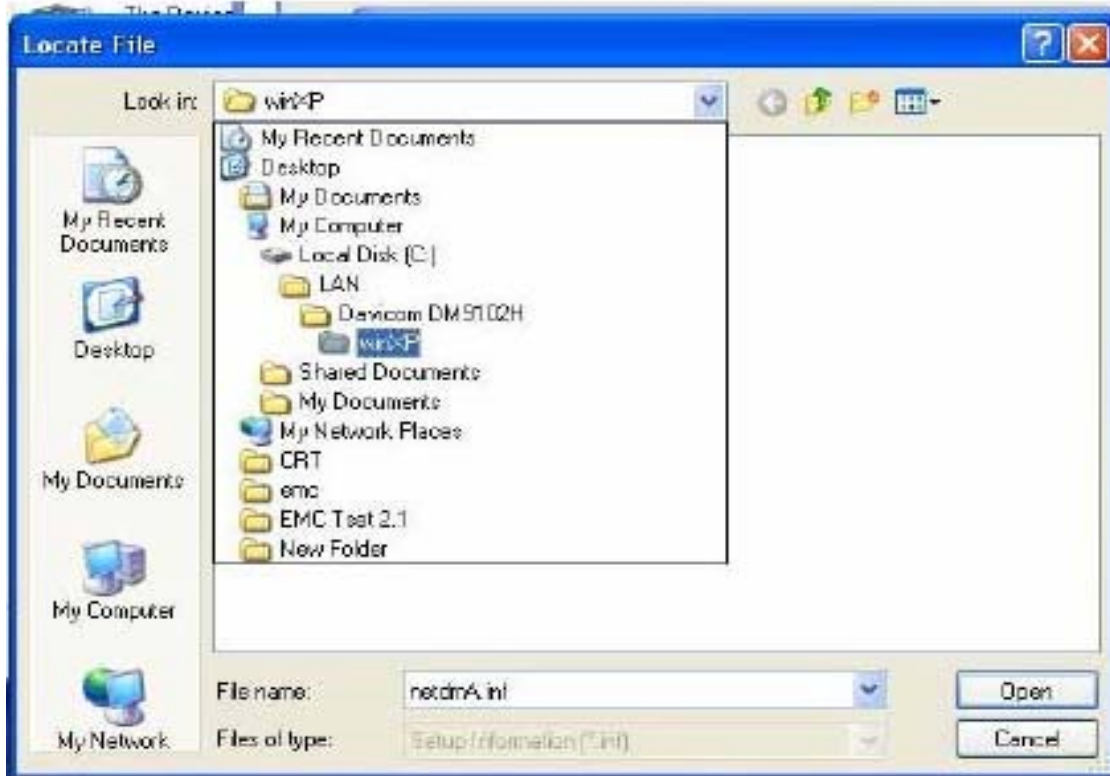
▪ **4.2.7   Select "OK" (Pls refer below Picture-7)**

(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)

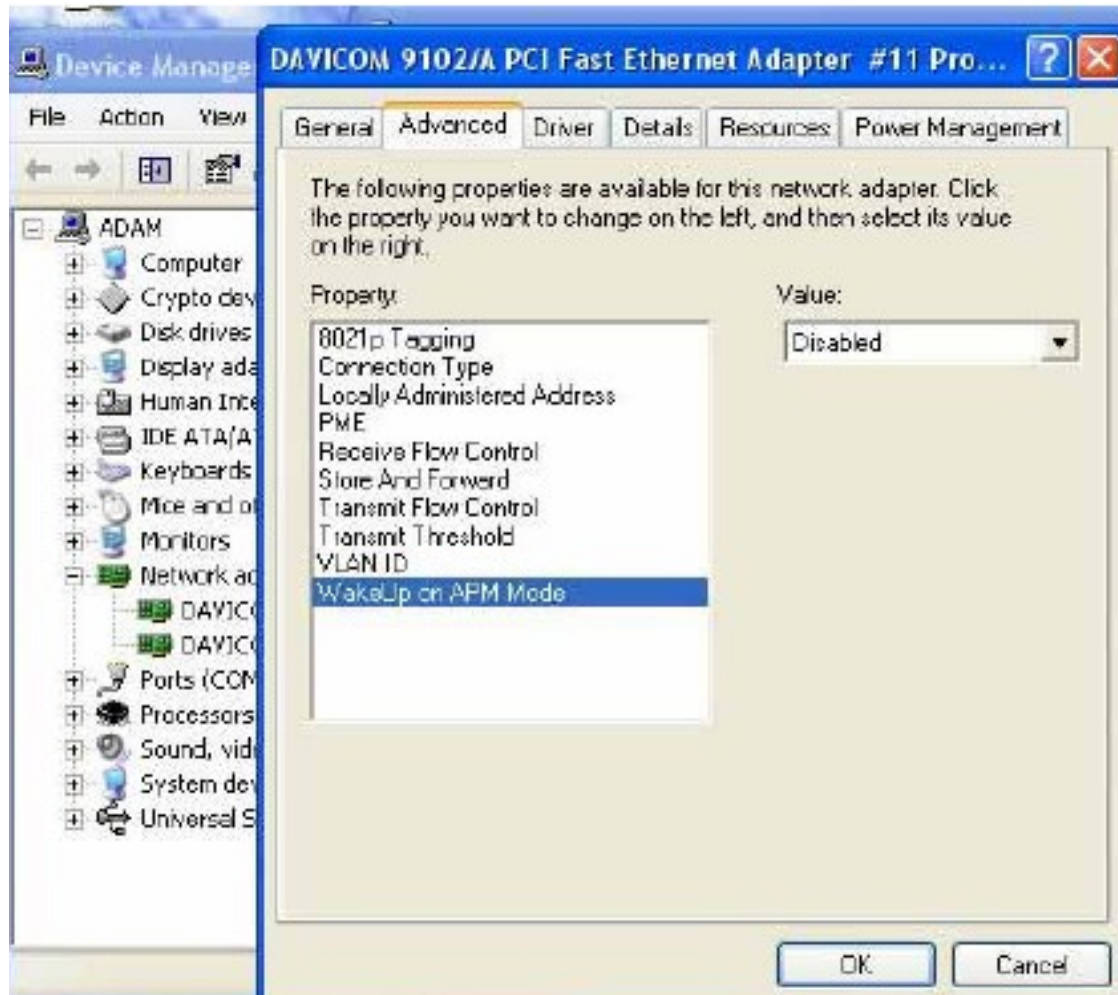▪ **4.2.10 Select "Finish" (Pls refer below Picture-10)**

(Picture-10)
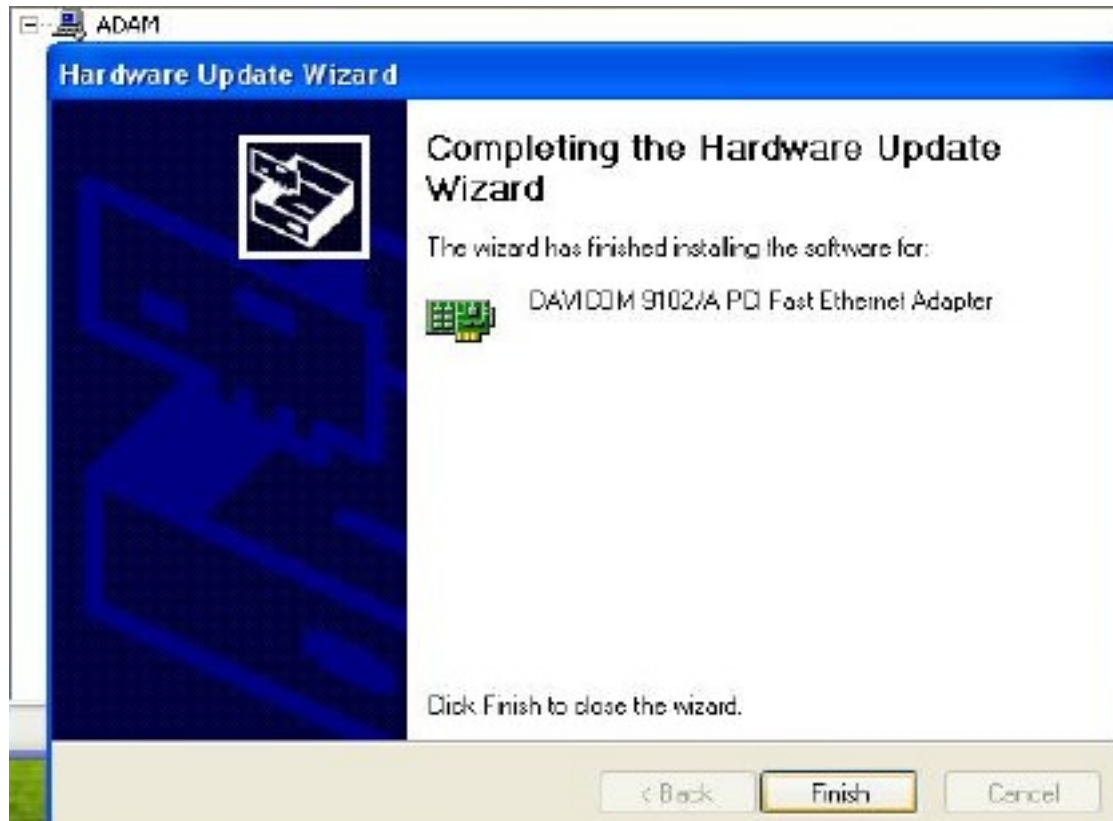
▪ **4.2.11 Select "Properties" (Pls refer below Picture-11)**

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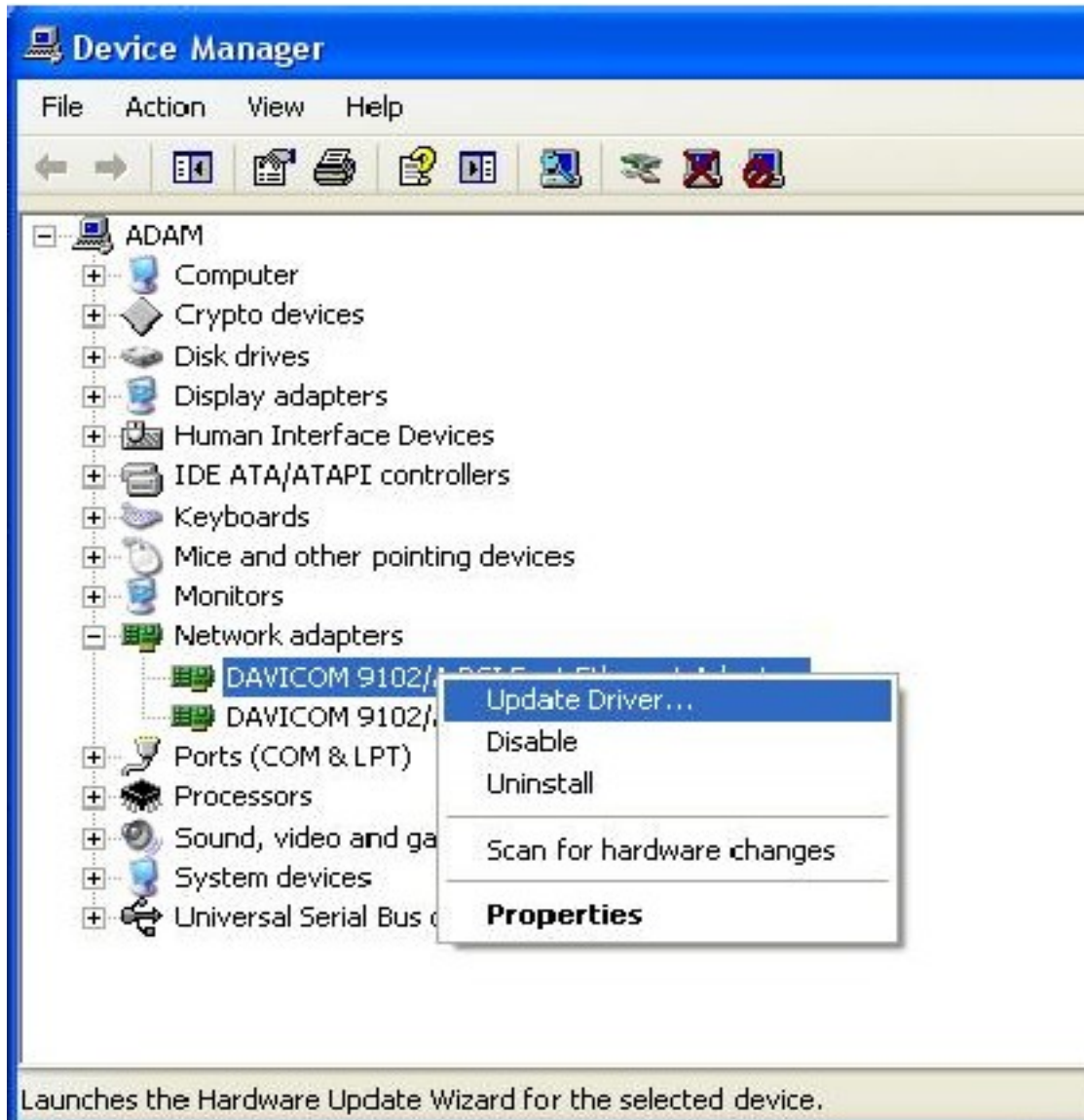
▪ **4.2.12 Check the Advance WakeUp on APM Mode Value is Disable (Pls refer below Picture-12)**

(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

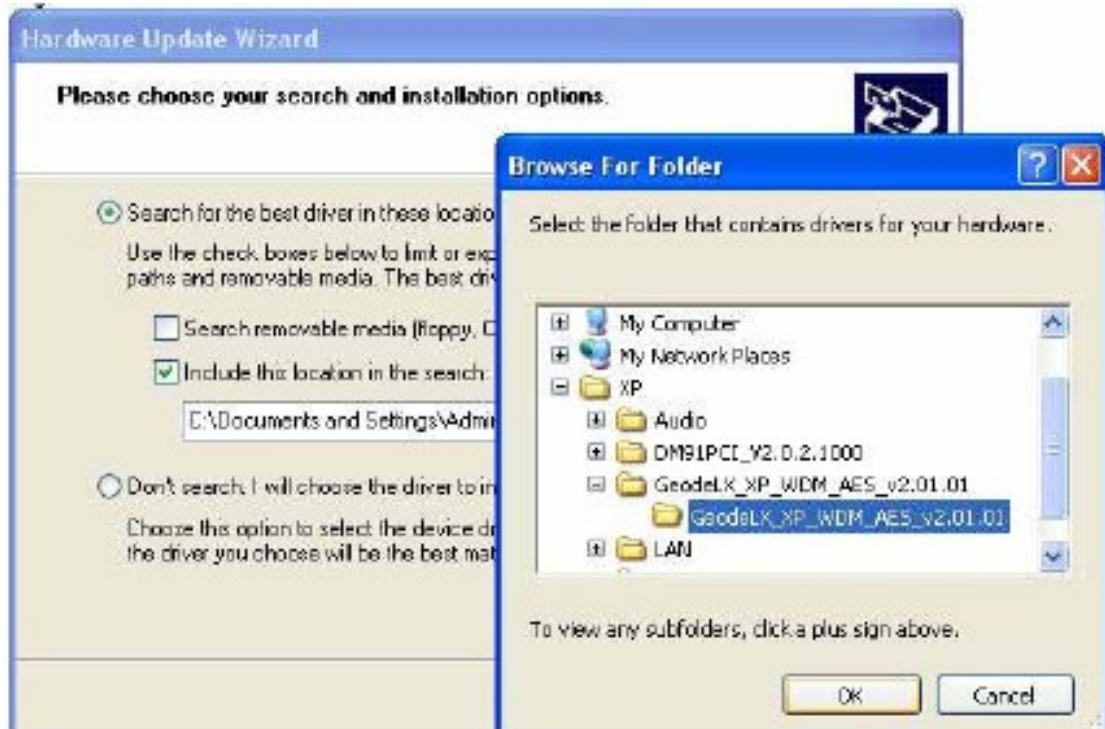▪ **4.3.2 As follow this figure choose and click "Next"**

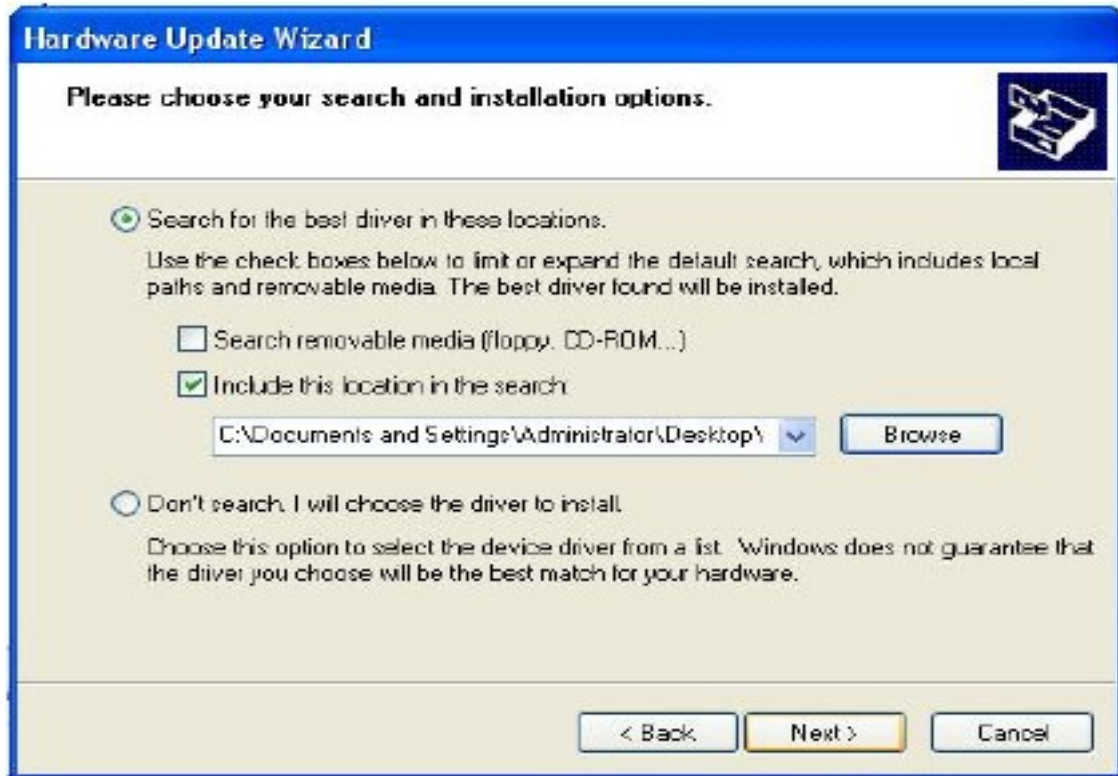▪ **4.3.3   As follow this figure choose and click "Next"**

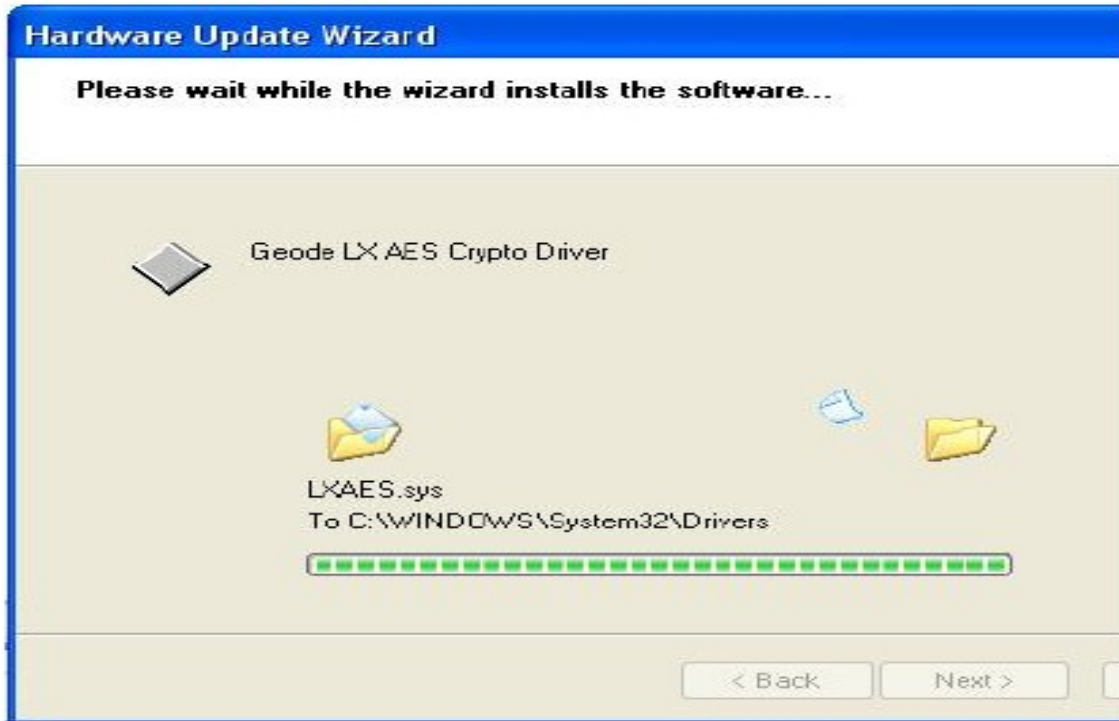▪ **4.3.4 Choose the Include this location in the search and click "Browse".**

▪ **4.3.5 Select the file "GeodeLX_XP_WDM_AES_v2.01.01" from your driver source and click "OK".**
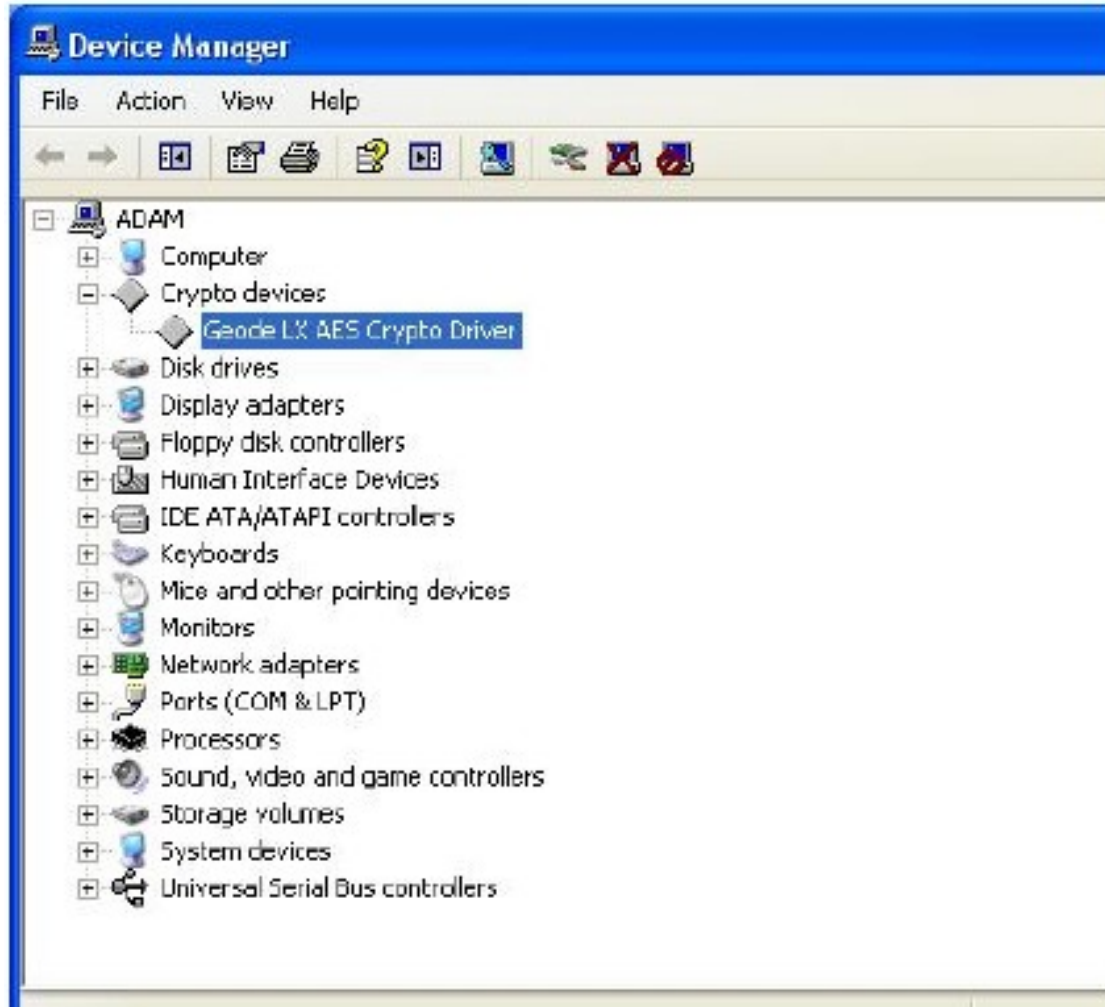
▪ **4.3.6 Follow the step 4 and click "Next".**

▪ **4.3.7   Waiting for the drive install finished.**

▪ **4.3.8   Check the Crypto devices has installed.**

MEMO: