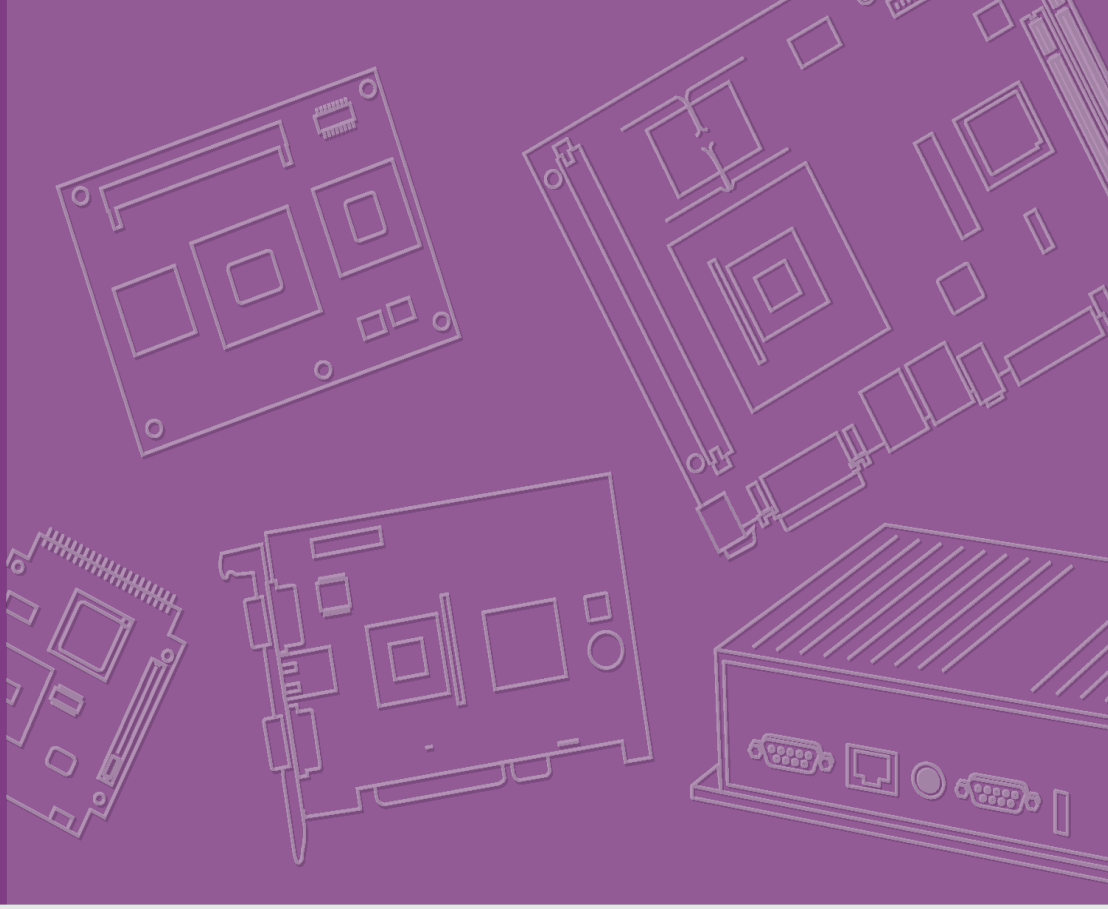

User Manual

ARK-DS303

Compact Embedded IPC

Trusted ePlatform Services

ADVANTECH

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Part No. 2006S30300 Edition 1

Printed in China April 2010

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

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

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

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

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

Declaration of Conformity

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Packing List

Before installation, please ensure the following items have been shipped:

- 1 x ARK-DS303 Unit
- 1 x Driver/Utility CD/manual
- 1 x China RoHS
- 1 x Traditional Chinese User Manual for CCC
- 1 x Mounting plate set

Ordering Information

Model Number	Description
ARK-DS303B-S6A1E	ARK-DS303 barebone, N270 w/o HDD,RAM
ARK-DS303F-S6A1E	ARK-DS303, N270 w/ 160G HDD, 1G RAM
ARK-DS303P-S6A1E	ARK-DS303, N270 w/ 1080P, 160G HDD, 1G RAM

Optional Accessories

Part Number	Description
1757002942	Adapter AC 90-264V 36W/12V W/ PFC FSP036-RAB
1700001524	Power cable 3-pin 180cm, US/UL
170203183C	Power cable 3-pin 183cm, EU
170203180A	Power cable 3-pin 180cm, UK

Contents

Chapter 1

General Introduction

This chapter gives background information on ARK-DS303 series.

1.1 Introduction

ARK-DS303 is an ideal application ready system platform solution. For digital signage applications, the Intel platform provides high graphic performance and power for HDTV decoding and multimedia processing. This easy-to-implement appliance enables centralized control, scheduling and delivery of multimedia content through IP/Ethernet network.

All electronics in ARK-DS303 are protected in a compact sealed iron case for easy integration into customers' applications, or as a stand-alone application, where space is limited and the environment harsh. ARK-DS303 offers 1 gigabit LAN port, 4 USB, 1 COM, 1 VGA and 1 HDMI for dual display - all packed into a small rugged unit and powered by Intel Atom N270 processor. The ARK-DS303 supports 1 x 2.5" SATA HDD and 1 x Compact Flash card for storage. A TV-tuner option is also available for integrating TV functions into signage applications. The compact size of ARK-DS303 and the standard mounting bracket means it can be easily mounted behind signage display devices.

1.2 Product Features

1.2.1 General

- Intel® Atom™ processor N270 1.6 GHz
- Dual display of HDMI and VGA
- Supports 1 GbE , 4 USB 2.0 and 1 COM
- Internal 2.5-inch SATA HDD drive bay
- Built-in MiniPCIe slot for easy expansion e.g. WiFi, TV-tuner, etc
- Easy integration and easy maintenance

1.2.2 Display

- Dual display of HDMI and VGA, supports Full HD up to 1080p via adding a HD decoder card.(Optional)

1.2.3 Power Consumption

- **Typical:** 8.28W (CPU is Intel Atom Processor N270 1.6 GHz and w/o expansion)
- **Max.:** 10.44W (CPU is Intel Atom Processor N270 1.6 GHz and w/o expansion)

1.3 Hardware Specifications

- **CPU:** Intel® Atom™ processor N270 1.6 GHz
- **System Chipset:** Intel 945GSE+ ICH7M
- **BIOS:** Award 4Mb FHW BIOS
- **System Memory:** 1 x DDR2 DIMM socket, supports DDR2 400/533 MHz, up to 2 GB
- **SSD:** Supports 1 x CF Card TYPE I/II
- **HDD:** Supports 1 x 2.5" SATA HDD
- **Watchdog Timer:** Single chip watchdog 255-level interval timer, setup by software
- **I/O Interface:** 1 x RS-232
- **USB:** 4 x USB 2.0 compliant ports
- **Audio:** Supports line-out, microphone-in
- **Ethernet Chipset:** 1 x Realtek RTL8111D-GR (Gigabit LAN)

Speed: 10/100/1000 Mbps

Interface: 1 x RJ-45 jacks with LED

Standard: IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T compliant

- **Expansion**

  PCIe: 1 socket

- **Chipset:** Integrated graphics built in Intel 945GSE, Intel® Graphics Media Accelerator 950 (Intel® GMA 950)
- **Resolution**

  CRT: Up to QXGA (2048x1536 @ 60 Hz)

  HDMI: Supports up to UXGA (1920x1080 @ 75 Hz)
- **Dual Independent:** VGA+ HDMI

1.4 Mechanical Specifications

1.4.1 Dimensions

185 x 118.2 x 43 mm (7.28" x 4.65" x 1.69")

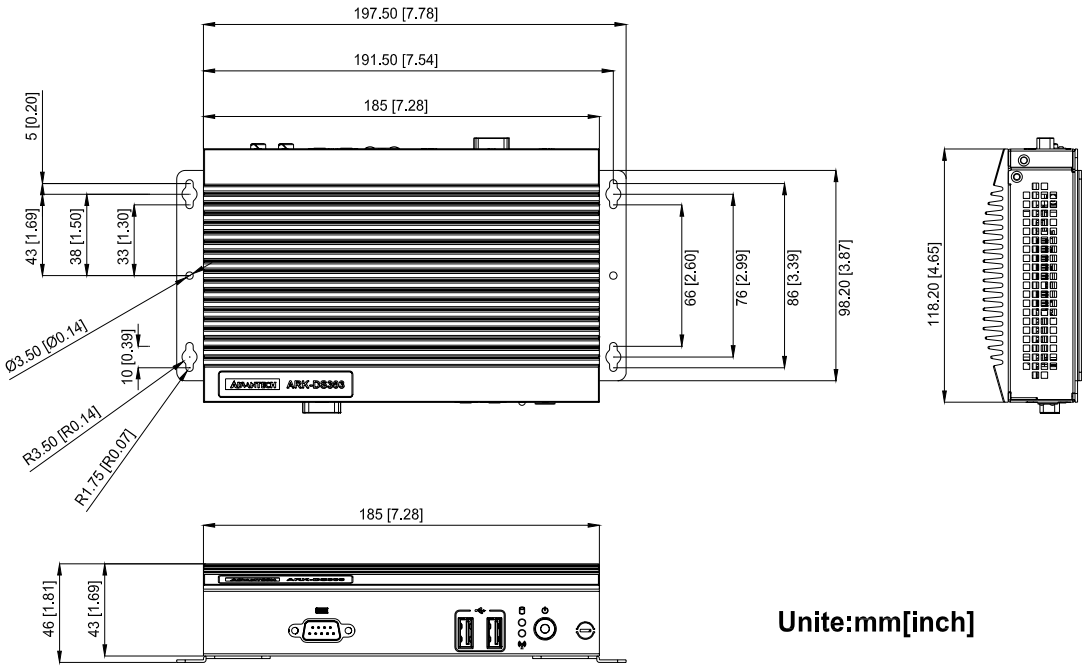


Figure 1.1 ARK-DS303 Mechanical Dimensions

1.4.2 Weight

0.9 kg (1.98 lb.)

1.5 Power Requirements

1.5.1 System Power

Minimum power input: DC 12V, ⎓3A

1.5.2 RTC Battery

3 V/210 mAH CR2032

1.6 Environment Specification

1.6.1 Operating Temperature

0° C - 40° C (32~104° F)

1.6.2 Relative Humidity

95% @ 40° C (non-condensing)

1.6.3 Storage Temperature

-20~70° C (-4~167° F)

1.6.4 Vibration Loading During Operation

0.5 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 Oct./min, 1 hr/axis.

1.6.5 Shock During Operation

20 G, IEC 60068-2-27, half sine, 11 ms duration

1.6.6 Safety

UL, CCC

1.6.7 EMC

CE, FCC, CCC

Chapter 2

Hardware Installation

This chapter introduces external I/O and the installation of ARK-DS303 Hardware.

2.1 ARK-DS303 I/O Connectors

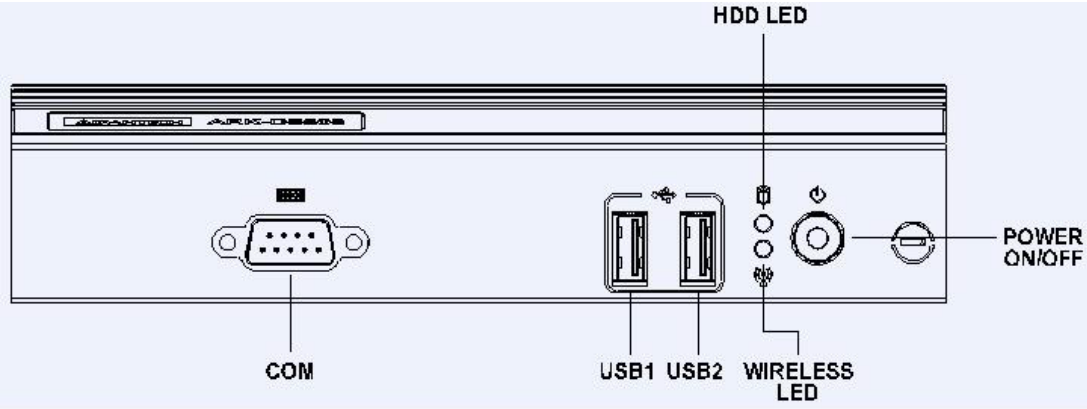


Figure 2.1 ARK-DS303 Front View

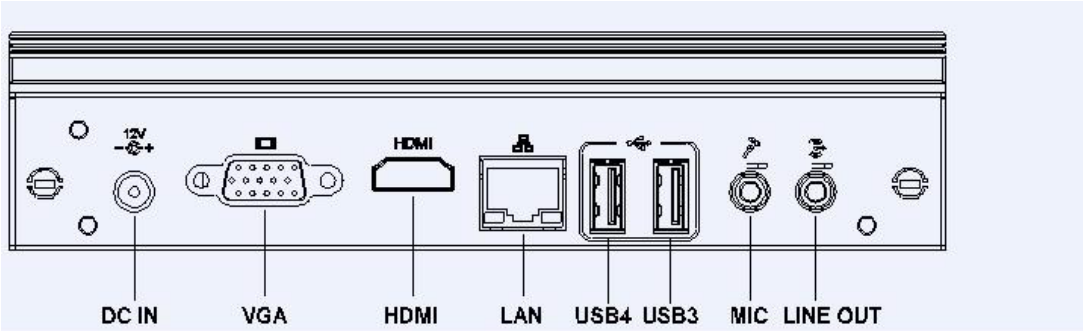


Figure 2.2 ARK-DS303 Rear View

2.2 ARK-DS303 Front Side External I/O Connectors

2.2.1 Power ON/OFF Button

ARK-DS303 has a power ON/OFF button on rear side. Push this button to turn the system ON and OFF. It can also support 4 second delay soft power off.

Figure 2.3 Power ON/OFF Button

2.2.2 USB Connectors

The ARK-DS303 provides four USB interface connectors, which gives complete Plug & Play and hot swapping capability for up to 127 external devices. The USB interface is compliant with USB UHCI, Rev. 2.0. The USB interface supports Plug and Play, which enables you to connect or disconnect a device without turning off the computer.

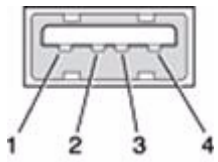


Figure 2.4 USB Port connector

Table 2.1: USB Port Pin Assignments

Pin	Signal Name
1	VCC
2	USB Data-
3	USB Data+
4	GND

2.2.3 COM Connector

ARK-DS303 provides one D-sub 9-pin connector serial communication interface port. The port can support RS-232 mode communication.

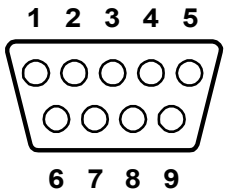


Figure 2.5 COM connector

Table 2.2: COM Port Pin Assignments

Pin	Signal Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.3 ARK-DS303 Rear Side External I/O Connectors

2.3.1 Audio Connector

Line Out: Stereo speakers, earphone or front surround speakers can be connected to the line out jack.

MIC In: Microphone must be connected to MIC In jack.

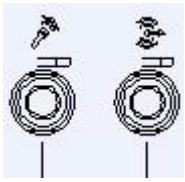


Figure 2.6 Line-out and MIC Connector

2.3.2 Ethernet Connector (LAN)

ARK-DS303 provides one RJ45 LAN interface connector, they are fully compliant with IEEE 802.3u 10/100/1000 Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators on the front side to show its Active/Link status and speed status.

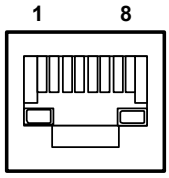


Figure 2.7 Ethernet Connector

Table 2.3: LAN Connector Pin Assignments

Pin	Signal Name
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	GND
6	GND
7	MDI2+
8	MDI2-
9	MDI3+
10	MDI3-
11	VCC
12	ACT
13	+V3.3 & Link1000#
14	+V3.3 & Link100#

2.3.3 HDMI Connector

The HDMI (High-Definition Multimedia Interface) provides an all-digital audio/video interface to transmit the uncompressed audio/video signals and is HDCP compliant. Connect the HDMI audio/video device to this port. HDMI technology can support a maximum resolution of 1920 x 1080p but the actual resolutions supported depend on the monitor being used.

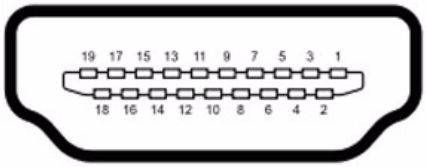


Figure 2.8 HDMI Connector

Table 2.4: HDMI Connector Pin Assignments

Pin	Signal Name
1	TMDS Data2+
2	GND
3	TMDS Data2-
4	TMDS Data1+
5	GND
6	TMDS Data1-
7	TMDS Data0+
8	GND
9	TMDS Data0-
10	TMDS Clock+
11	GND
12	TMDS Clock-
13	NC
14	NC
15	SCL
16	SDA
17	GND
18	+5 V Power
19	Detect

2.3.4 VGA Connector

The ARK-DS303 provides a high resolution VGA interface connected by a D-sub 15-pin connector to support a VGA CRT monitor. It supports display resolutions of up to 2048 x 1536 @ 60Hz.

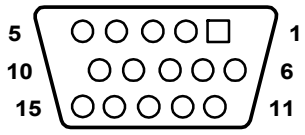


Figure 2.9 VGA Connector

Table 2.5: VGA Connector Pin Assignments

Pin	Signal Name
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	DDC DAT
13	H-SYNC
14	V-SYNC
15	DDC CLK

2.3.5 Power Input Connector

ARK-DS303 comes with a DC-Jack header that carries 12 VDC external power input.

Figure 2.10 Power Input Connector

2.4 HW Installation

2.4.1 Memory Installation

1. Remove the HDD cover by loosening the fixing screw.
2. Remove rear IO board and heatsink, then insert DDR to DDR socket.

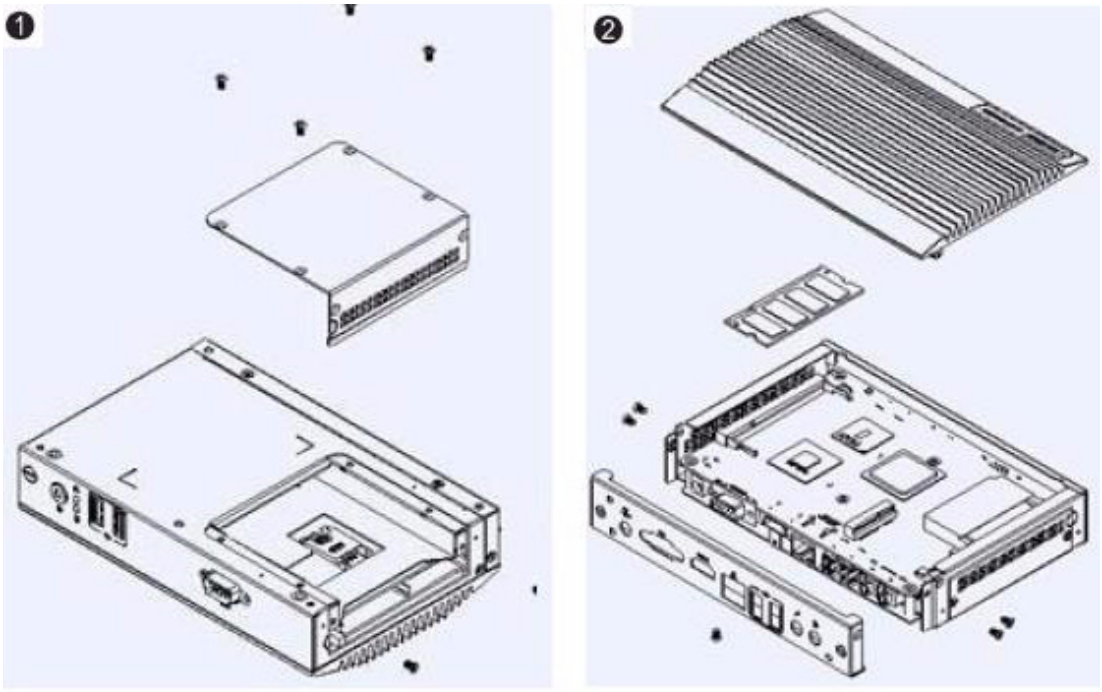


Figure 2.11 Memory installation

2.5 HD Decoder Card Installation

1. Remove the HDD cover by loosening the fixing screw.
2. Remove rear IO board and heatsink, and insert HD decoder card to MiniPCIe socket onboard.

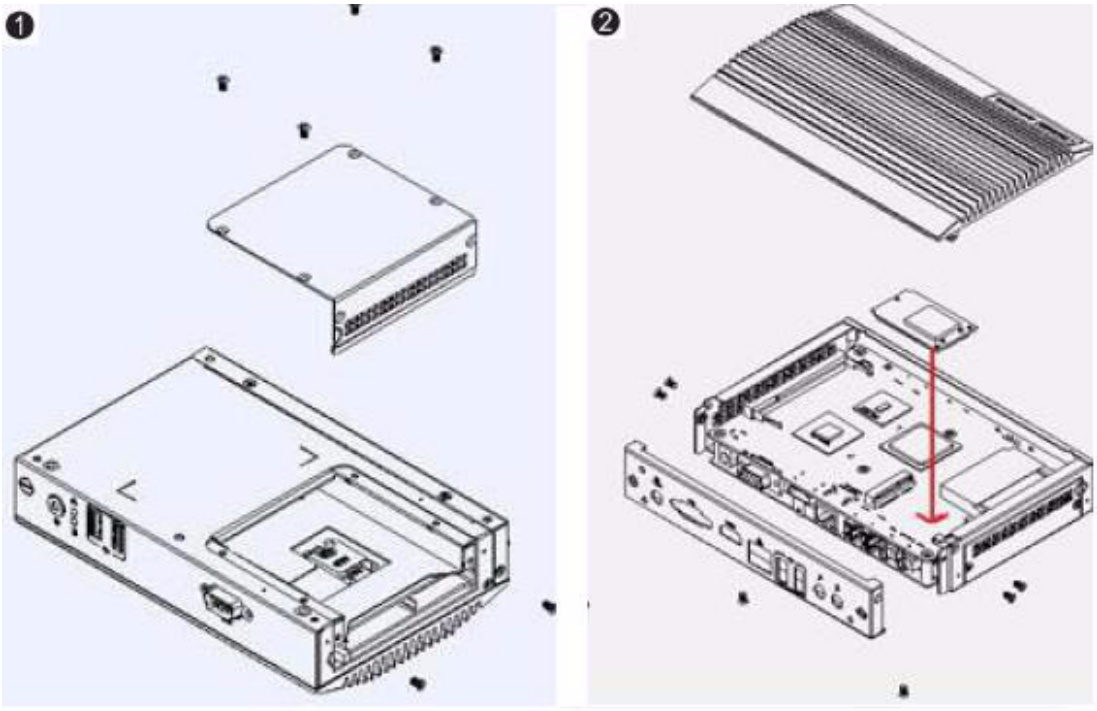


Figure 2.12 HD decoder card installation

Note! *The way to install WLAN card or 3G card is the same as HD decoder card installation.*

2.6 HDD Installation

1. Assemble the 2.5-inch SATA HDD on HDD bracket with 4 HDD screws
2. Remove the HDD cover by loosening the fixing screw.
3. Install the HDD module to the system.
4. Screw the HDD cover to the system.

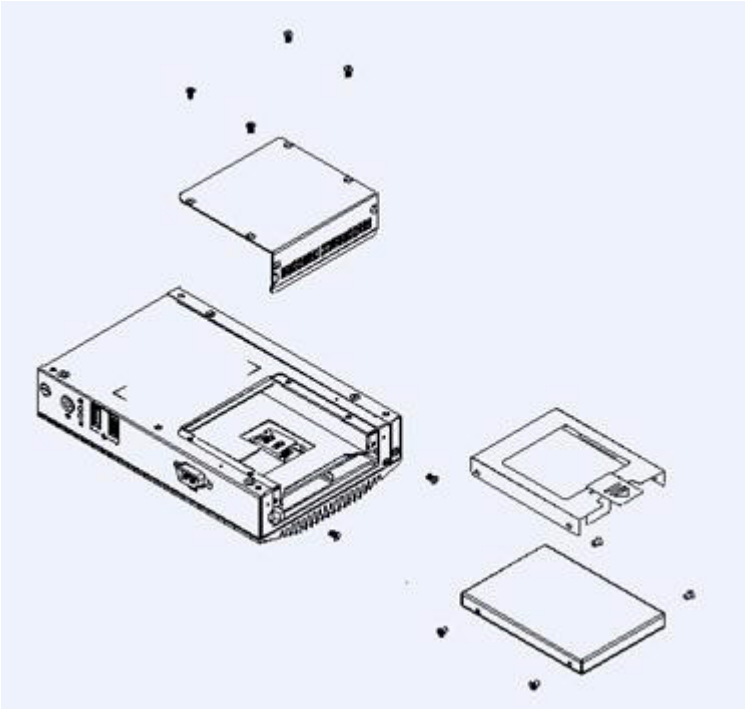


Figure 2.13 HDD installation

2.7 CF Card Installation

1. Remove the HDD cover by loosening the fixing screw.
2. Insert CF card into CF card socket.

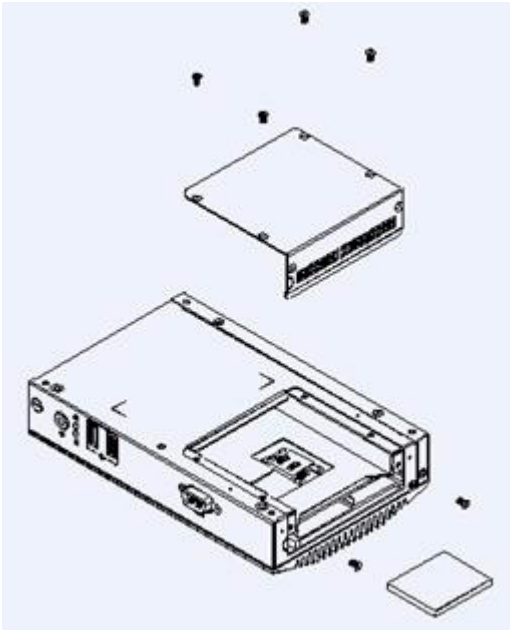


Figure 2.14 CF card installation

2.8 SIM Card Installation

1. Remove the HDD cover by loosening the fixing screw.
2. Insert the SIM card into SIM card socket.

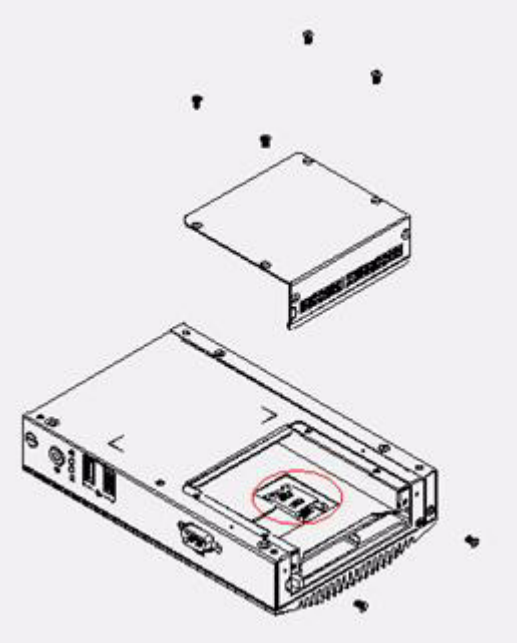


Figure 2.15 SIM card installation

2.9 TV Tuner Installation

Please update TV tuner installation as below:

1. Remove the HDD cover by loosening the fixing screw.
2. Fix the TV tuner bracket with HDD cover by the two screws marked with purple circles.
3. Connect the TV tuner cable crossing the reserved hole (marked with red color in Fig.2.16) to the TV tuner card.
4. Screw the TV tuner card and TV tuner cover with the TV tuner bracket.

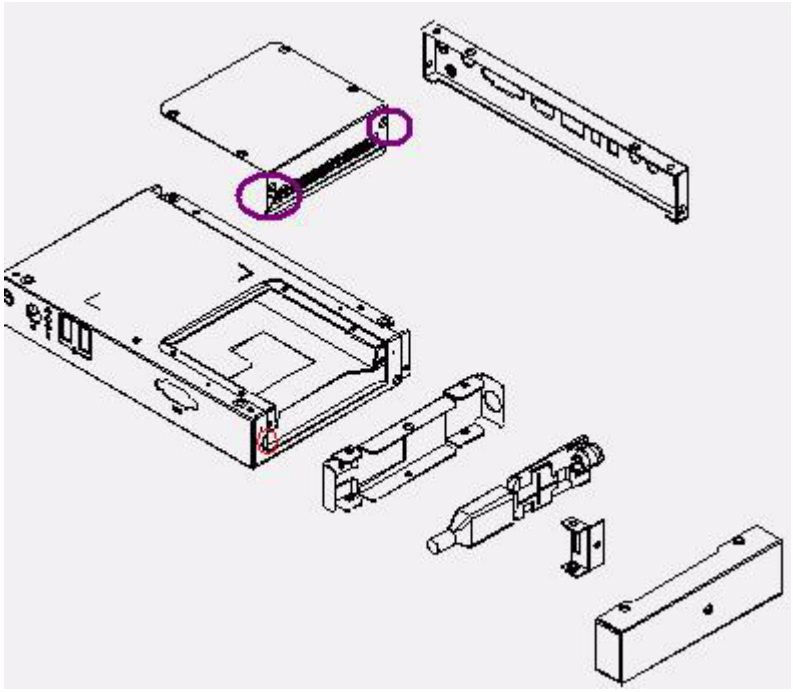


Figure 2.16 Screw the TV tuner card and TV tuner cover.

Chapter 3

BIOS Settings

This chapter introduces how to set BIOS configuration data.

3.1 BIOS Introduction

Advantech provides the full-featured AwardBIOS 6.0 that delivers the superior performance, compatibility and functionality that manufactures of Industrial PCs and Embedded boards need, it's many options and extensions let you customize your products to a wide range of designs and target markets. You can use Advantech's utilities to select and install features to suit your own designs.

3.2 BIOS Setup

The ARK-DS303 series system has build-in AwardBIOS with a CMOS SETUP utility which allows the user to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

When the power is turned on, press the <Del> button during the BIOS POST (Power-On Self Test) which will take you to the CMOS SETUP screen.

CONTROL KEYS

< ↑ >< ↓ >< ← >< → >	Move to selected item
<Enter>	Select item
<Esc>	Main menu - Quit without saving changes into CMOS
	Sub menu - Exit current page and return to main menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Optimized Default
<F10>	Save all CMOS changes

3.2.1 Main Menu

Press <Del> to enter AwardBIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

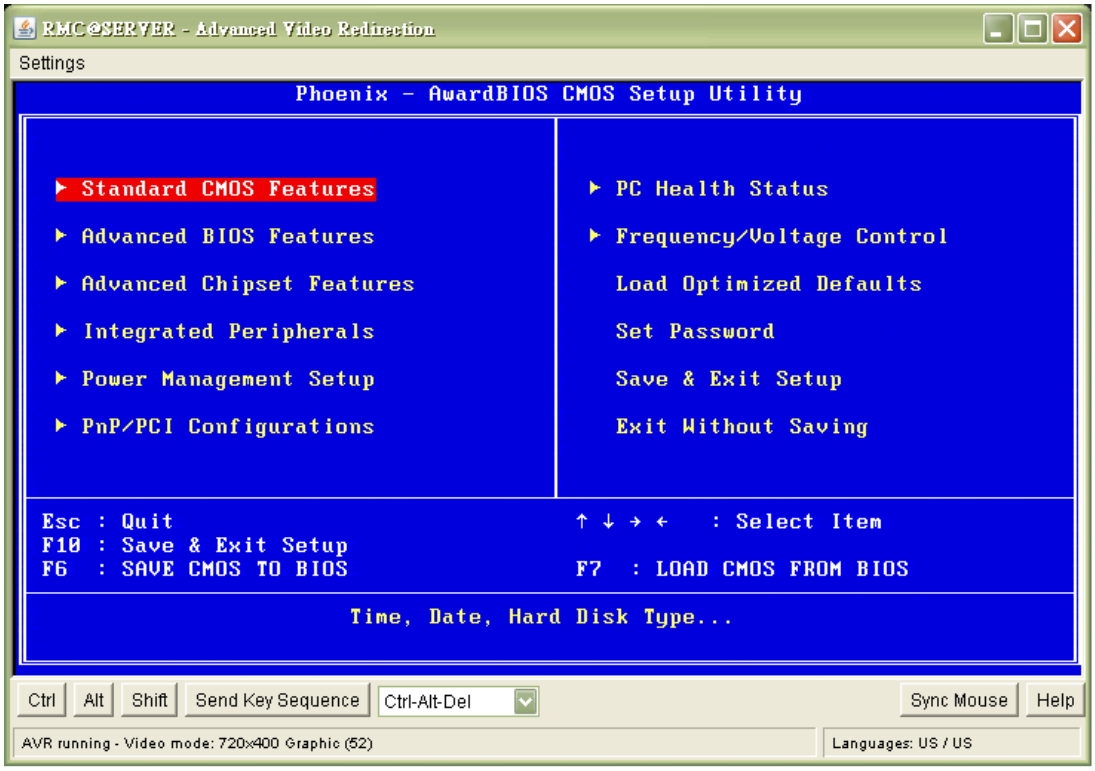


Figure 3.1 Award BIOS CMOS Setup Utility

- **Standard CMOS Features**
  This setup page includes all the items in standard compatible BIOS.
- **Advanced BIOS Features**
  This setup page includes all the items of AwardBIOS enhanced features.
- **Advanced Chipset Features**
  This setup page includes all the items of chipset configuration features.
- **Integrated Peripherals**
  This setup page includes all onboard peripheral devices.
- **Power Management Setup**
  This setup page includes all the items of power management features.
- **PnP/PCI Configurations**
  This setup page includes PnP OS and PCI device configuration.
- **PC Health Status**
  This setup page includes the system auto-detect CPU and system temperature, voltage, fan speed.
- **Frequency/Voltage Control**
  This setup page includes CPU host clock control, frequency ratio and voltage.
- **Load Optimized Defaults**
  This setup page includes load system optimized values for best performance configuration.
- **Set Password**
  Establish, change or disable password.

- **Save & Exit Setup**
  Save CMOS value settings to CMOS and exit BIOS setup.
- **Exit Without Saving**
  Abandon all CMOS value changes and exit BIOS setup.

3.2.2 Standard CMOS Features

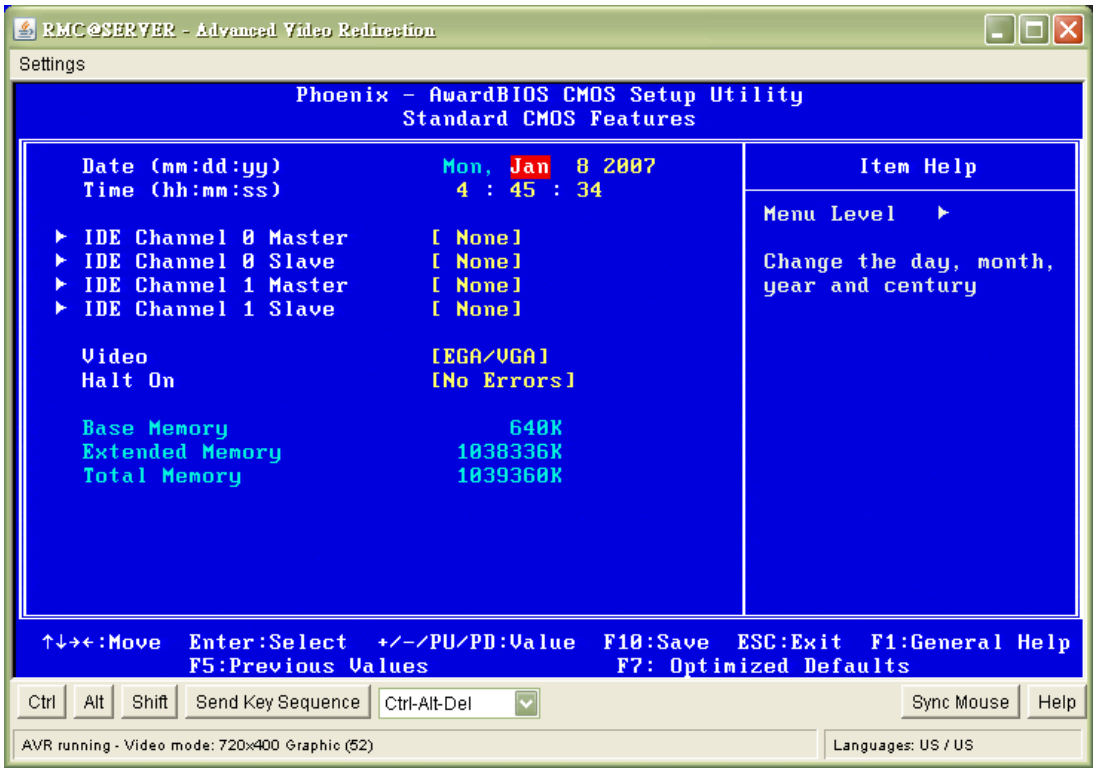


Figure 3.2 Award BIOS Standard CMOS Features

- **Date**
  The date format is <week>, <month>, <day>, <year>.

Week	From Sun to Sat, determined and display by BIOS only
Month	From Jan to Dec.
Day	From 1 to 31
Year	From 1999 through 2098

- **Time**
  The times format in <hour> <minute> <second>, based on 24-hour time.
- **IDE Channel 0 Master/Slave**
  IDE HDD Auto-Detection Press "Enter" for automatic device detection.
- **IDE Channel 1 Master/Slave**
  IDE HDD Auto-Detection Press "Enter" for automatic device detection.
- **Video**
  The item determines that VGA display support type.

EGA/VGA	Supports VGA color mode.
CGA 40	Supports VGA color mode.
CGA 80	Supports VGA color mode.
MONO	Supports VGA mono mode.

- **Halt on**

  The item determines whether the computer will stop if an error is detected during power up.

No Errors	The system boot will not stop for any error
All Errors	Whenever the BIOS detects a non-fatal error the system will be stopped.
All, But Keyboard	The system boot will not stop for a keyboard error

- **Base Memory**

  The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

- **Extended Memory**

  The POST of the BIOS will determine the amount of extended memory (above 1MB in CPU's memory address map) installed in the system.

- **Total Memory**

  This item displays the total system memory size.

3.2.3 Advanced BIOS Features

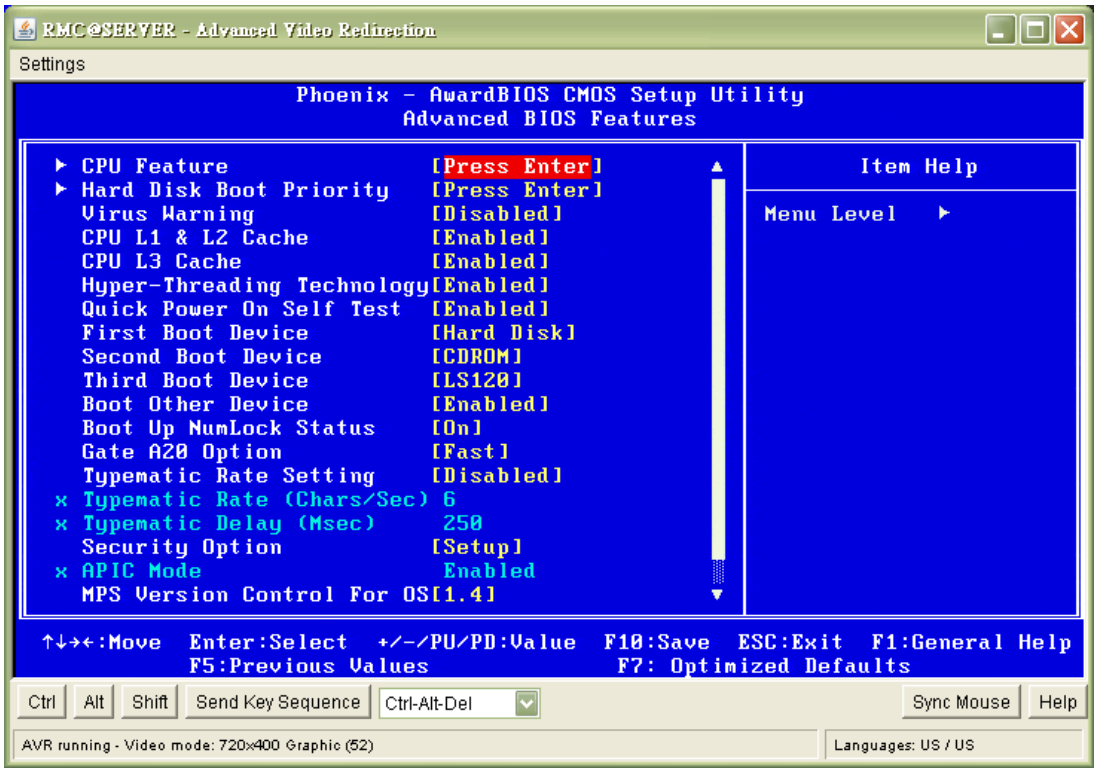


Figure 3.3 Award BIOS Advanced CMOS Features

- **CPU Feature**

  This item allows the user to adjust CPU features, CPU ratio, VID and Thermal, and special features like XD flag.

- **Hard Disk Boot Priority**

  This item allows the user to select boot sequence for system devices.

- **Virus Warning [Disabled]**

  This item allows the user to choose the VIRUS warning feature for IDE hard disk boot sector protection.

- **CPU L1 & L2 Cache [Enabled]**

  This item allows the user to enable CPU L1 and L2 cache.

- **CPU L3 Cache [Enabled]**

  This item allows user to enable CPU L3 cache.

- **Hyper-Threading Technology [Enabled]**

  This item allows user to enable supported on the Intel processors with HT technology.

- **Quick Power On Self Test [Enabled]**

  This field speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third and forth time. Initial setting is enabled by default.

- **First / Second / Third / Boot Other Drive**

LS120	Select boot device priority by LS120.
Hard Disk	Select boot device priority by Hard Disk.
CDROM	Select boot device priority by CDROM.
USB Device	Select boot device priority by USB Device.
ZIP 100	Select boot device priority by ZIP.
USB-FDD	Select boot device priority by USB-FDD.
USB-ZIP	Select boot device priority by USB-ZIP.
USB-CDROM	Select boot device priority by USB-CDROM.
LAN	Select boot device priority by LAN.
Disabled	Disable this boot function.

- **Boot Up NumLock Status [ON]**

  This item enables users to activate the Number Lock function upon system boot.

- **Gate A20 Option [Fast]**

  This item enables users to switch A20 control by port 92 or not.

- **Typematic Rate Setting**

  This item enables users to set the two typematic controls items.

  This field controls the speed at

  – Typematic Rate (Chars/Sec)

  This item controls the speed at system registers repeated keystrokes.

  Eight settings are 6, 8, 10, 12, 15, 20, 24 and 30.

  – Typematic Delay (Msec)

  This item sets the time interval for displaying the first and second characters. Four delay rate options are 250, 500, 750 and 1000.

- **Security Option [Setup]**

Setup	System will boot, but access to Setup if the correct password is not entered at the prompt. (Default value)
System	System can not boot and can not access to Setup page if the correct password is not entered at the prompt.

- **APIC Mode [Enabled]**

  This item allows user to enable of disable the "Advanced Programmable Interrupt Controller ". APIC is implemented on the motherboard and must be supported by the operating system - it extends the number of IRQ's available.

- **MPS Version Control for OS [1.4]**

  This item sets the operating system multiprocessor support version.

3.2.4 Advanced Chipset Features

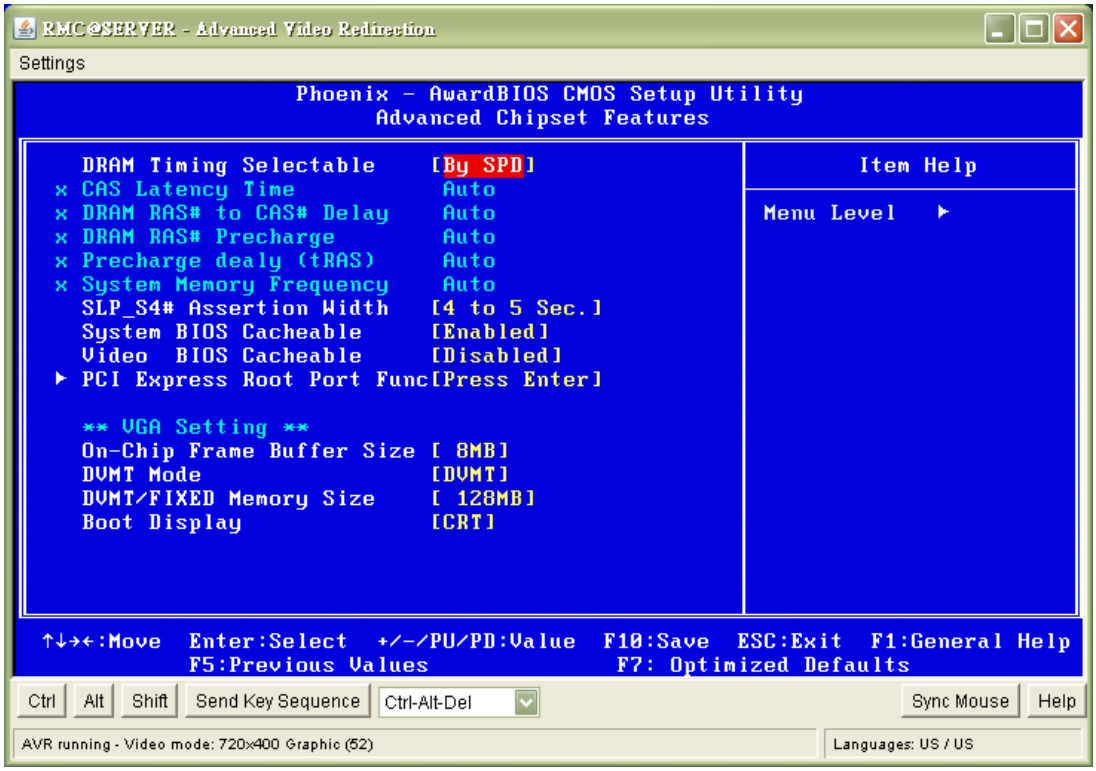


Figure 3.4 Award BIOS Advanced Chipset Features

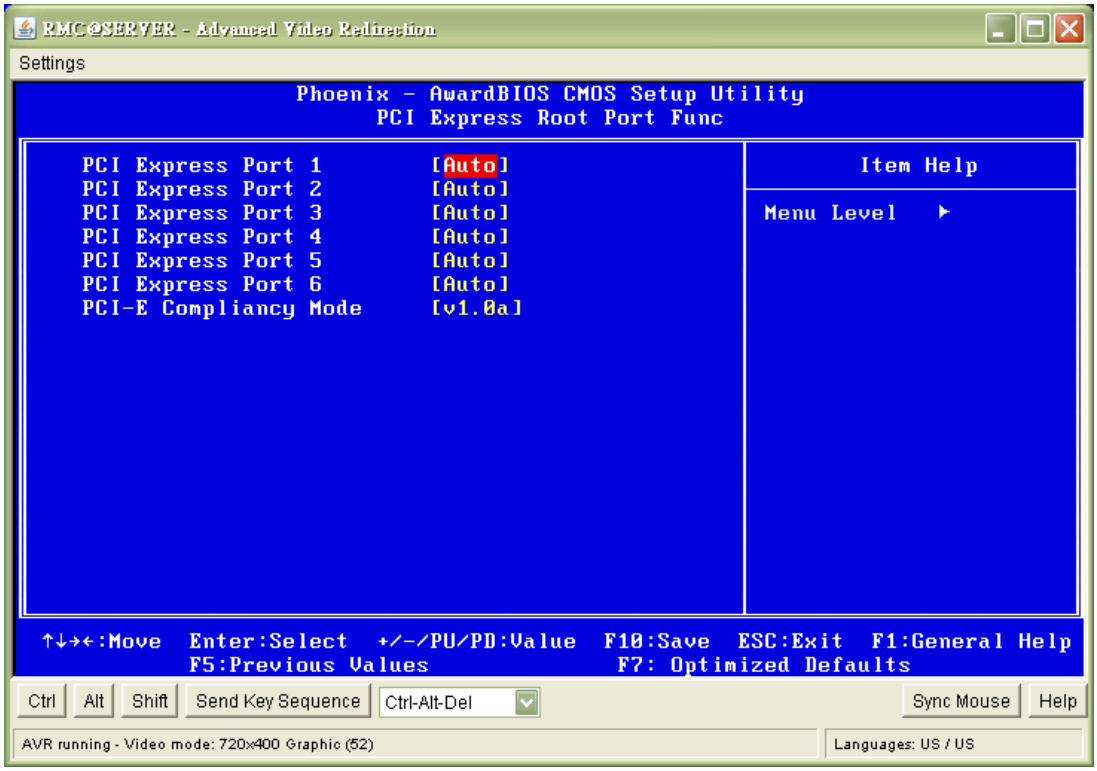
Note! *The "Advanced Chipset Features" screen controls the configuration of the board's chipset register settings and performance tuning - the options on this screen may vary depending on the chipset type. It is strongly recommended that only technical users make changes to the default settings.*

- **DRAM Timing Selectable [By SPD]**
  This item allows the user to set optimal timings for items 2 through 5. The system default setting of "By SPD" follows the SPD information on the ROM chip and ensures the system runs stably, with optimal performance.
- **CAS Latency Time [Auto]**
  This item enables users to set the timing delay in clock cycles before SDRAM starts a read command after receiving it.
- **DRAM RAS# to CAS# Delay [Auto]**
  This item enables users to set the timing of the transition from RAS (Row Address Strobe) to CAS (Column Address Strobe) as both rows and columns are separately addressed shortly after DRAM is refreshed.
- **DRAM RAS# Precharge [Auto]**
  This item enables users to set the DRAM RAS# precharge timing, system default is setting to "Auto" to reference the data from SPD ROM.
- **Precharge delay<tRAS> [Auto]**
  Allow user to select delay time for tRAS
- **System BIOS Cacheable [Enabled]**
  This item allows the system BIOS to be cached to allow faster execution and better performance.

- **Video BIOS Cacheable [Enabled]**

  This item allows the video BIOS to be cached to allow faster execution and better performance.

- **PCI Express Root port Func [Press Enter]**



This item allows the user to adjust PCIE port to on, off or auto.

- **On-Chip Frame Buffer Size [8MB]**

  This item allows the user to adjust on-chip graphics of the memory buffer.

- **DVMT Mode [DVMT]**

  Intel's **Dynamic Video Memory Technology (DVMT)** takes that concept further by allowing the system to dynamically allocate memory resources according to the demands of the system at any point in time. The key idea in DVMT is to improve the efficiency of the memory allocated to either system or graphics processor.

  The BIOS feature that controls all this is the **DVMT Mode** BIOS feature. It allows you to select the DVMT operating mode.

  Fixed — The graphics driver will reserve a fixed portion of the system memory as graphics memory. This ensures that the graphics processor has a guaranteed amount of graphics memory but the downside is once allocated, this memory cannot be used by the operating system even when it is not in use.

  DVMT — The graphics chip will dynamically allocate system memory as graphics memory, according to system and graphics requirements. The system memory is allocated as graphics memory when graphics-intensive applications are running but when the need for graphics memory drops, the allocated graphics memory can be released to the operating system for other uses.

  BOTH — The graphics driver will allocate a fixed amount of memory as dedicated graphics memory, as well as allow more system memory to be dynamically allocated between the graphics processor and the operating system.

- **DVMT/FIXED Memory Size [128MB]**

  This item allows the user to adjust DVMT/FIXED graphics memory size.

  64MB Selected graphics memory size is 64MB.
  128MB Selected graphics memory size is 128MB.
  224MB Selected graphics memory size is 224MB.

- **Boot Display [CRT]**

  This item allows the user to decide that display mode.

  CRT Select boot display mode by CRT.
  HDMI + CRT Select boot display mode by HDMI+CRT.

3.2.5 Integrated Peripherals

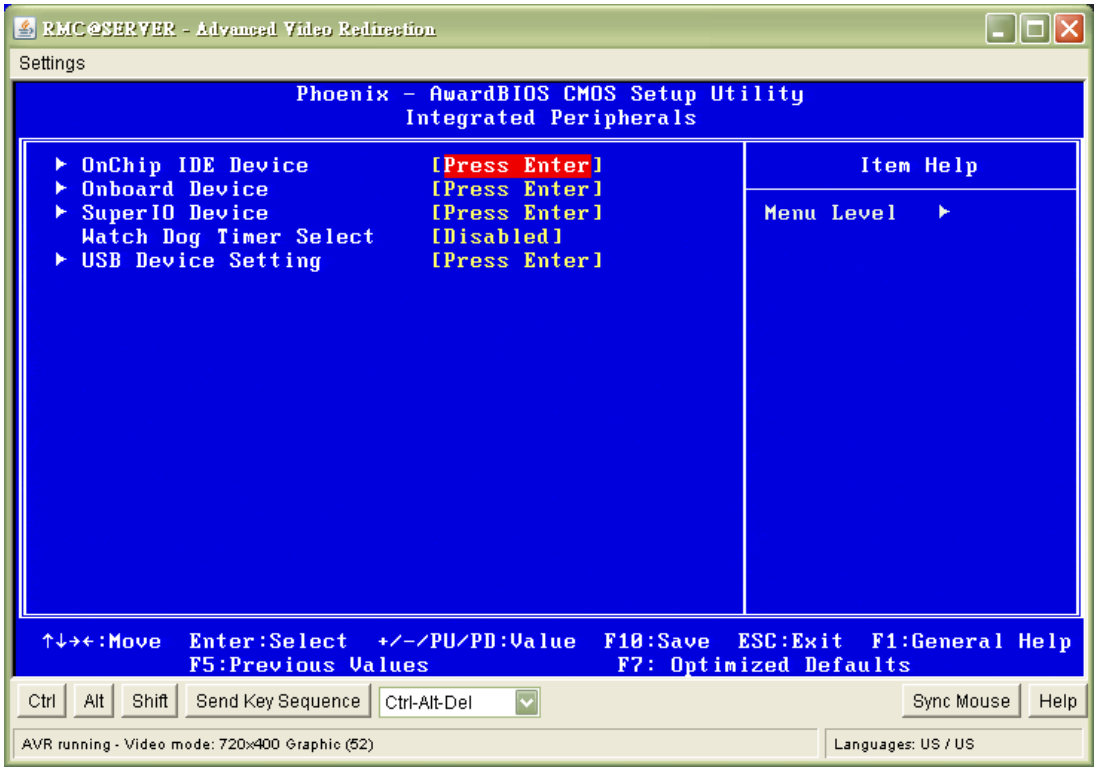


Figure 3.5 Award BIOS Integrated Peripherals

Note! *The "Integrated Peripherals" screen controls chipset configuration for IDE, ATA, SATA, USB, AC97, MC97 and Super IO and Sensor devices. The options on this screen vary depending on the chipset.*

- **OnChip IDE Device [Press Enter]**

  This item enables users to set the OnChip IDE device status, including IDE devices and setting PIO and DMA access modes. Some chipsets support newer SATA devices (Serial-ATA).

- **Onboard Device [Press Enter]**

  This item enables users to set the Azalia/AC97 status to enable or disable.

- **Super IO Device [Press Enter]**

  This item enables users to set the Super IO device status, includes enable Floppy, COM, LPT, IR and to control GPIO and power fail status.

- **Onboard Serial port 1 [3F8/IRQ4]**
  This item allows the user to adjust serial port 1 address and IRQ.
- **Onboard Serial port 2 [2F8/IRQ3]**
  This item allows the user to adjust serial port 2 address and IRQ.
- **Watch Dog Timer Select [Enabled]**
  This item enables the users to set the WDT (Watch Dog Timer) functions.
- **USB Device Setting [Press Enter]**
  This item enables users to set the OnChip USB functions, includes enable USB1.1/2.0 controller and operation mode, and USB keyboard/mouse/storage functions.

3.2.6 Power Management Setup

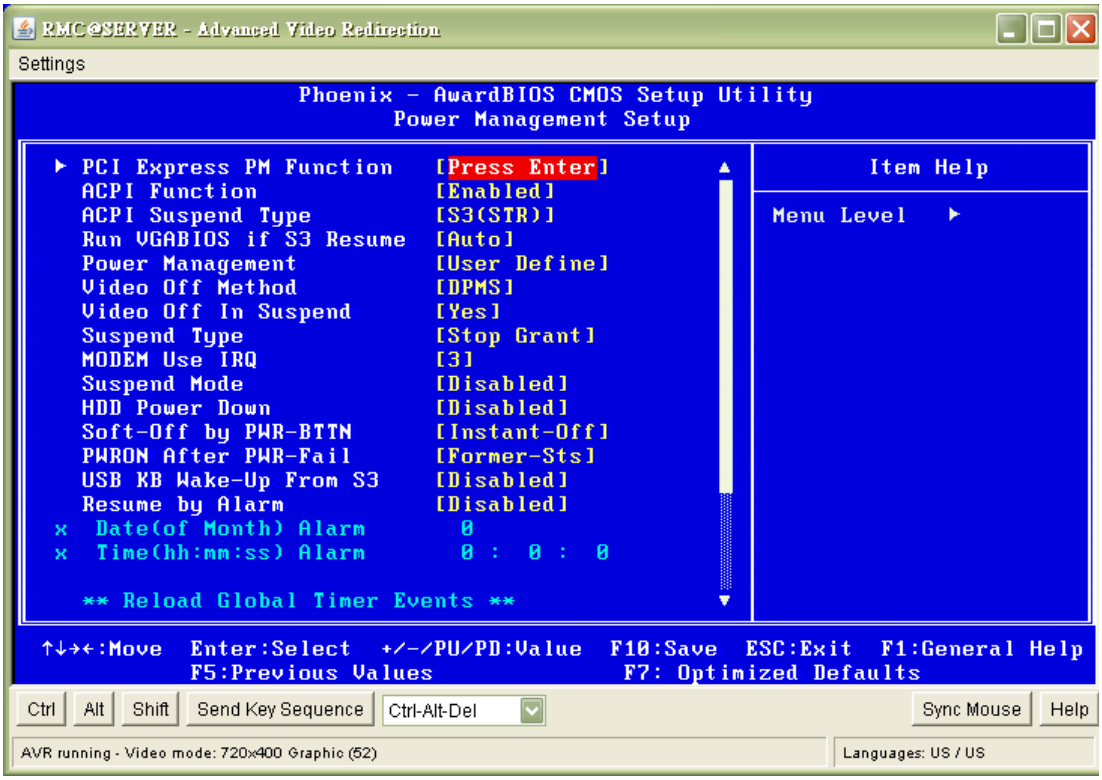


Figure 3.6 Award BIOS Power Management Setup

Note! *The "Power Management Setup" screen allows configuration of the system for effective energy savings while still operating in a manner consistent with intended computer use.*

- **ACPI Function[Enabled]**
  This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, and communicates with PC and system devices for improving power management.

- **ACPI Suspend Type[S1 (POS)]**

  This item allows user to select the sleep state when suspended.

  S1(POS) The suspend mode is equivalent to a software power down;

  S3(STR) The system shuts down with the exception of a refresh current to the system memory.

  S1&S3 Allow by OS.

- **Run VGA BIOS if S3 Resume [Auto]**

  This item allows thesystem to reinitialize the VGA BIOS after the system resumes from ACPI S3 mode.

- **Power Management [User Define]**

  This item allows the user to select the system power saving mode.

  Min Saving Minimum power management. Suspend Mode=1 hr.

  Max Saving Maximum power management. Suspend Mode=1 min.

  User Define Allows user to set each mode individually. Suspend Mode= Disabled or 1 min ~1 hr.

- **Video Off Method [DPMS]**

  This item allows user to determine the manner is which the monitor is blanked.

Blank Screen	This option only writes blanks to the video buffer.
V/H SYNC+Blank	This option will cause system to turn off vertical and horizontal synchronization ports and write blanks to the video buffer.
DPMS	Initial display power management signaling.

- **Video Off In Suspend [Yes]**

  This item allows the user to turn off video when the system enters suspend mode.

- **Suspend Type [Stop Grant]**

  This item allows users to determine the suspend type.

- **Modem use IRQ [3]**

  This item allows users to determine the IRQ which the MODEM can use.

- **Suspend Mode [Disabled]**

  This item allows users to determine the time of system inactivity, all devices except the CPU will be shut off.

- **HDD Power Down Mode [Disabled]**

  This item allows users to determine the time of system inactivity, the hard disk drive will be powered down.

- **Soft-Off by PWR-BTTN [Instant-Off]**

  This item allows users to define the function of the power button.

Instant-Off	Press power button then power off instantly.
Delay 4 Sec	Press power button for 4 sec. delay to power off.

- **PWRON After PWR-Fail [Former-Sts]**

  This item allows users to select system power status after power loss.

- **USB KB Wake-Up From S3 [Enabled]**

  This item allows user to define USB Keyboard to wake up the system from S3 mode.

- **Resume by Alarm [Disabled]**

  This item allows users to enable and key in date/time to power on the system.

Disabled	Disable this function.
Enabled	Enable alarm function to power on system
Data (of month) Alarm	1-31

Time (HH:MM:SS) Alarm(0-23) : (0-59) : 0-59)

3.2.7 PnP/PCI Configurations

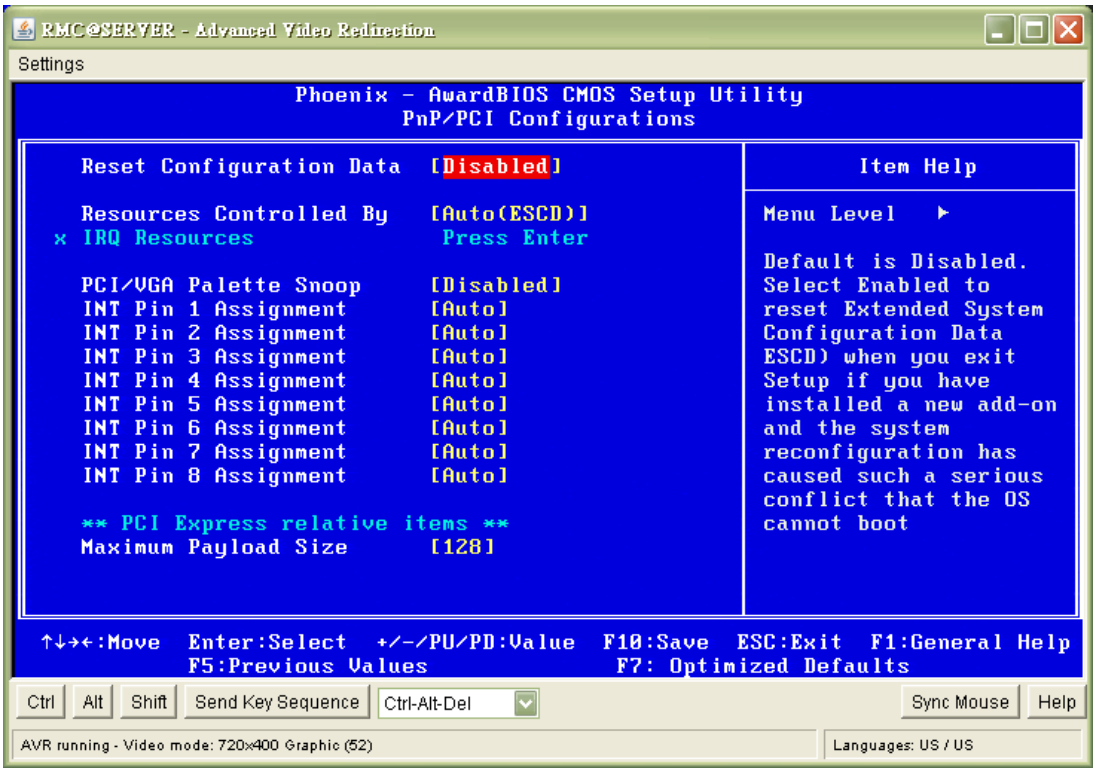


Figure 3.7 Award BIOS PnP/PCI Configurations

Note! *This "PnP/PCI Configurations" option is setting up the IRQ and DMA (both PnP and PCI bus assignments.*

- **Reset Configuration Data [Disabled]**
  This item allow user to clear any PnP configuration data stored in the BIOS.
- **Resources Controlled By [Auto (ESCD)]**
  – IRQ Resources
  This item allows you respectively assign an interruptive type for IRQ-3, 4, 5, 7, 9, 10, 11, 12, 14, and 15.
- **PCI/ VGA Palette Snoop [Disabled]**
  The item is designed to solve problems caused by some non-standard VGA cards. A built-in VGA system does not need this function.
- **INT Pin 1~8 Assignment [Auto]**
  The interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.
- **Maximum payload Size [128]**
  The item allows users to adjust maximum TLP (Transaction Layer Packet) payload size.

3.2.8 PC Health Status

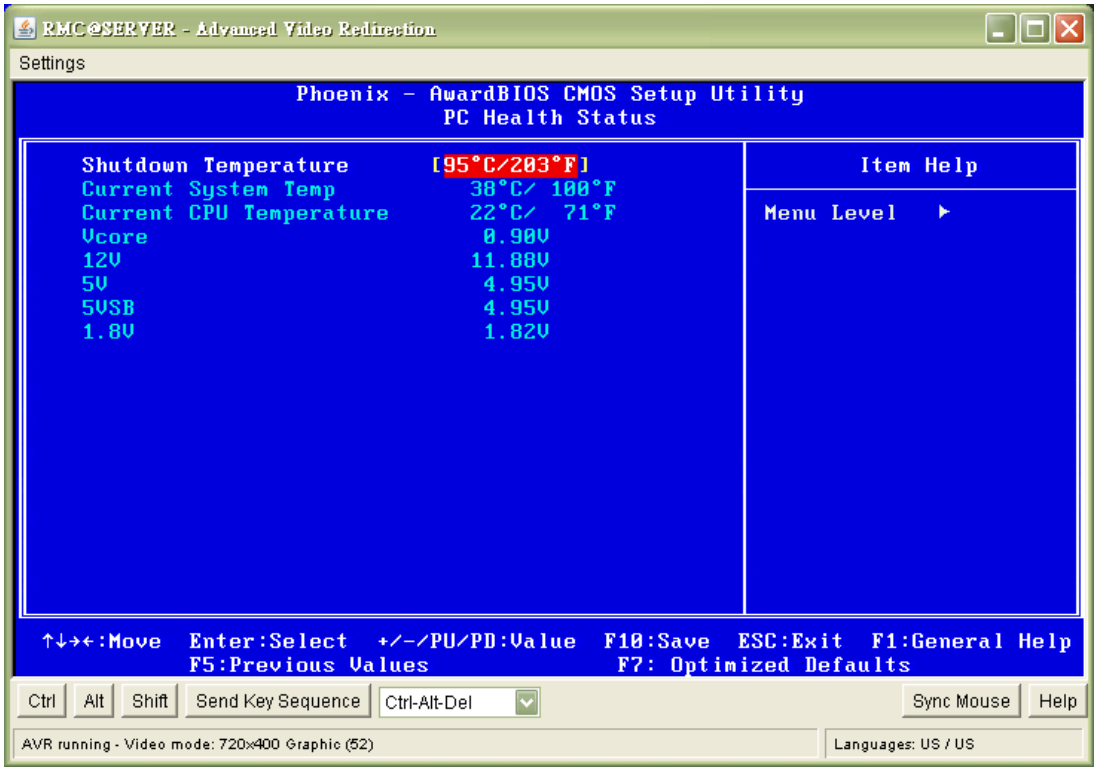


Figure 3.8 Award BIOS PC Health Status

Note! *The "PC Health Status" screen controls the thermal, fan, and voltage status of the board. The options on this page vary depending on the chipset.*

- **Shutdown Temperature [95°C/203°F]**
  This item allow user to set the temperature to notify the ACPI OS to shutdown the system.
- **System Temperature [Show Only]**
  This item displays current system temperature.
- **CPU Temperature [Show Only]**
  This item displays current CPU temperature.
- **CPU/ 1.8V DDR2/12V Input Voltage [Show Only]**
  This item displays current CPU and system voltage.

3.2.9 Frequency/voltage Control

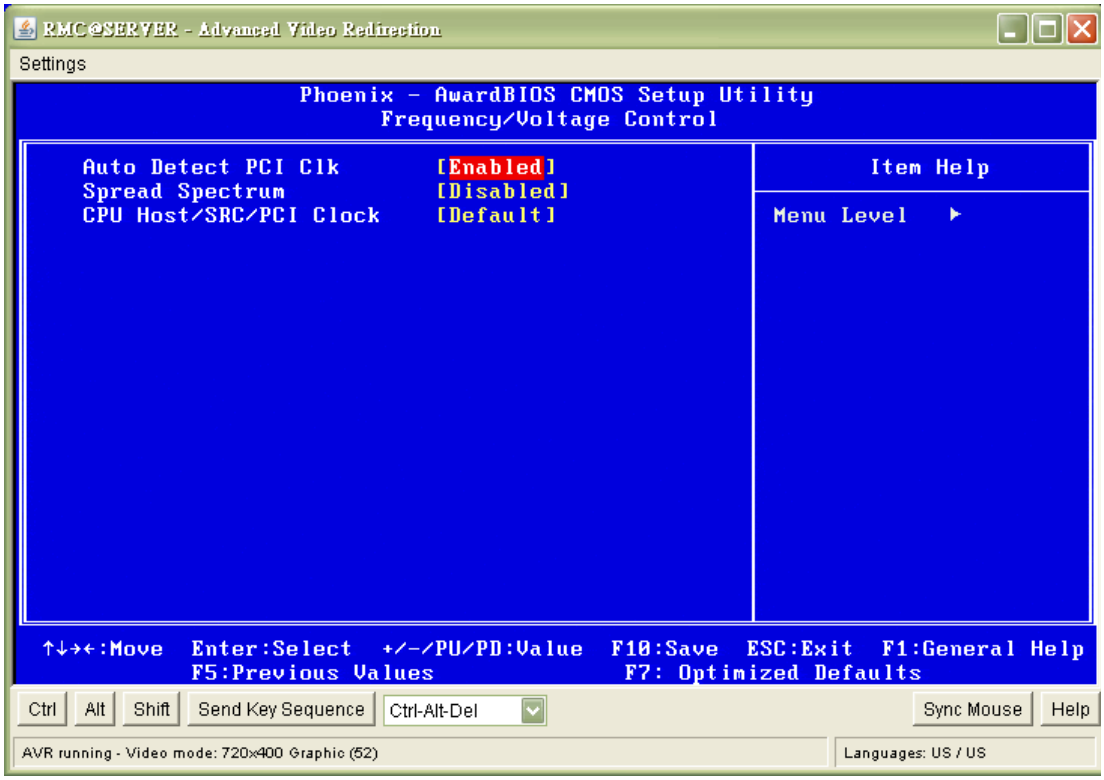


Figure 3.9 Award BIOS Frequency/Voltage Control

Note! *The "Frequency/Voltage Control" screen controls the CPU host frequency. The options on this page vary depending on the chipset; items show up according to installed CPU capacities.*

- **Auto Detect PCI Clk [Enabled]**
  This item enables users to set the PCI Clk by system automatic detection or by manual.
- **Spread Spectrum [Disabled]**
  This item enables users to set the spread spectrum modulation.
- **CPU Host/SRC/PCI Clock [Default]**
  This item enables users to set the CPU Host/SRC/PCI clock modulation.

3.2.10 Load Optimized Defaults

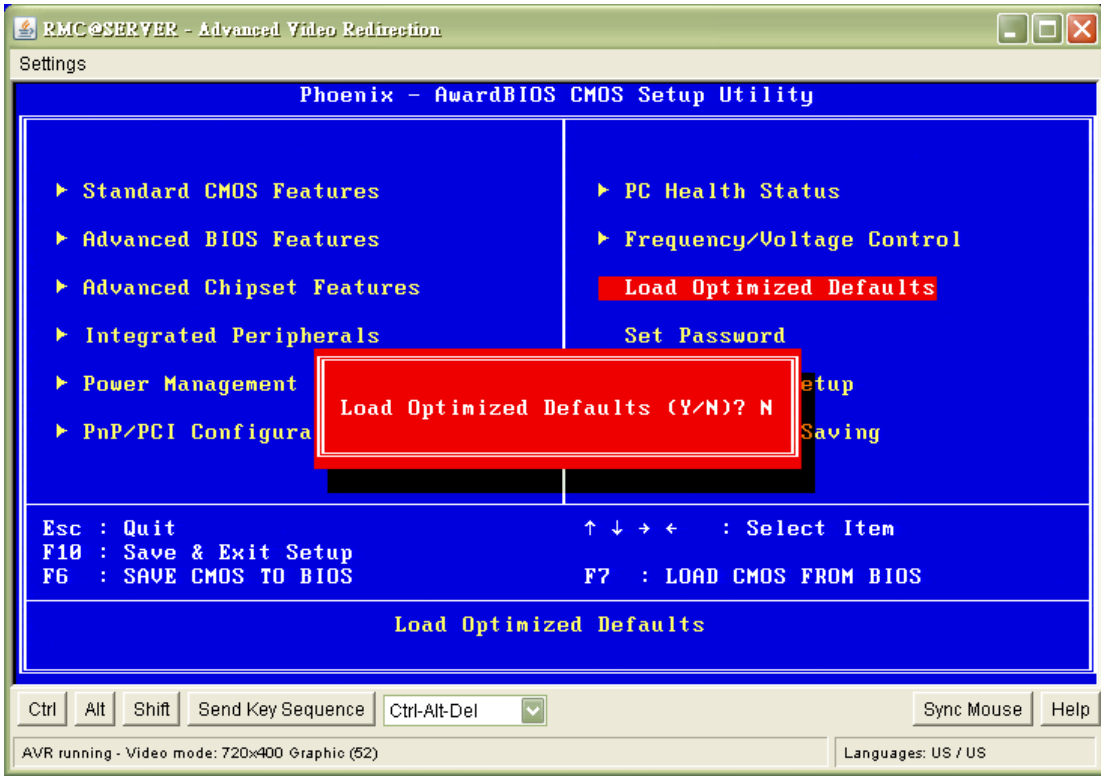


Figure 3.10 Award BIOS Load Setup Defaults

Note! *"Load Optimized Defaults" loads the default system values directly from ROM. If the stored record created by the setup program should ever become corrupted (and therefore unusable), select Load Setup Defaults to have these default values load automatically for the next bootup.*

3.2.11 Set Password

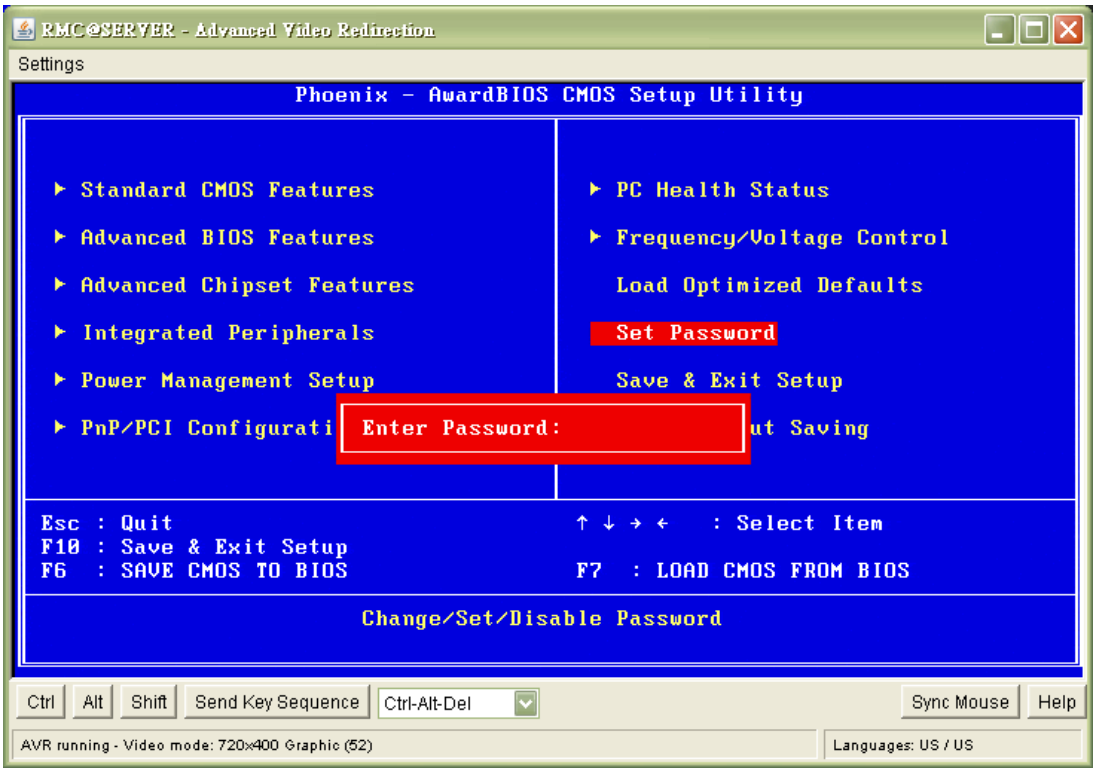


Figure 3.11 Award BIOS Set Password

Note! *To enable this feature, you should first go to the "Advanced BIOS Features" menu, choose the Security Option, and select either System or Setup, depending on which aspects you want password protected. System requires a password both to boot the system and to enter Setup. Setup requires a password only to enter Setup. A password may be at most 8 characters long.*

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the existing password and press <Enter>.
3. You will see "Confirm Password". Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, enter the new password and press <Enter>.
5. At the "Confirm Password" prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the existing password and press <Enter>.
3. You will see "Confirm Password". Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, please don't enter anything; just press <Enter>.
5. At the "Confirm Password" prompt, again, don't type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

3.2.12 Save & Exit Setup

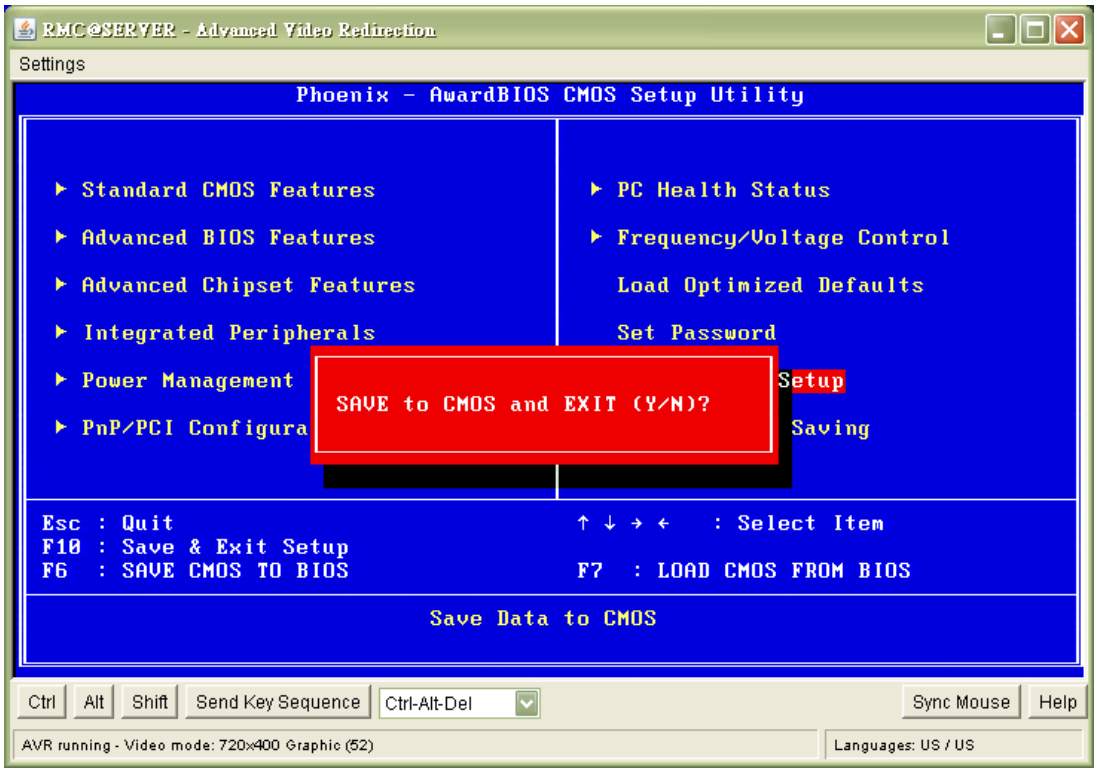


Figure 3.12 Award BIOS SAVE to CMOS and EXIT

Note! *Type "Y" will quit the BIOS Setup Utility and save user setup value to CMOS.*

Type "N" will return to BIOS Setup Utility.

3.2.13 Quit Without Saving

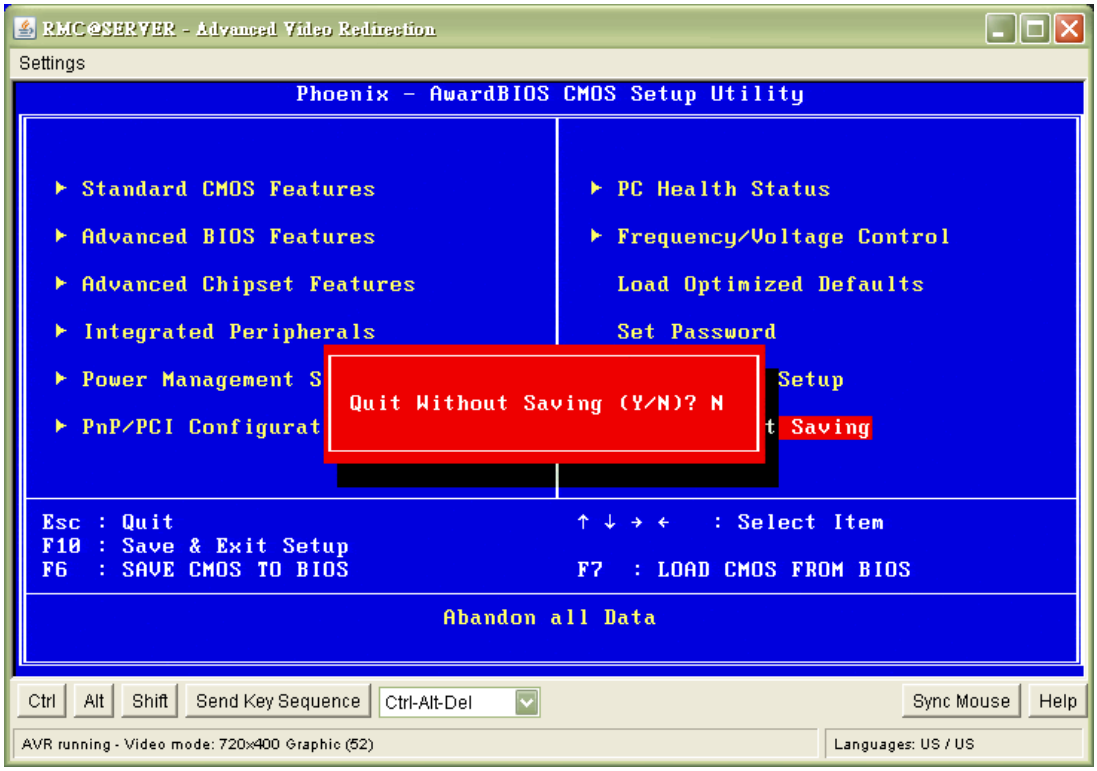


Figure 3.13 Award BIOS Quit without Saving

Note! *Type "Y" will quit the BIOS Setup Utility without saving to CMOS. Type "N" will return to BIOS Setup Utility.*

Chapter 4

Software Installation

This chapter introduces driver installation.

4.1 Driver Installation

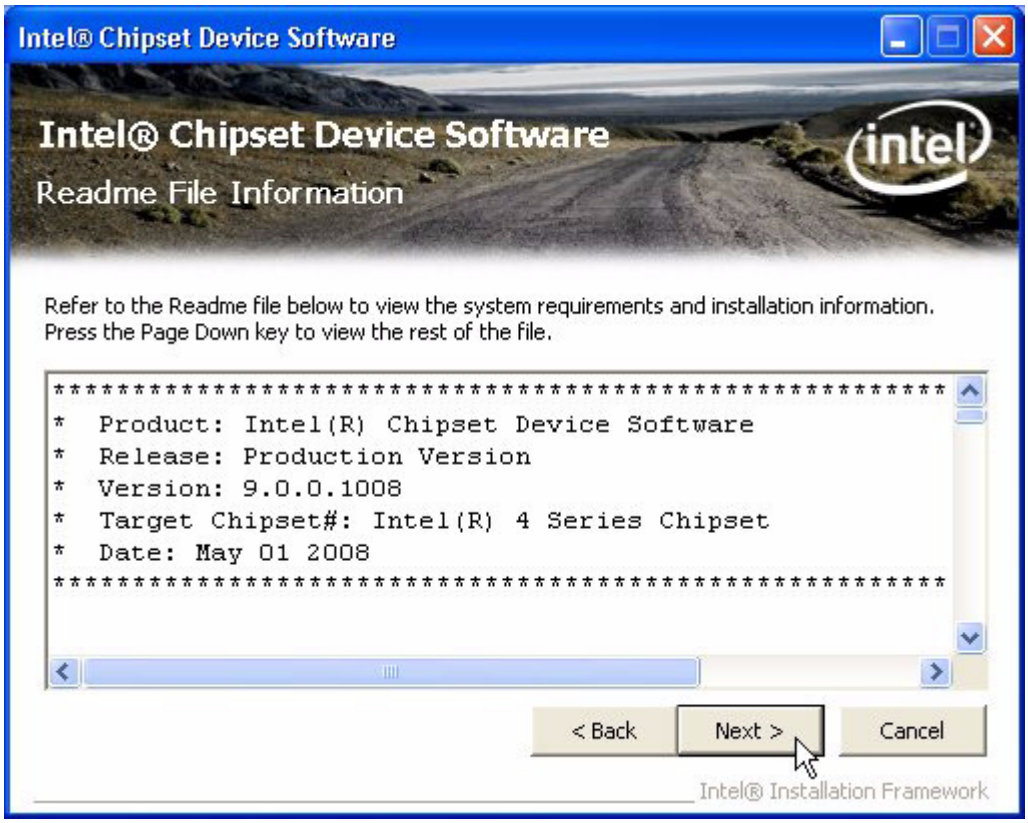
4.1.1 Graphic Driver Installation

1. Change folder address to \Drivers\Chipset. And double click to execute infinst_autol.exe.

2. Click "Next" bottom to the next step.

3. Click "Yes" to accept License Agreement.

4. Click "Next" to exit Readme File Information window.



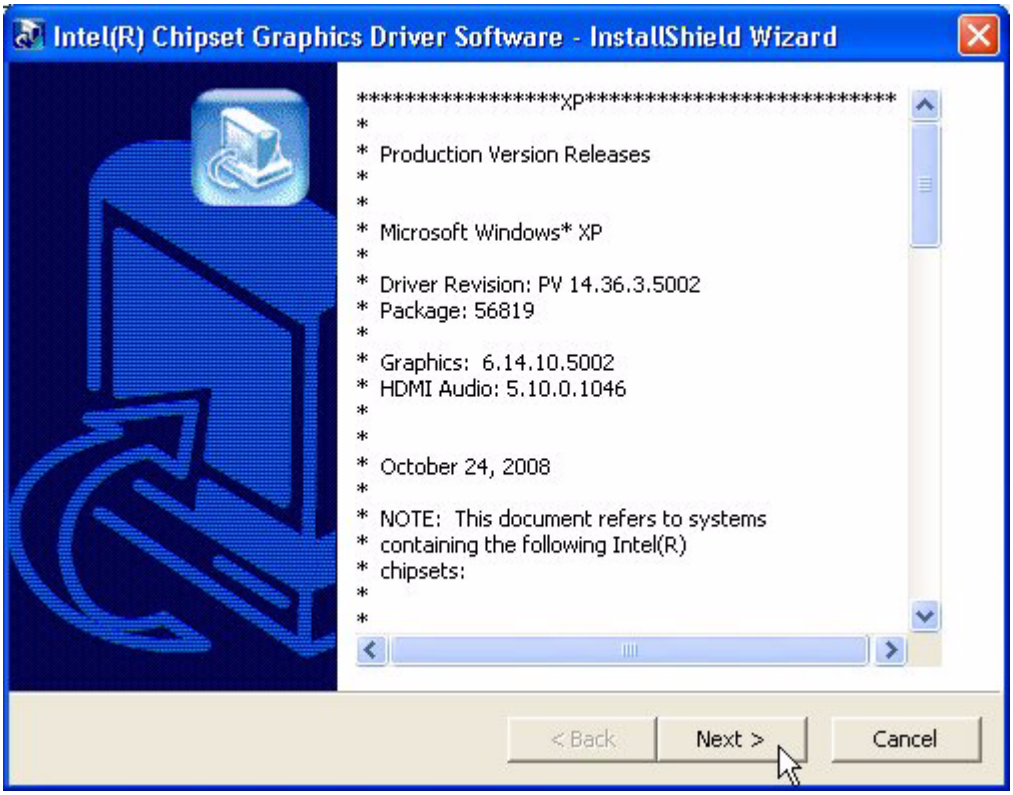
5. Click "Next" bottom to continue.

6. Select "Yes, I want to restart this computer now." and click "Finish" at the bottom. The computer will restart automatically and the driver installation is completed.

4.1.2 Graphic driver installation

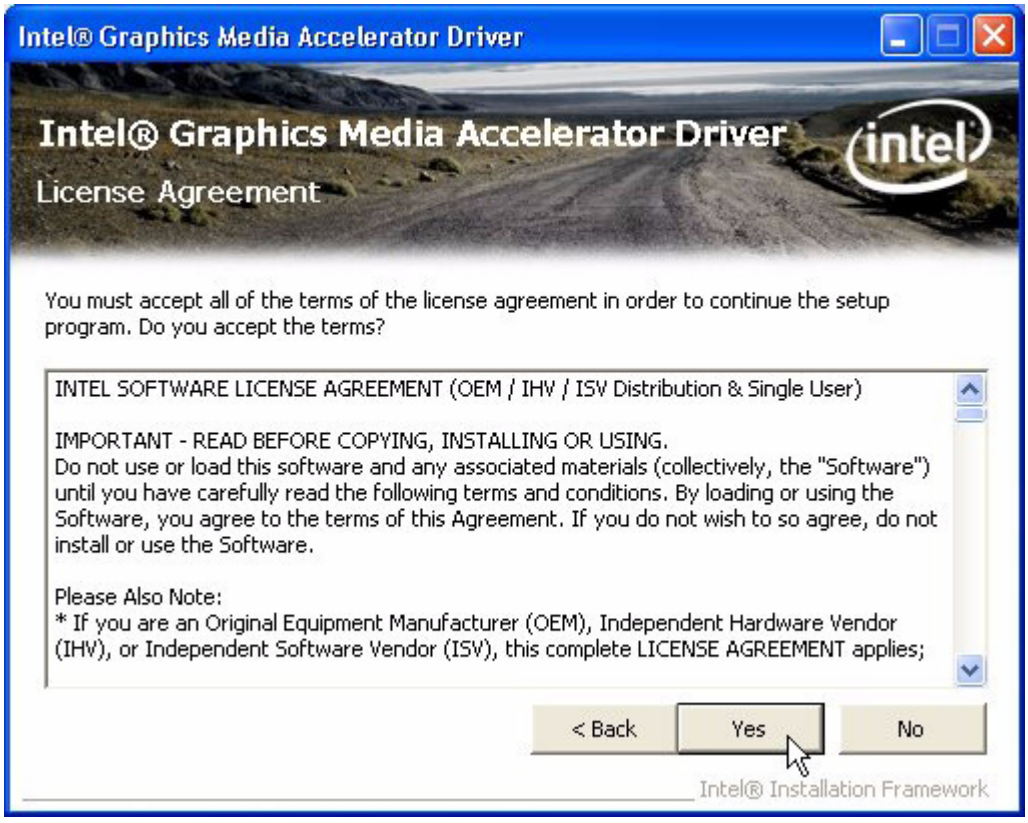
1. Change folder address to \Drivers\VGA. And double click to execute Setup.exe.

2. Click "Next" bottom to continue installation.

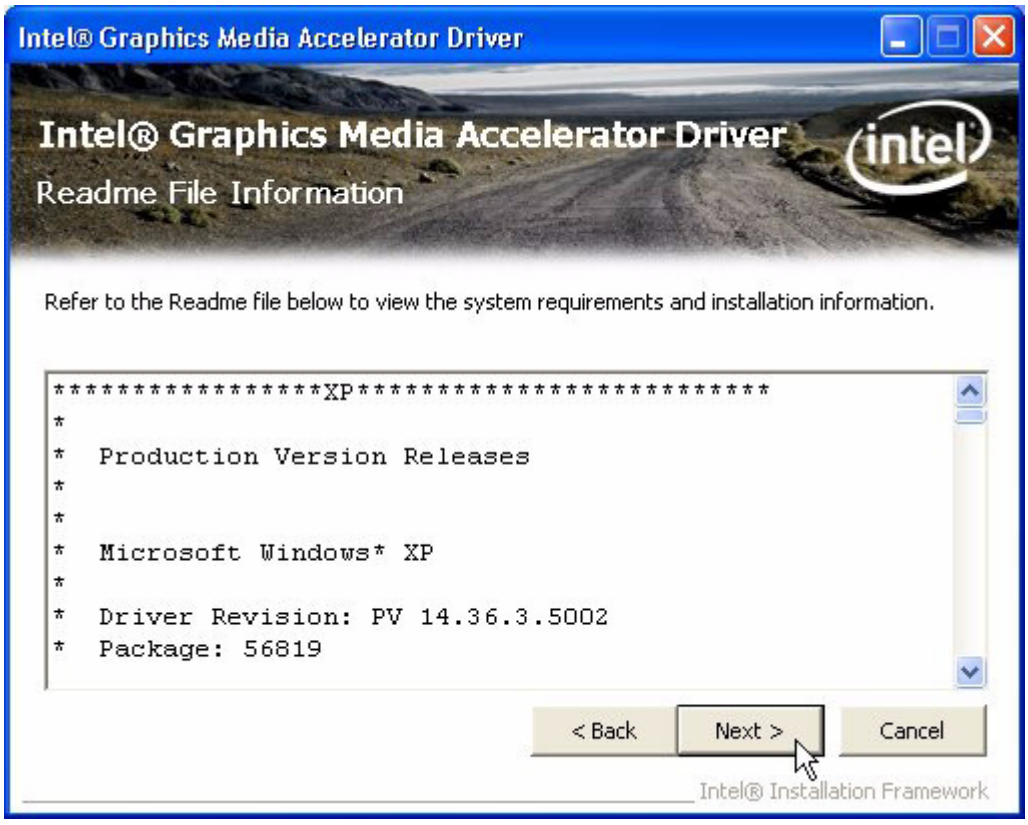


3. Click "Next" bottom to skip through welcome window.

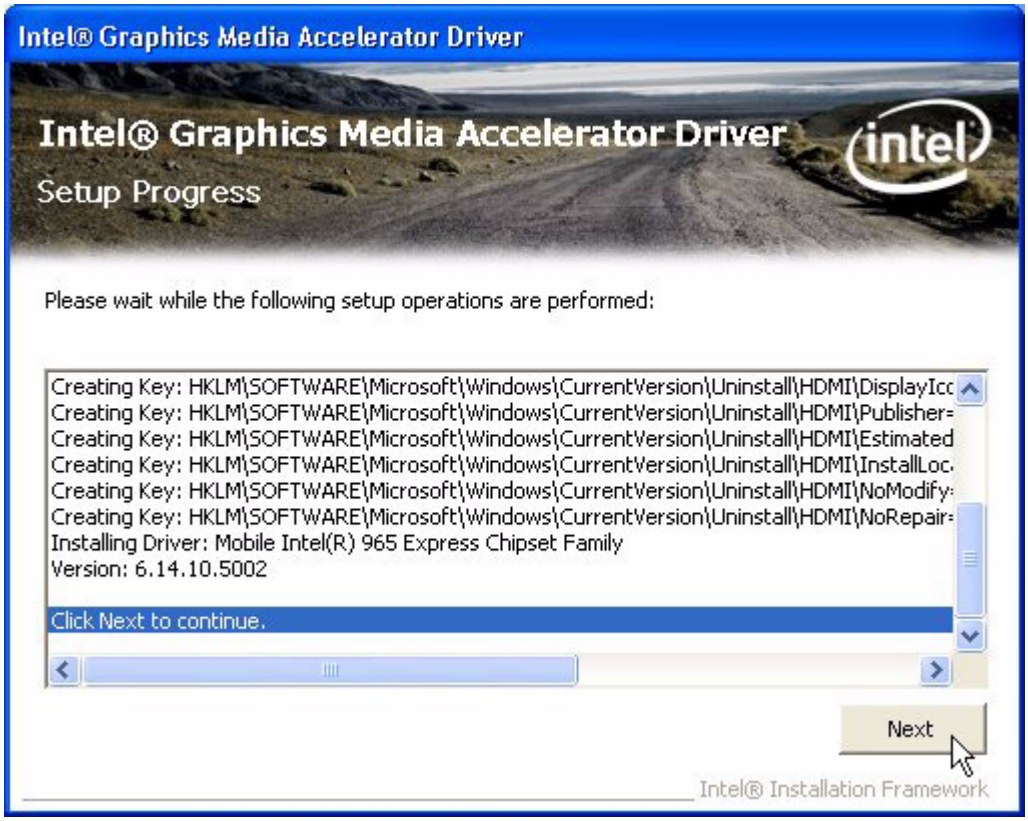
4. Click "Yes" to accept License Agreement.



5. Click "Next" to exit Readme File Information window.



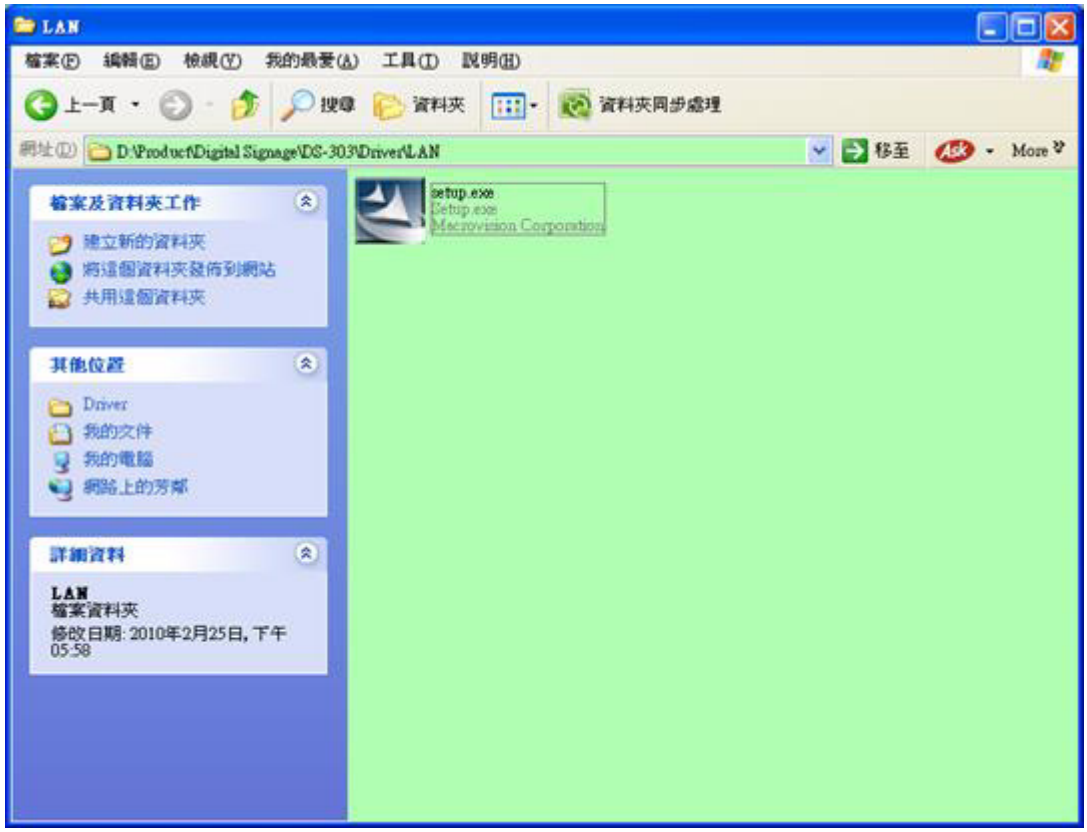
6. Click "Next" bottom to continue.



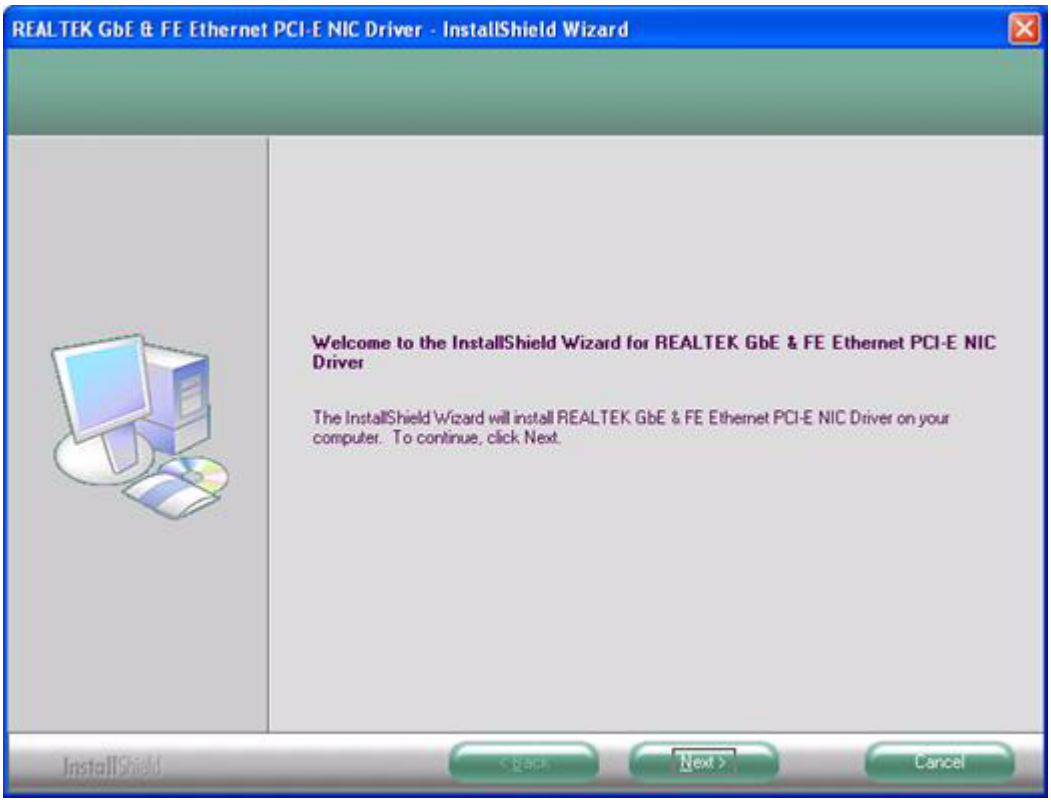
7. Select "Yes, I want to restart this computer now." and click "Finish" at the bottom. The computer will restart automatically and the driver installation is completed.

4.1.3 LAN driver installation

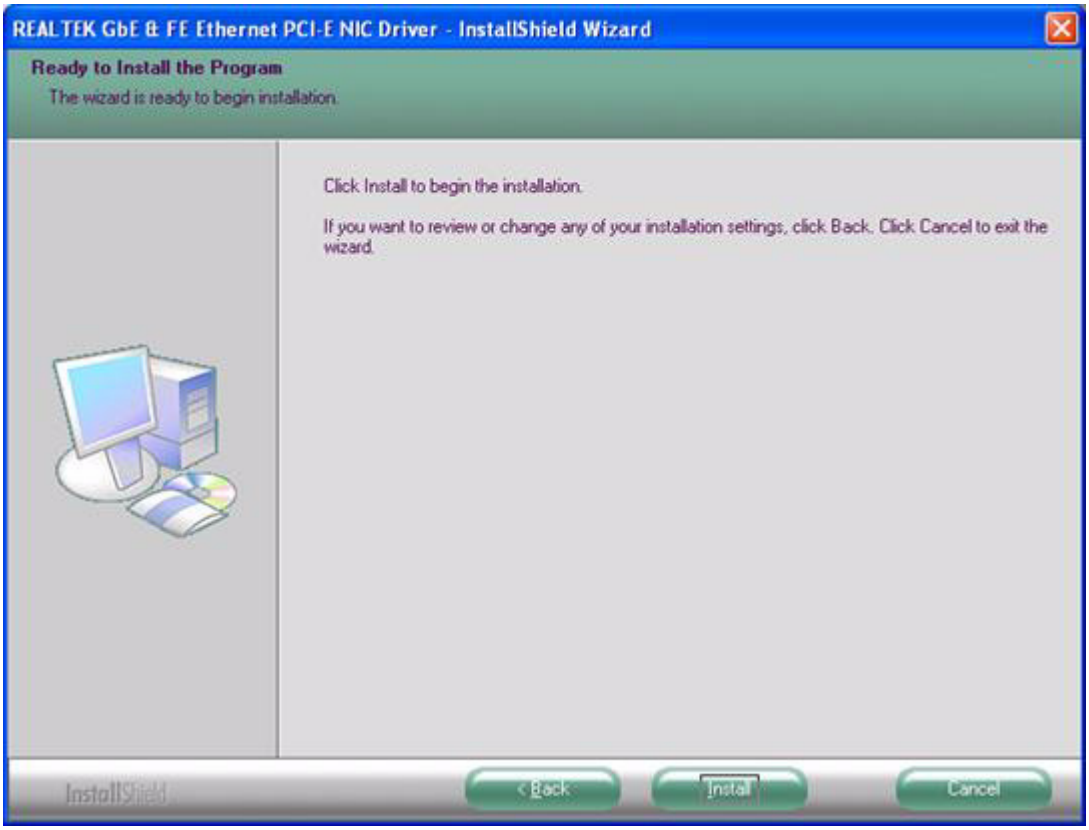
1. Change folder address to \Drivers\LAN. And double click to execute Setup.exe.



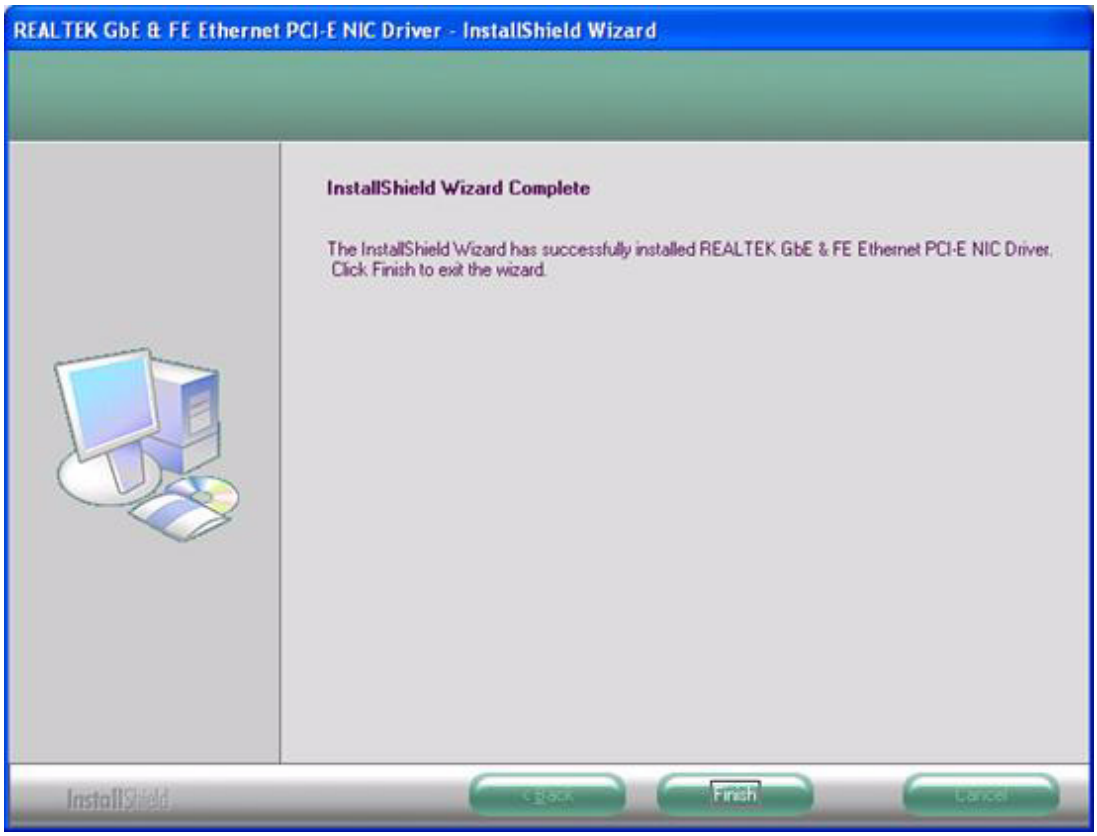
2. Click "Next" bottom to the next step.



3. Click "Install" button to start Installation.

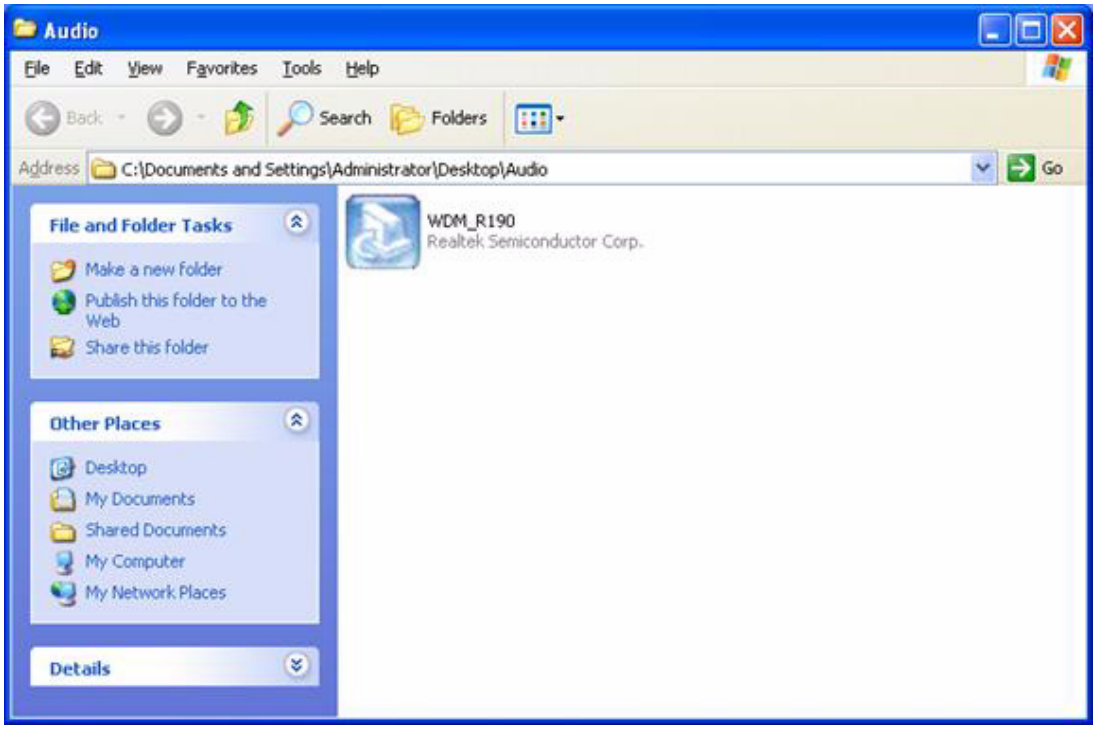


4. The network driver installation is completed. Click "Finish" button to exit InstallShield.

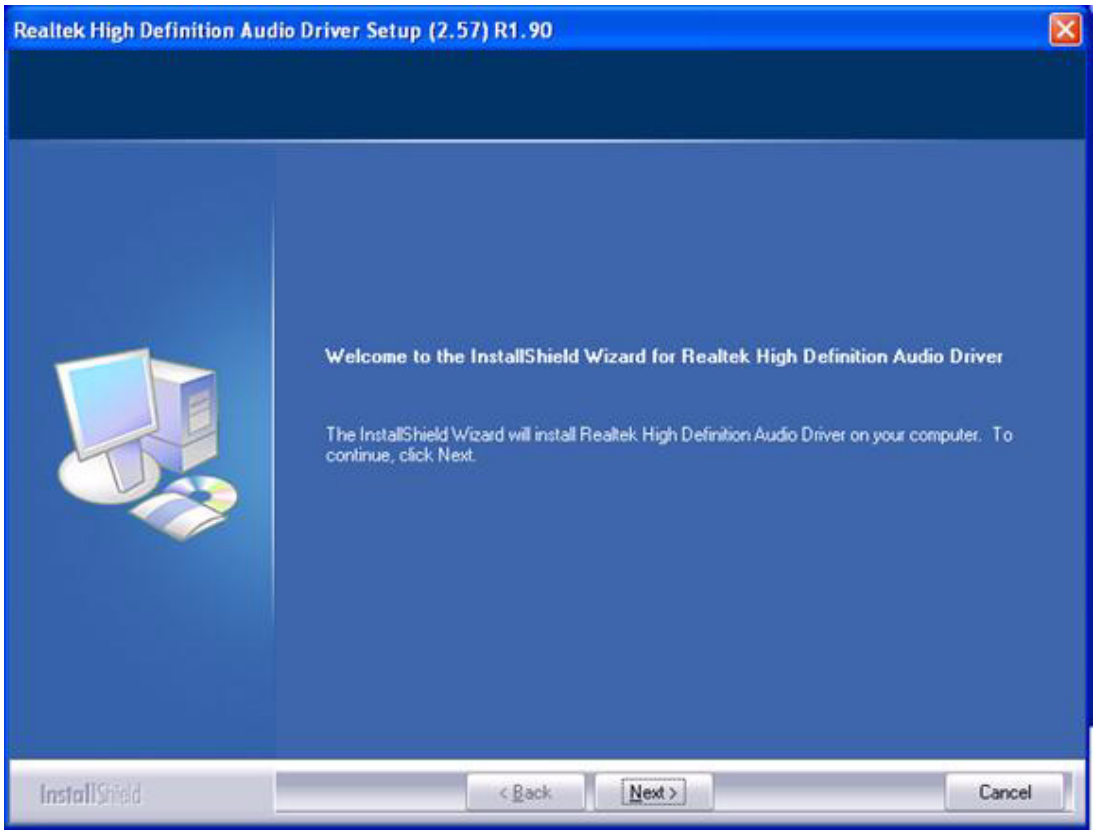


4.1.4 Audio driver installation

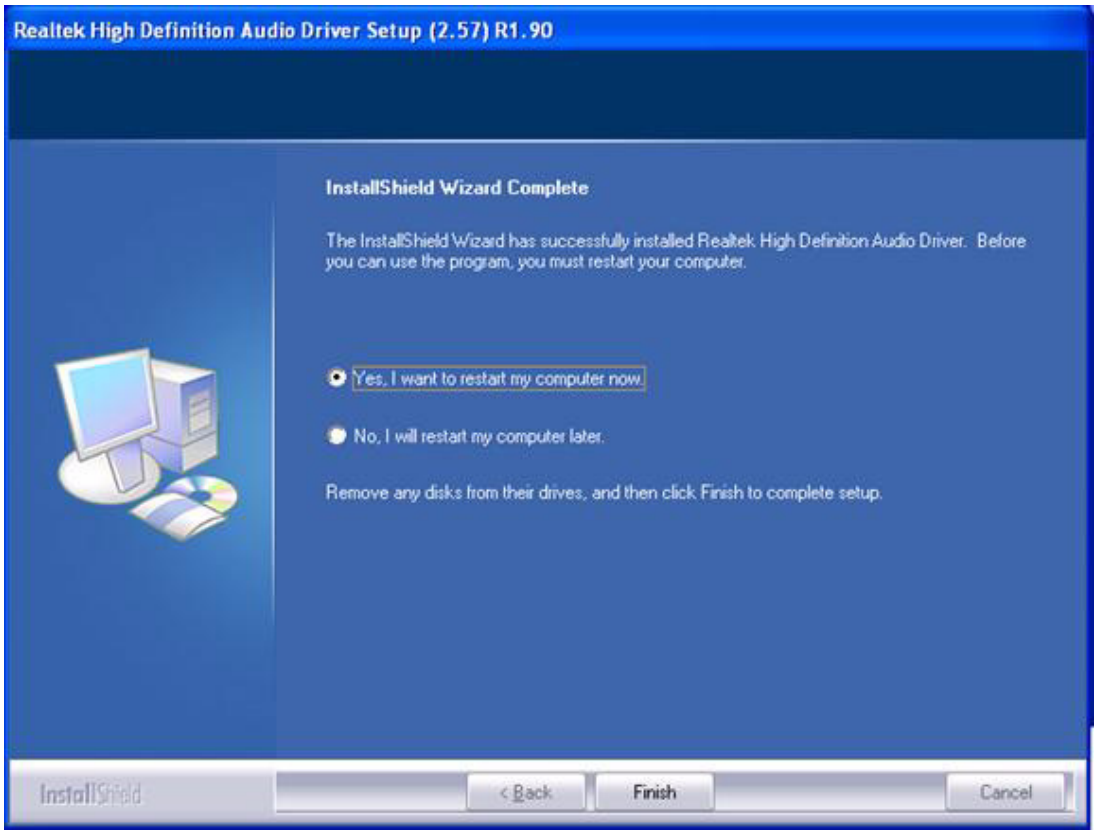
1. Change folder address to \Drivers\Audio. And double click to execute WDM_R190.exe.



2. Click "Next" bottom to skip welcome message.



3. Select "Yes, I want to restart this computer now." and click "Finish" at the bottom. The computer will restart automatically and the driver installation is completed.



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