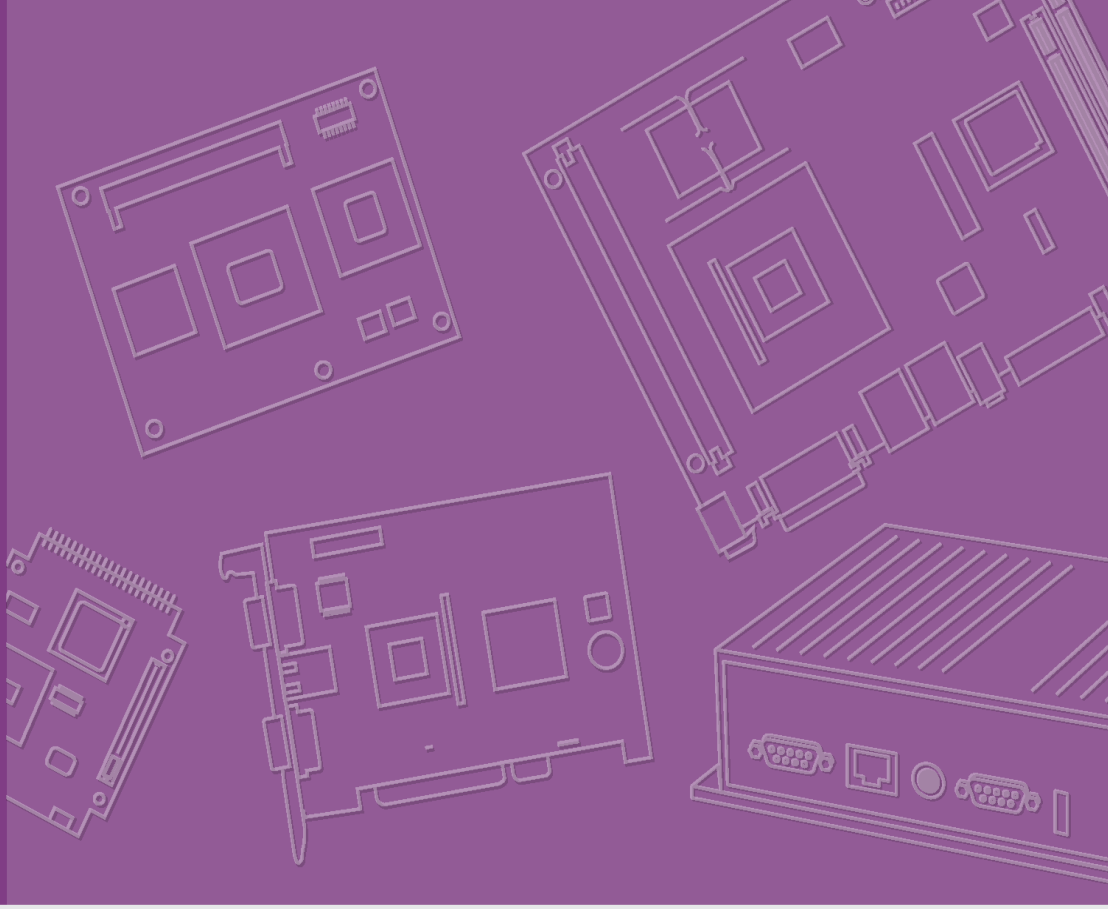

User Manual

ARK-DS520

Graphic-Optimized Digital Signage Player Powered by NVIDIA GT218

ADVANTECH

Enabling an Intelligent Planet

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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 website 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-DS520 Unit
- 1 x Power Adaptor
- 1 x Driver/Utility CD/manual
- 1 x China RoHS
- 1 x Simplified Chinese User Manual for CCC

Power Cord & Accessory Options

Part Number	Description
1702002600	3-pin power cord (US)
1700018705	3-pin power cord (EU)
1702031801	3-pin power cord (UK)
1702031836	3-pin power cord (AU)
1700000237	3-pin power cord (JP)

Part Number Description

Part Number	Description
AMO-WIFI01E	WIFI 802.11 b/g/n mini PCIe module (w/antenna)
AMO-HSDPA01E	HSDPA mini PCIe module (w/antenna)

Note! *A wireless LED will be activated when inserting WLAN card into either one of the mini PCIe card slots in ARK-DS520.*

Contents

Chapter 1

General Introduction

This chapter gives background information on ARK-DS520 series.

1.1 Introduction

ARK-DS520 is powered by an Intel® Atom™ D525 dual-core processor with an integrated nVidia GT218 (ION2) graphic module for Full HD playback. There is also a another fanless option based on the Intel® Atom™ N455 single-core processor. With NVIDIA Optimus technology, the system energizes media playback with over 10 times normal performance, due to its combination of integrated graphics, high performance editing and converting of videos, and rich 3D user interface. ARK-DS520 delivers advanced graphics performance with lower cost to meet your signage application requirements.

ARK-DS520 has a rich combination of video output interfaces (e.g.: 2 x VGA, VGA + HDMI, HDMI + DVI) to provide dual display output simultaneously. For better connectivity, it has internal support for 2 x Mini PCIe interfaces for add-on functions such as wireless network and TV tuner cards to fulfill different requirements. And ARK-DS520 also supports 4 x USB ports, 2 x COM (RS-232) ports and DIO ports for system integration and applications.

1.2 Product Features

1.2.1 General

- Intel® Atom™ D525 1.8 GHz, Intel® Atom™ N455 1.66 GHz
- Rich video I/O combination supports dual display (e.g.: 2 x VGA, VGA + HDMI, HDMI + DVI)
- Supports 2 x GbE, 4 x USB 2.0, 2 x COM and 8-bit GPIO ports
- 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 support; up to 1080p full HD video playback performance (subject to the video media format and playback software)

1.2.3 Power Consumption

- **Typical:** 18 W (CPU is Intel Atom D525 1.8 GHz and w/o expansion)
- **Max.:** 30 W (CPU is Intel Atom D525 1.8 GHz and w/o expansion)

1.3 Hardware Specifications

- **CPU:** Intel Atom D525 1.8 GHz (or Intel Atom N455 1.66 GHz)
- **System Chipset:** Intel Atom D525/N455 + ICH8M
- **BIOS:** AMI 16 Mbit Flash BIOS
- **System Memory:** 2 x DDR3 SODIMM sockets, supports DDR3 800 MHz up to 4 GB (D525) & supports DDR3 667 MHz up to 2 GB (N455)
- **Graphic chipset:** nVidia GT218-ILV-B1Video Memory Size: independent display memory 512 MB
- **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:** 2 x RS-232 ports

- **USB:** 4 x USB 2.0 compliant ports
- **Audio:** Supports line-out, microphone-in
- **Ethernet Chipset:** 1 x Intel WG82567V + 1 x Realtek RTL8111D-GR (Gigabit LAN)
  - Speed: 10/100/1000 Mbps
  - Interface: 2 x RJ-45 jacks with LED
  - Standard: IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T compliant
- **Expansion**

  miniPCIe: 2 sockets
- **Resolution**
  - VGA: up to 2048 x 1536 at 60 Hz;
  - DVI-D: single link 1600 x 1200 at 60 Hz;
  - HDMI: Up to 1920 x 1080 at 60 Hz (1080P)
- **Dual Independent Outputs:**
  - VGA1+VGA2
  - VGA1+HDMI
  - VGA1+DVI-D
  - VGA2+HDMI
  - VGA2+DVI-D
  - HDMI+DVI-D

1.4 Mechanical Specifications

1.4.1 Dimensions

220 x 44.2 x 150 mm (8.67" x 1.74" x 5.91"), without mounting brackets.

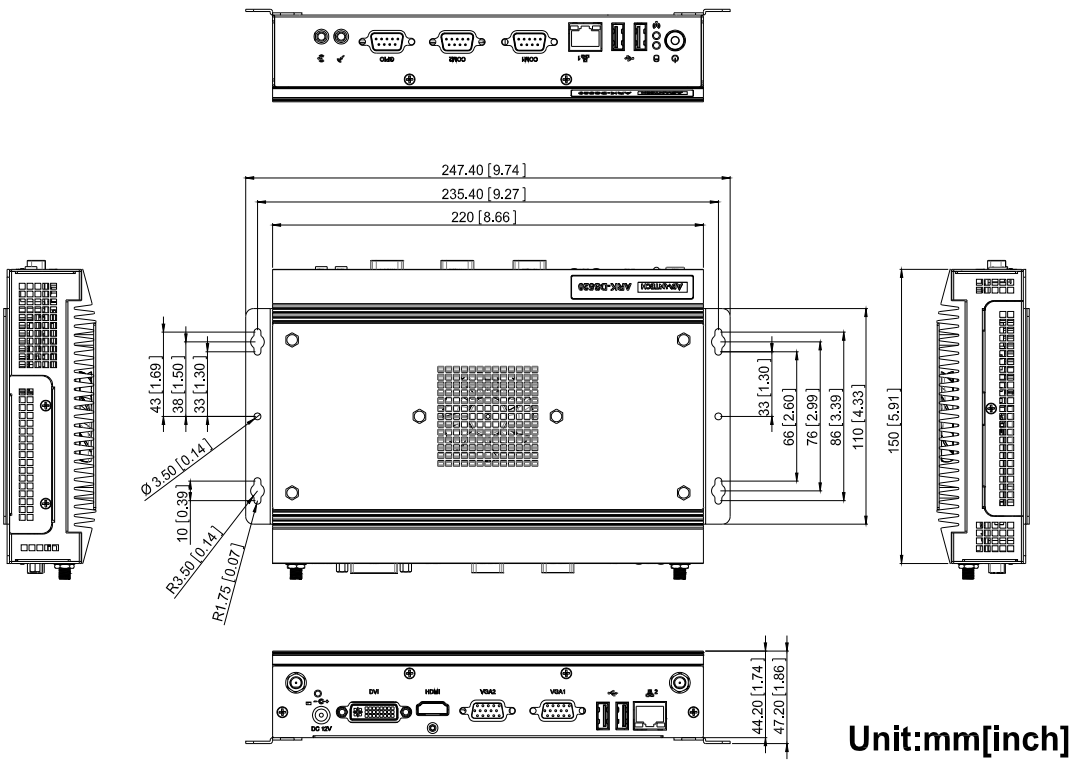


Figure 1.1 ARK-DS520 Mechanical Dimensions

1.4.2 Weight

1.7 kg (3.74 lb.)

1.5 Power Requirements

1.5.1 System Power

Minimum power input: DC 12 V, 5 A

1.5.2 RTC Battery

3 V/200 mAH BR2032

1.6 Environmental Specifications

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

0.3 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

BSMI, CCC

1.6.7 EMC

CE, FCC

Chapter 2

Hardware Installation

This chapter introduces external I/O and the installation of ARK-DS520 Hardware.

2.1 ARK-DS520 I/O Connectors

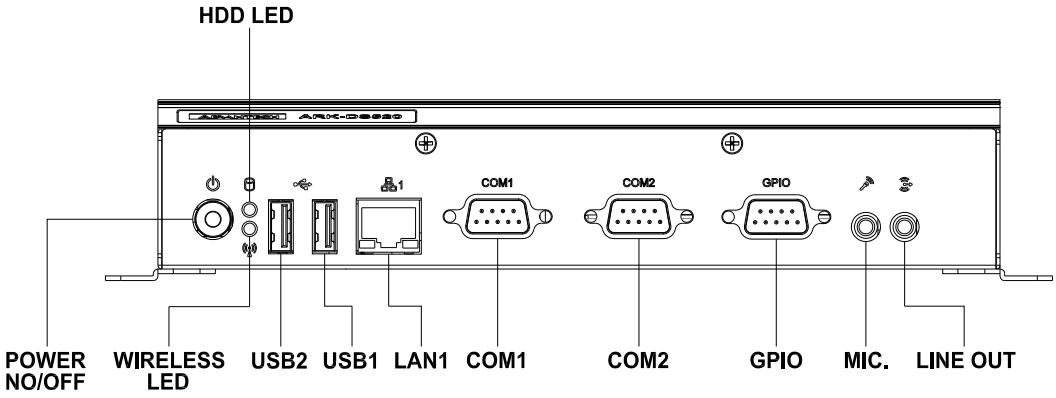


Figure 2.1 ARK-DS520 Front View

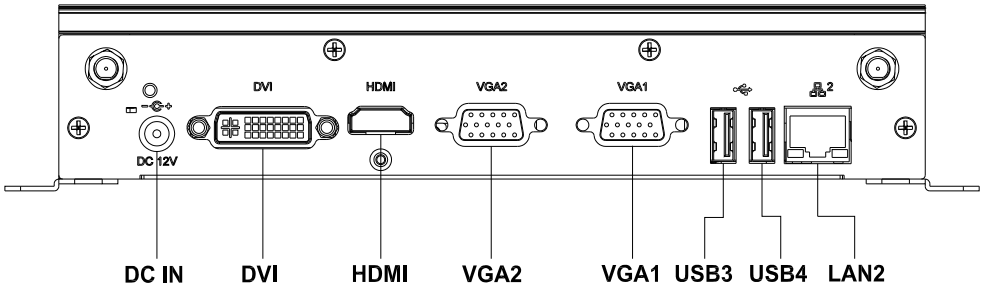


Figure 2.2 ARK-DS520 Rear View

2.2 ARK-DS520 Front Side External I/O Connectors

2.2.1 Power ON/OFF Button

ARK-DS520 has a power ON/OFF button on the front side. Push this button to turn the system ON and OFF. It also supports a 4 second delay soft power off.

Figure 2.3 Power ON/OFF Button

2.2.2 USB 1~4 Connectors

The ARK-DS520 provides four USB interface connectors (2 x USB ports on the front-side; and 2 x USB ports on the rear-side), 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.

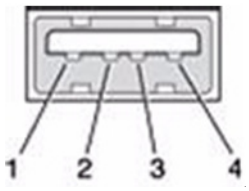


Figure 2.4 USB 1~4 Connectors

Table 2.1: USB 1~4 Port Pin Assignments

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

2.2.3 COM 1,2 Connector

ARK-DS520 provides two D-sub 9-pin connectors serial communication interface ports. The ports support RS-232 mode communications.

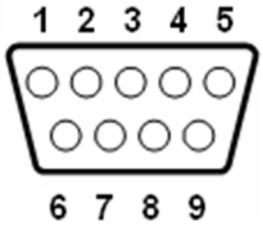


Figure 2.5 COM 1,2 Connector

Table 2.2: COM 1,2 Connector Pin Assignments

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

2.2.4 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

2.2.5 Ethernet Connector (LAN)

ARK-DS520 provides two RJ-45 LAN interface connectors (1 x LAN connector on the front-side; 1 x LAN connector on the rear-side); 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.

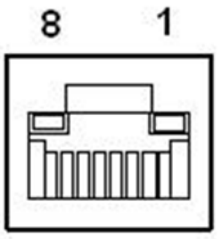


Figure 2.7 Ethernet Connector

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 ARK-DS520 Rear Side External I/O Connectors

2.3.1 Power Input Connector

ARK-DS520 comes with a DC-Jack header that takes 12 VDC external power input.

Figure 2.8 Power Input Connector

2.3.2 DVI-D Connector

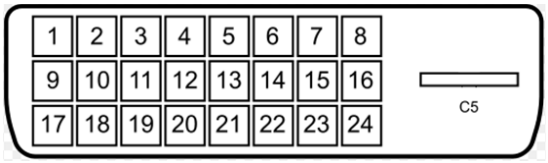


Figure 2.9 DVI-D Connector

Table 2.4: DVI-D Connector Pin Assignments

Pin	Signal Name
1	TMDS Data2-
2	TMDS Data2+
3	GND
4	NC
5	NC
6	SCL
7	SDA
8	NC
9	TMDS Data1-
10	TMDS Data1+
11	GND
12	NC
13	NC
14	+5 V Power
15	GND
16	Hot Plug Detect
17	TMDS Data0-
18	TMDS Data0+
19	GND
20	NC
21	NC
22	GND
23	TMDS Clock+
24	TMDS Clock-
C5	NC

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.

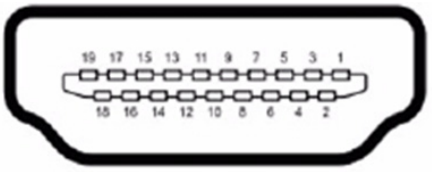


Figure 2.10 HDMI Connector

Table 2.5: 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	Hot Plug Detect

2.3.4 VGA 1,2 Connector

The ARK-DS520 provides two high resolution VGA interfaces connected by a D-sub 15-pin connector to support VGA CRT compatible monitors. It supports display resolutions of up to 2048 x 1536 @ 60 Hz.

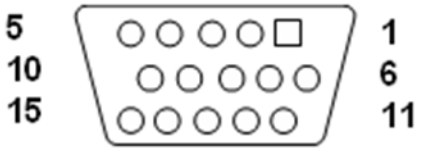


Figure 2.11 VGA 1, 2 Connector

Table 2.6: VGA 1,2 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

2.4 Hardware Installation

2.4.1 Memory Installation

1. Remove Mini-PCIe cover, HDD cover by loosening the 5 fixing screws.
2. Remove the heatsink by loosening the 4 fixing screws on front and rear panels, and 2 fixing screws inside the chassis.
3. Insert the memory into memory socket.
4. Reverse the above-mentioned steps to assemble the system.

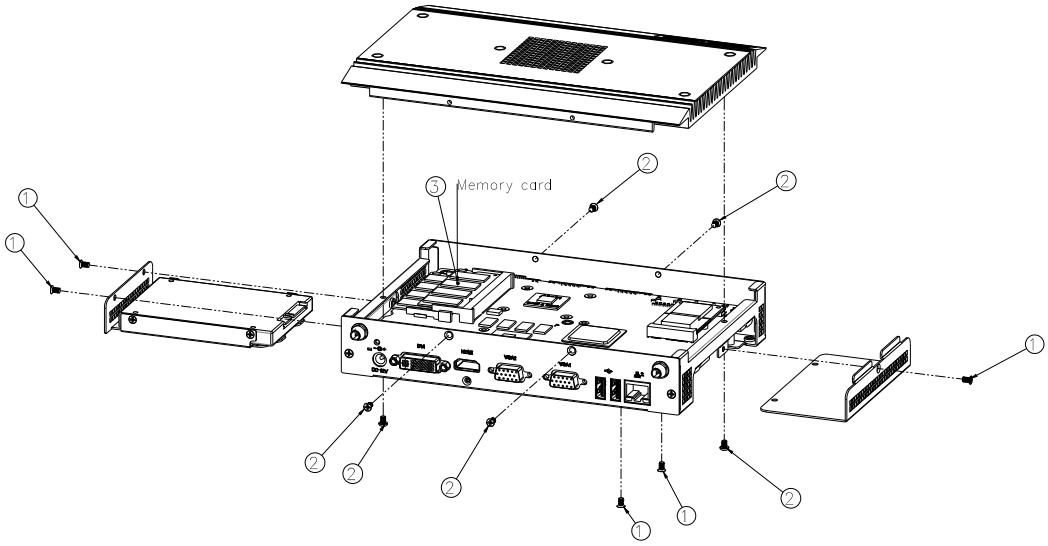


Figure 2.12 Memory Installation

2.4.2 HDD Installation

1. Assemble the 2.5-inch SATA HDD on HDD bracket with 4 HDD screws.
2. Install the HDD module into the system.
3. Assemble back the HDD cover with the screws.

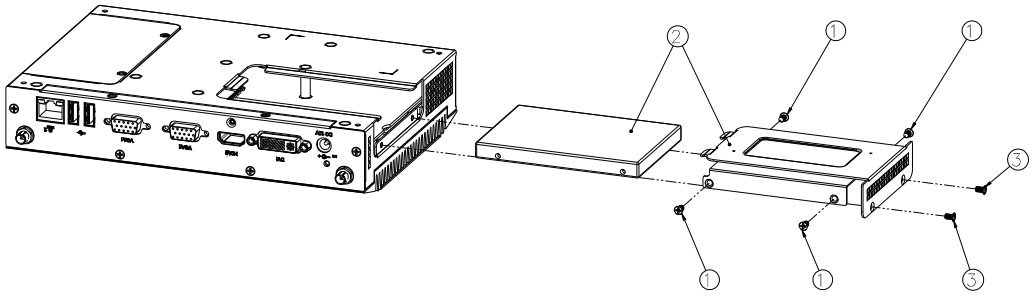


Figure 2.13 HDD Installation

2.4.3 CF Card Installation

1. Remove the Mini PCIe cover by loosening the 3 fixing screws.
2. Insert the CF card into CF card socket.
3. Assemble back the Mini PCIe cover with the screws.

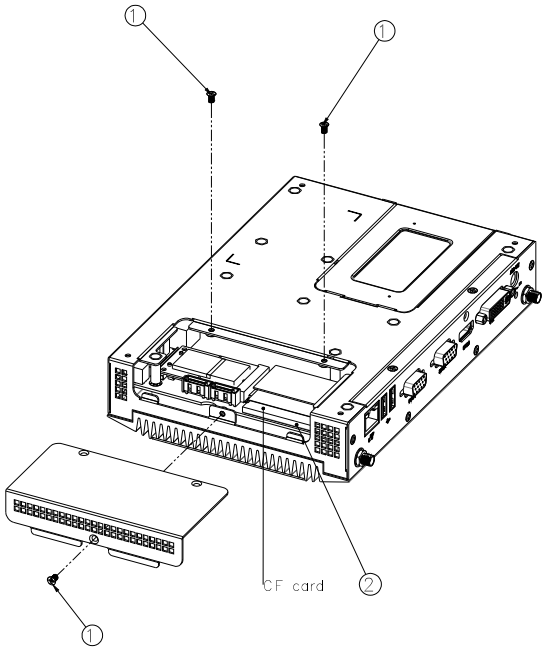


Figure 2.14 CF Card Installation

2.4.4 Mini Card & SIM Card Installation

1. Remove the Mini PCIe cover by loosening the 3 fixing screws.
2. Insert the Mini card into Mini PCIe card /SIM card into SIM card socket.
3. Re-assemble the Mini PCIe cover with the screws.

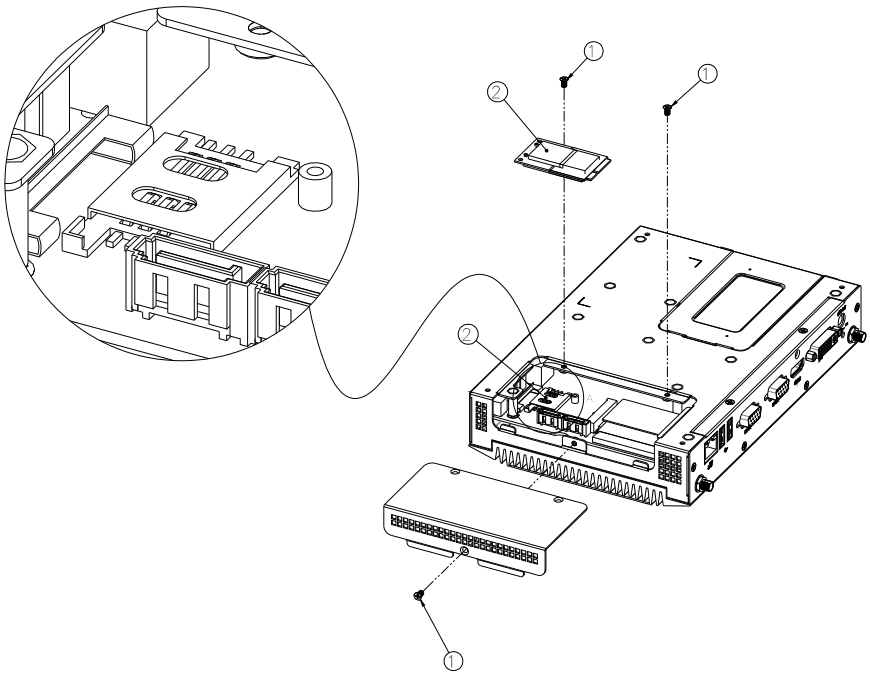


Figure 2.15 SIM Card Installation

2.4.5 LAN Card Wireless Antenna Installation

1. Remove Mini-PCIe cover, HDD cover by loosening the 5 fixing screws.
2. Remove the heatsink by loosening the 4 fixing screws on front and rear I/O panels, and 2 fixing screws inside the chassis.
3. Fix the antenna onto the front I/O panel.
4. Reverse the above-mentioned steps to assemble the system.

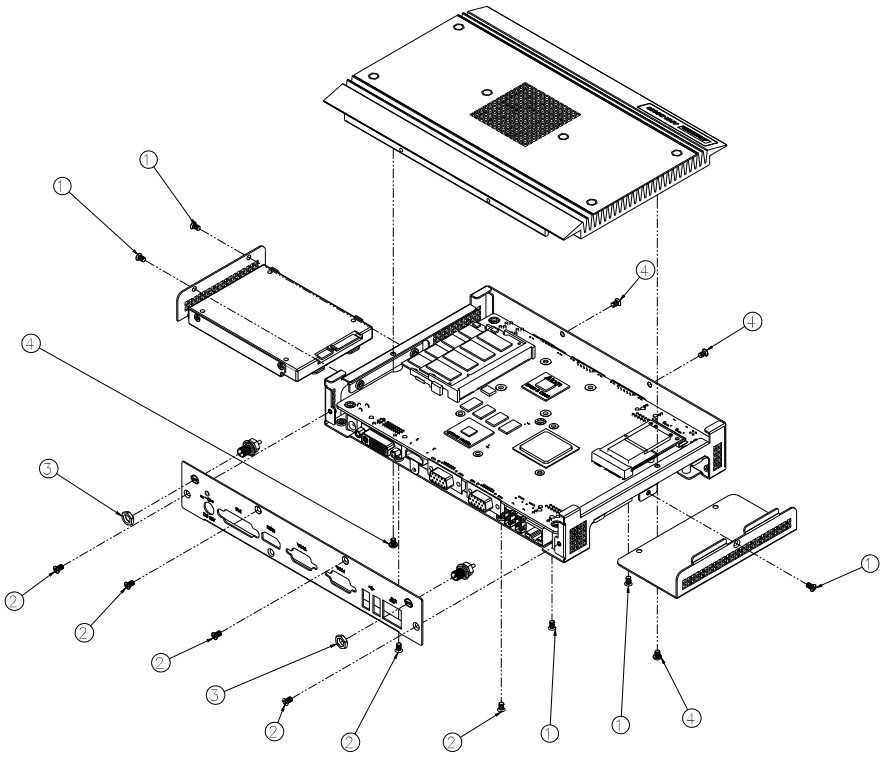


Figure 2.16 LAN Card Wireless Antenna Installation

Chapter 3

BIOS Settings

This chapter introduces how to set BIOS configuration data.

3.1 BIOS Introduction

AMIBIOS has been integrated into many motherboards for over two decades. With the AMIBIOS Setup program, you can modify BIOS settings and control various system features. This chapter describes the basic navigation of the ARK-DS520 series BIOS setup screens.

AMIBIOS's ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in battery-backed CMOS so it retains the setup information when the power is turned off.

3.2 Entering BIOS Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to patch code, press <DEL> and you will immediately be allowed to enter setup.

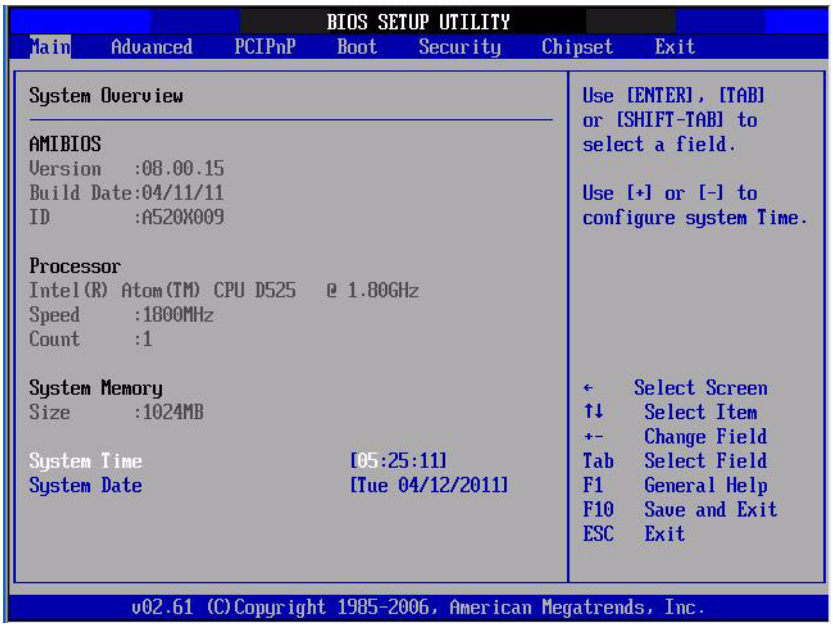


Figure 3.1 Setup Program Initial Screen

3.2.1 Main Setup

When you first enter the BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in the section. The Main BIOS Setup screen is shown below.

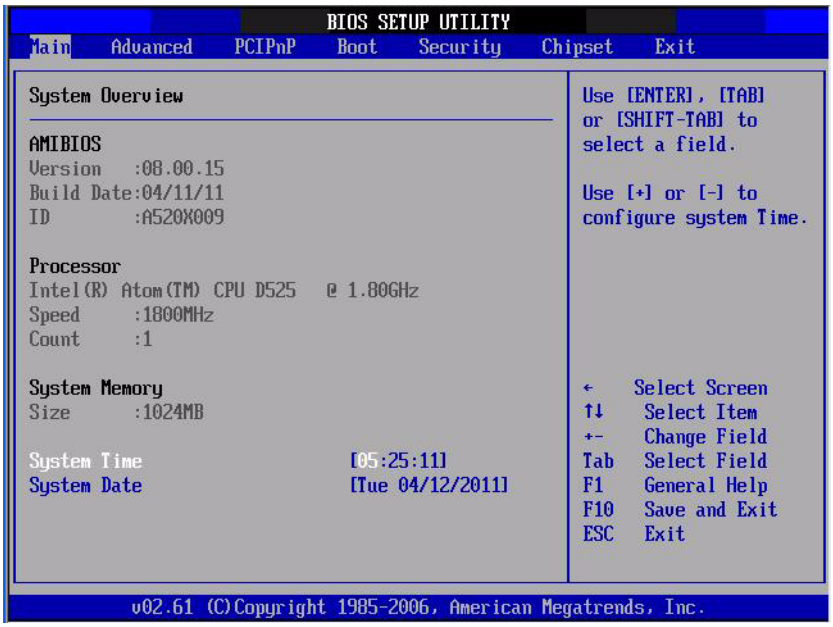


Figure 3.2 Main Setup Screen

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1.1 System Time / System Date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the ARK-DS520 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

Figure 3.3 Advanced BIOS Features Setup Screen

3.2.2.1 CPU Configuration

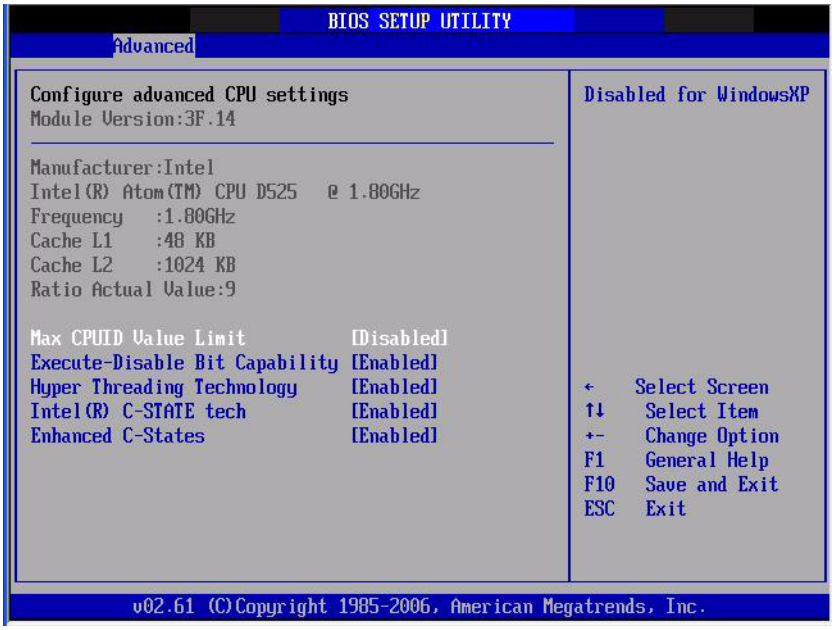


Figure 3.4 CPU Configuration Setting

- **Max CPUID Value Limit**
  This item allows you to limit CPUID maximum value.
- **Execute-Disable Bit Capability**
  This item allows you to enable or disable the No-Execution page protection technology.
- **Hyper Threading Technology**
  This item allows you to enable or disable Intel® Hyper Threading technology.
- **Intel® C-STATE Tech**
  This item allows the CPU to save more power under idle mode.
- **Enhanced C-States**
  CPU idle set to enhanced C-States, disabled by Intel® C-STATE tech item.

3.2.2.2 IDE Configuration

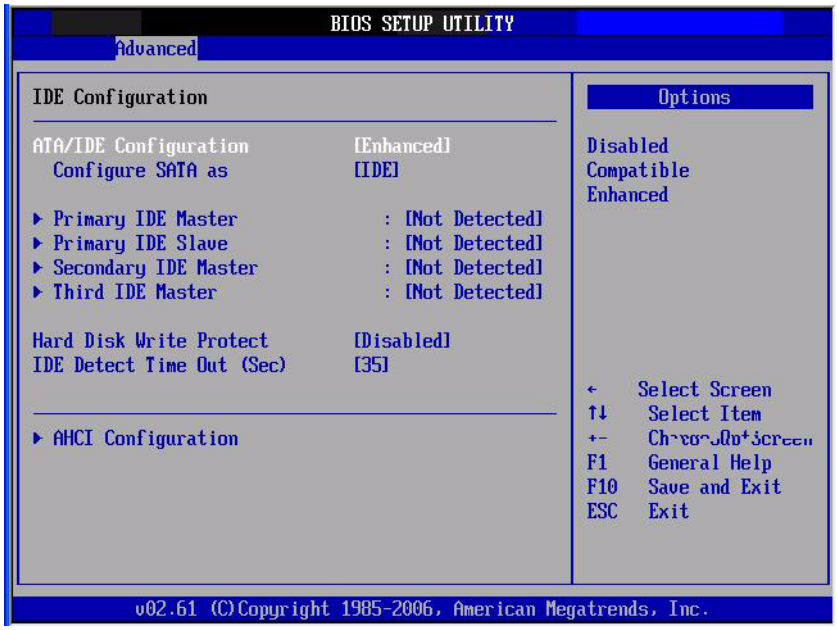


Figure 3.5 IDE Configuration

- **ATA/IDE Configuration**
  This item allows you to select Disabled / Compatible / Enhanced.
- **Legacy IDE Channels**
  When set to Enhanced mode you can select IDE or AHCI mode. When selecting Compatible mode you can select SATA only, SATA primary, PATA secondary, or PATA only.
- **Primary/Secondary/Third IDE Master/Slave**
  BIOS auto detects the presence of IDE device, and displays the status of auto detection of IDE device.
  - Type: Select the type of SATA driver. [Not Installed][Auto][CD/DVD][ARMD]
  - LBA/Large Mode: Enables or Disables LBA mode.
  - Block(Multi-Sector Transfer): Enables or disables data multi-sectors transfers.
  - PIO Mode: Selects PIO mode.
  - DMA Mode: Selects DMA mode.
  - S.M.A.R.T.: Selects smart monitoring, analysis, and reporting technology.
  - 32-Bit Data Transfer: Enables or disables 32-bit data transfer.

- **Hard Disk Write Protect**

  Disable/Enable device write protection. This will be effective only if the device is accessed through BIOS.

- **IDE Detect Time Out (Sec)**

  This item allows you to select the time out value for detecting ATA/ATAPI device(s).

3.2.2.3 AHCI Configuration

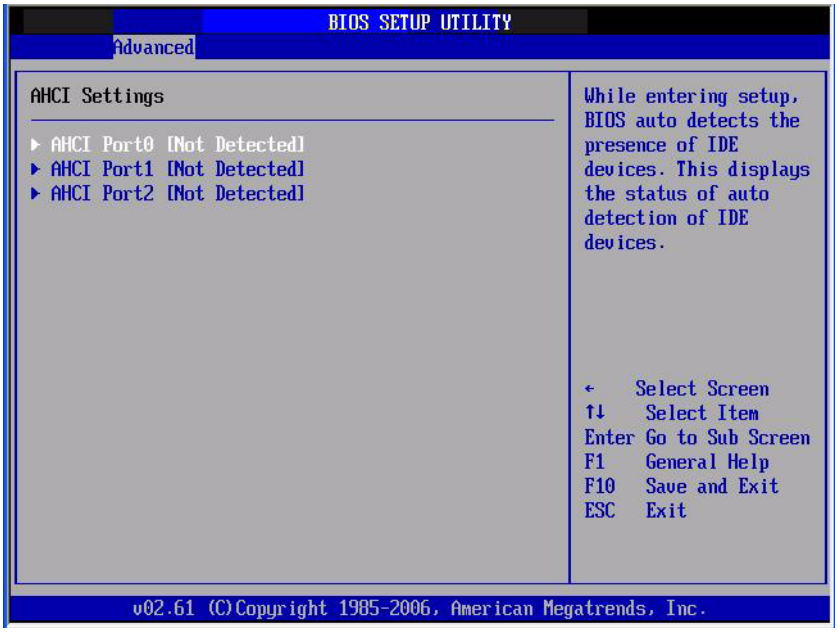


Figure 3.6 AHCI Configuration

- **AHCI Port0 / Port1 / Port2**

  While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE device.

3.2.2.4 Super I/O Chipset Configuration

Figure 3.7 Super I/O Chipset Configuration

- **Serial Port1 / Port 2 Address**

  This item allows you to select Serial Port1~Port2 base addresses.

3.2.2.5 Hardware Health Configuration

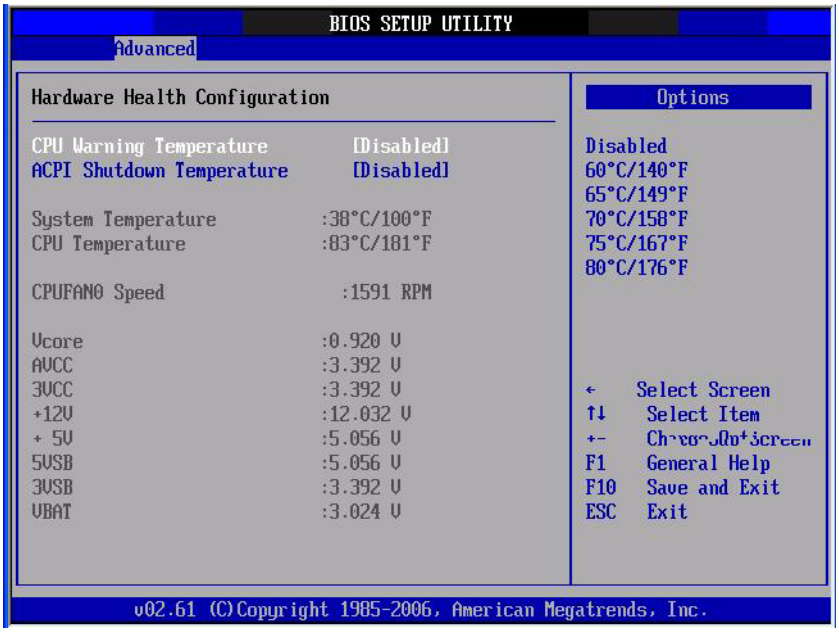


Figure 3.8 Hardware Health Configuration

- **H/W Health Function**

  This item allows you to control hardware monitoring.

- **Temperature Show**

  CPU/System Temperature.

- **Fan0 Speed Show**

  Display Fan0 Speed RPM.

- **Voltage Show**

  Vcore / AVCC / 3VCC / +5Vin / +12Vin / 5VSB / 3VSB / VBAT.

3.2.2.6 ACPI Settings

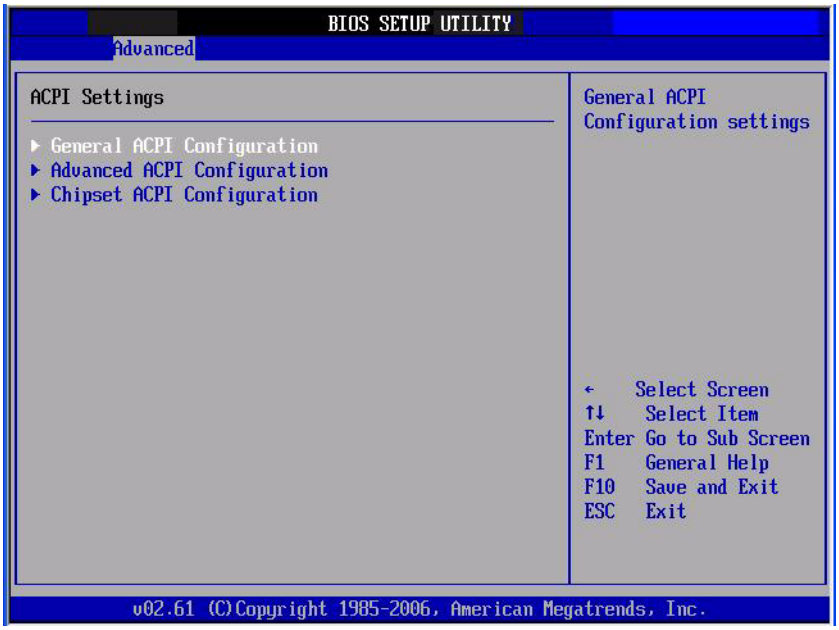


Figure 3.9 ACPI Settings

- **General ACPI Configuration**

  This item allows you to control hardware monitoring.

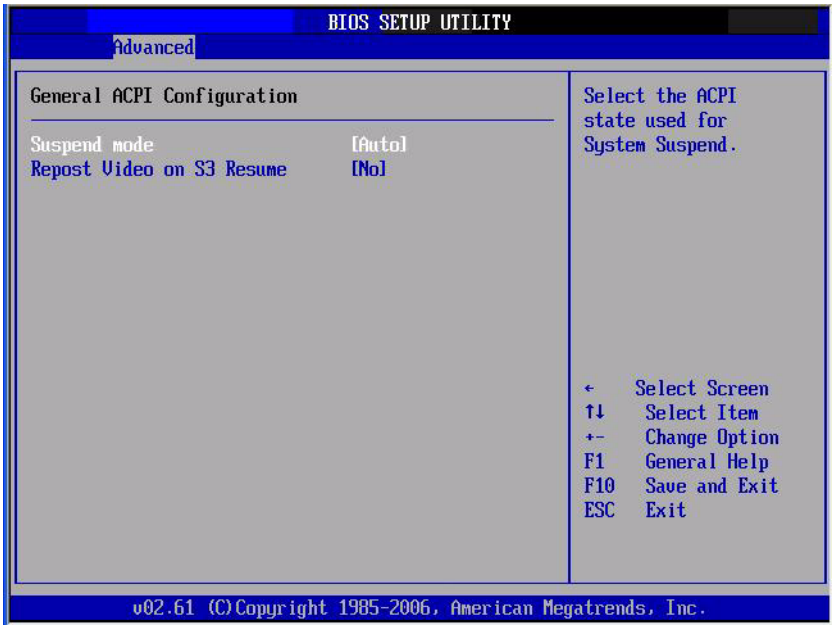


Figure 3.10 General ACPI Configuration

– Suspend mode
  Select the ACPI state used for system suspend.
– Report Video on S3 Resume
  This item allows you to invoke VA BIOS POST on S3/STR resume.

Advanced ACPI Configuration

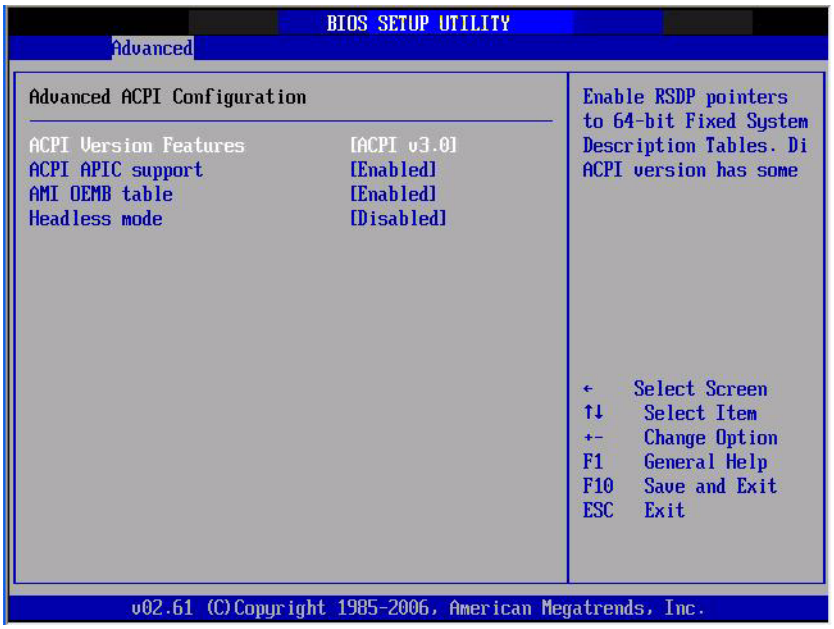


Figure 3.11 Advanced ACPI Configuration

- ACPI Version Features
  This item allows you to enable RSDP pointers to 64-bit fixed system description tables.
- ACPI APIC support
  Include APIC table pointer to RSDT pointer list.
- AMI OEMB table
  Include OEMB table pointer to R(x)SDT pointer lists.
- Headless mode
  Enable / Disable Headless Operation mode through ACPI.

Chipset ACPI Configuration

Figure 3.12 Chipset ACPI Configuration

– Energy Lake Features
  Allows you to configure Intel's Energy Lake power management technology.
– APIC ACPI SCI IRQ
  Enable/Disable APIC ACPI SCI IRQ.
– USB Device Wakeup From S3
  Enable/Disable USB Device Wakeup from S3.
– High Performance Event Timer
  Enable / Disable High performance Event timer.

3.2.2.7 APM Configuration

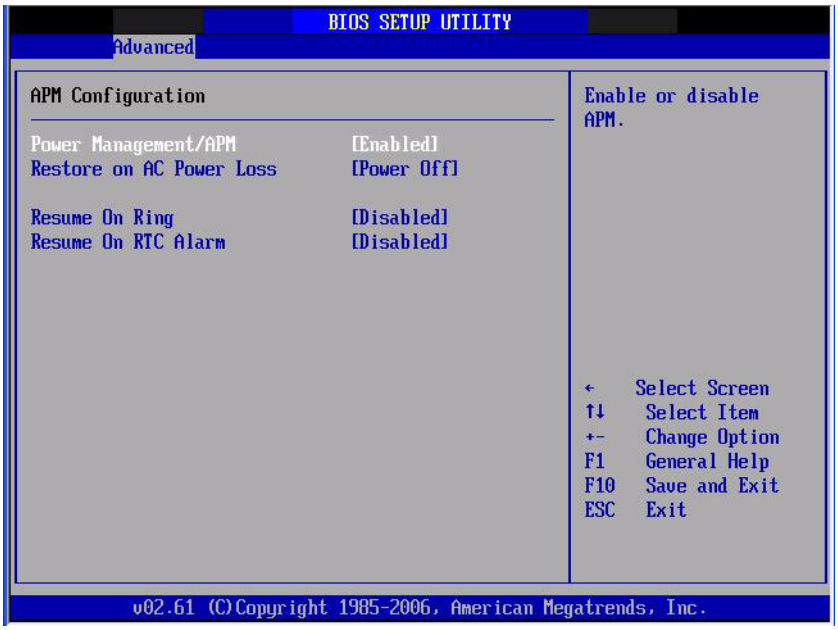


Figure 3.13 APM Configuration

- **Power Management/APM**
  Enable or disable APM.
- **Restore on AC Power Loss**
  Use this to set up the system response after a power failure. The "Off" setting keeps the system powered off after power failure, the "On" setting boots up the system after failure, and the "Last State" returns the system to the status just before power failure.
- **Resume On Ring**
  Enable / Disable RI to generate a wake event.
- **Resume On RTC Alarm**
  Enable / Disable RTC to generate a wake event.

3.2.2.8 USB Configuration

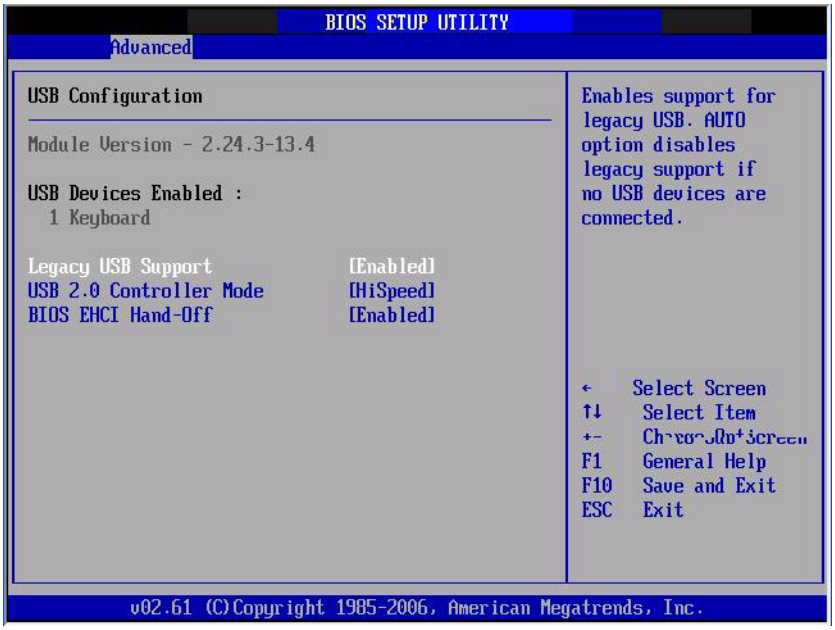


Figure 3.14 USB Configuration

- **Legacy USB Support**

  Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

- **USB 2.0 Controller Mode**

  This item allows you to select HiSpeed (480 Mbps) or FullSpeed (12 Mbps).

- **BIOS EHCI Hand-Off**

  This is a workaround for an OS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

3.2.3 PCI/PnP Configurations

Select the PCI/PnP tab from the ARK-DS520 setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

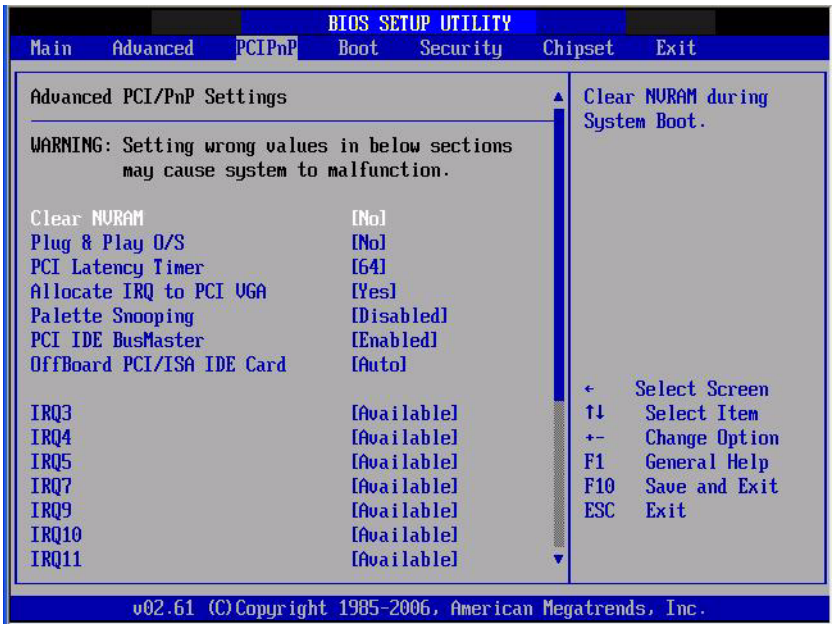


Figure 3.15 PCI/PnP Setup (Top)

3.2.3.1 Clear NVRAM

Set this value to force the BIOS to clear the Non-Volatile Random Access Memory (NVRAM). The Optimal and Fail-Safe default setting is 'No'.

3.2.3.2 Plug & Play O/S

When set to 'No', BIOS configures all the devices in the system. When set to 'Yes' and if you install a Plug and Play operating system, the operating system configures Plug and Play devices not required for bootup.

3.2.3.3 PCI Latency Timer

Value in units of PCI clocks for PCI device latency timer register.

3.2.3.4 Allocate IRQ to PCI VGA

When set to 'Yes', assigns IRQ to PCI VGA card if card requests IRQ. When set to 'No', will not assign IRQ to PCI VGA card even if card requests an IRQ.

3.2.3.5 Palette Snooping

This item is designed to solve problems caused by some non-standard VGA cards.

3.2.3.6 PCI IDE BusMaster

When set to 'Enabled' BIOS uses PCI busmastering for reading/writing to IDE drives.

3.2.3.7 OffBoard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card. Setting to 'Auto' will work for most PCI IDE cards.

3.2.3.8 IRQ3 / 4 / 5 / 7 / 9 / 10 / 11

This item allows you respectively assign an interruptive type for IRQ-3,4,5,7,9,10,11.

3.2.3.9 DMA channel 0 / 1 / 3 / 5 / 6 / 7

When set to 'Available' will specify which DMA channel is available to be used by PCI/PnP devices. When set to 'Reserved' will be reserved for use by legacy ISA devices.

3.2.3.10 Reserved Memory Size

This item allows you to reserve the size of memory block for legacy ISA device.

3.2.4 Boot Settings

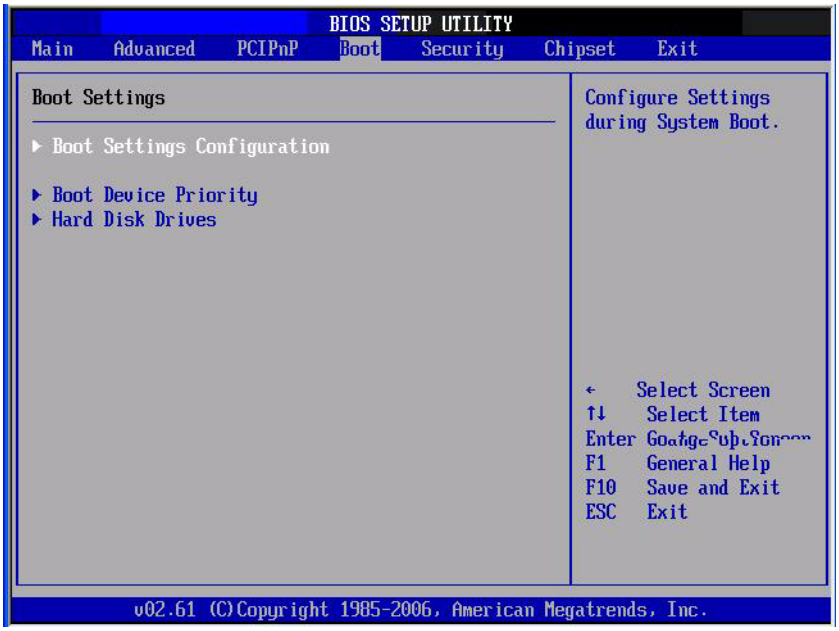


Figure 3.16 Boot Setup Utility

3.2.4.1 Boot Settings Configuration

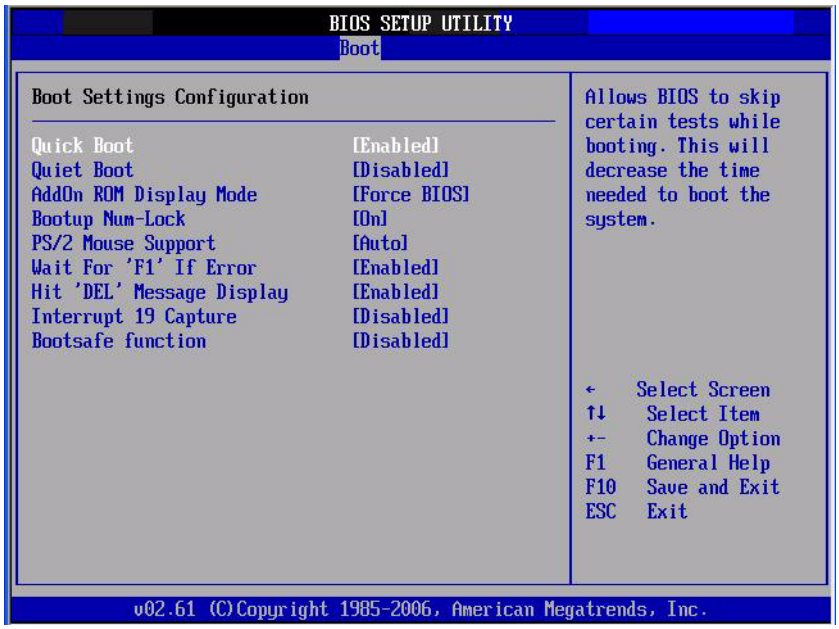


Figure 3.17 Boot Settings Configuration

- **Quick Boot**
  This item allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
- **Quiet Boot**
  If this option is set to 'Disabled', the BIOS displays normal POST messages. If 'Enabled', an OEM Logo is shown instead of POST messages.
- **AddOn ROM Display Mode**
  Set display mode for option ROM.
- **Bootup Num-Lock**
  Select the Power-on stage for Numlock.
- **PS/2 Mouse Support**
  Select support for PS/2 Mouse.
- **Wait For "F1" If Error**
  Wait for the F1 key to be pressed if an error occurs.
- **Hit "DEL" Message Display**
  Displays-Press DEL to run Setup in POST.
- **Interrupt 19 Capture**
  This item allows options for ROMs to trap interrupt 19.
- **Bootsafe Function**
  This item allows you to enable or disable the bootsafe function.

3.2.4.2 Boot Device Priority

Figure 3.18 BIOS Setup Boot Device Priority

- **1st Boot Device**
  This item specifies the boot sequence from available devices. A device enclosed in parenthesis has been disabled in the corresponding type menu. Press <+/-> to change 1st Boot device.

3.2.4.3 Hard Disk Drives

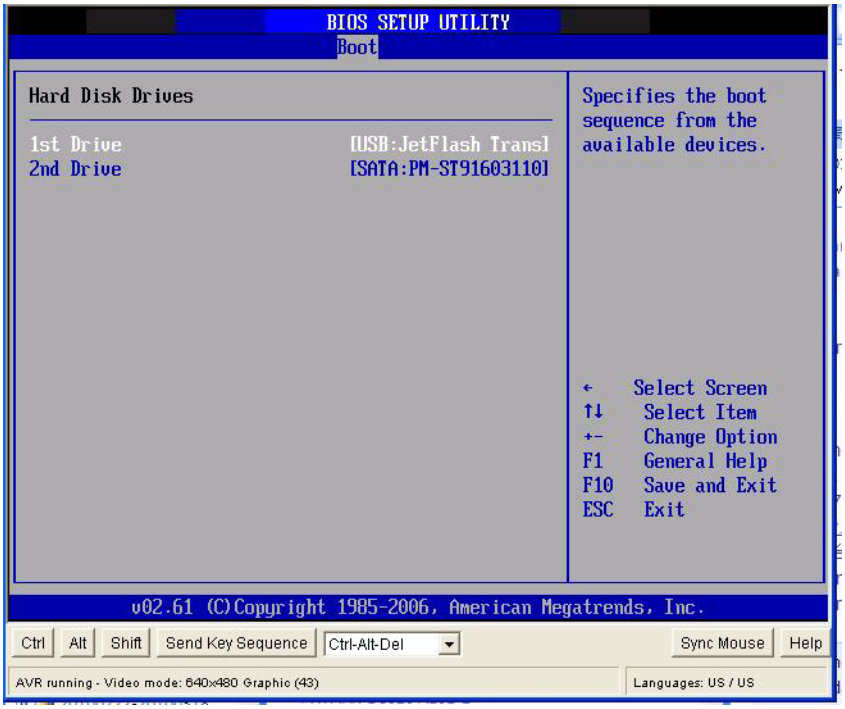


Figure 3.19 BIOS Setup Hard Disk Drives

- **1st / 2nd Device**

  This item allows you to check the quantity of hard disk drives.

3.2.5 Security Setup

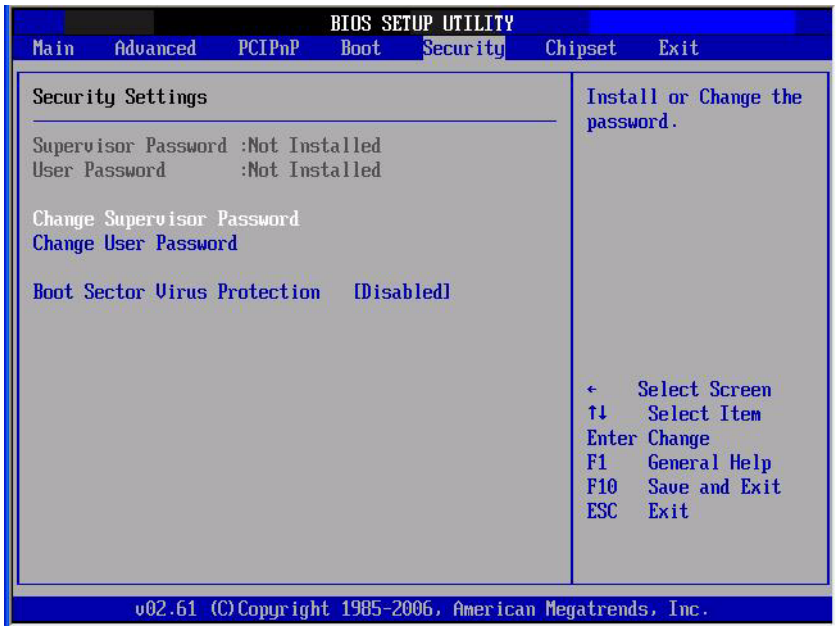


Figure 3.20 Password Configuration

Select 'Security Setup' from the ARK-DS520 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

3.2.5.1 Change Supervisor / User Password

- **Boot Sector Virus protection**

  The boot sector virus protection will warn if any program tries to write to the boot sector.

3.2.6 Advanced Chipset Configurations

Figure 3.21 Advanced Chipset Settings

3.2.6.1 North Bridge Chipset Configuration

Figure 3.22 North Bridge Chipset Configuration

- **DRAM Frequency**

  This item allows you to manually change DRAM frequency.

- **Configure DRAM Timing by SPD**

  This item allows you to enables or disable detection by DRAM SPD.

3.2.6.2 South Bridge Chipset Configuration

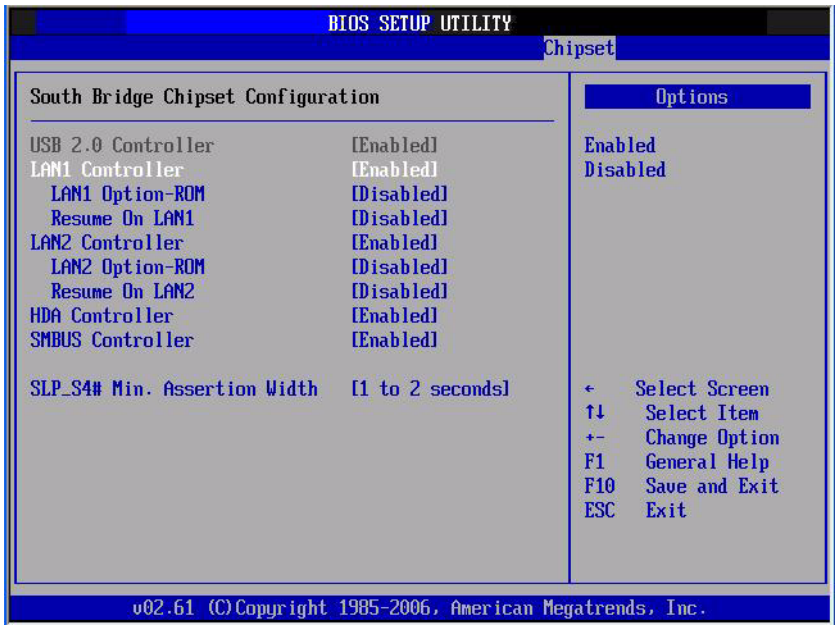


Figure 3.23 South Bridge Chipset Configuration

- **USB 2.0 Controller**
  Enables or disables the USB 2.0 controller.
- **LAN1 Controller**
  Enables or Disables the Lan1 controller.
- **Resume On LAN1**
  Enables or Disables resume on Lan1.
- **LAN2 Controller**
  Enables or Disables the Lan2 controller.
- **Resume On LAN2**
  Enables or Disables resume on Lan2.
- **HAD Controller**
  Enables or Disables the HAD controller.
- **SMBUS Controller**
  Enables or Disables the SMBUS controller.
- **SLP_S4#Min. Assertion Width**
  SPL_S4# is a signal for power plane control. This signal shuts off power to all non-critical systems when in the S4 (Suspend to disk) or S5 (Soft off) state. This setting indicates minimum assertion width of the SLP_S4# signal to ensure that the DRAMs have been safety power-cycled.

3.2.7 Exit Option

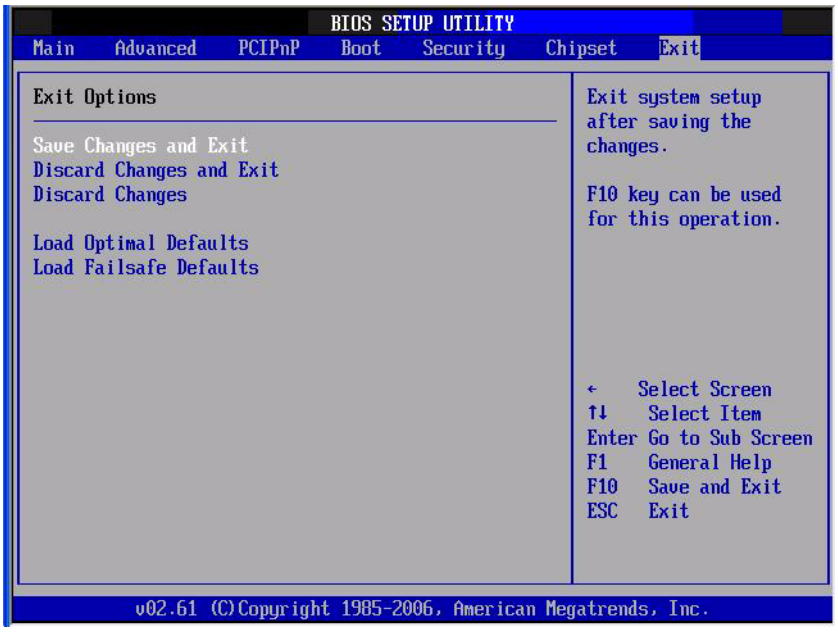


Figure 3.24 Exit Options

3.2.7.1 Save Changes and Exit

When you have completed system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.

1. Select 'Exit Saving Changes' from the Exit menu and press <Enter>.
   The following message appears:
   Save Configuration Changes and Exit Now?
   [OK][Cancel]
2. Select OK or cancel.

3.2.7.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

1. Select 'Exit Discarding Changes' from the Exit menu and press <Enter>.
   The following message appears:
   Discard Changes and Exit SetupNow?
   [OK][Cancel]
2. Select OK to discard changes and exit. Discard Changes.
3. Select Discard Changes from the Exit menu and press <Enter>.

3.2.7.3 Load Optimal Defaults

The ARK-DS520 automatically configures all setup items to optimal settings when you select this option. Optimal defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

3.2.7.4 Load Fail-Safe Defaults

The ARK-DS520 automatically configures all setup options to fail-safe settings when you select this option. Fail-Safe Defaults are designed for maximum system stability, but not maximum performance. Select Fail-Safe Defaults if your computer is experiencing system configuration problems.

1. Select 'Load Fail-Safe Defaults' from the Exit menu and press <Enter>.
   The following message appears:
   Load Fail-Safe Defaults:
   [OK][Cancel]
2. Select OK to load Fail-Safe defaults.

Chapter 4

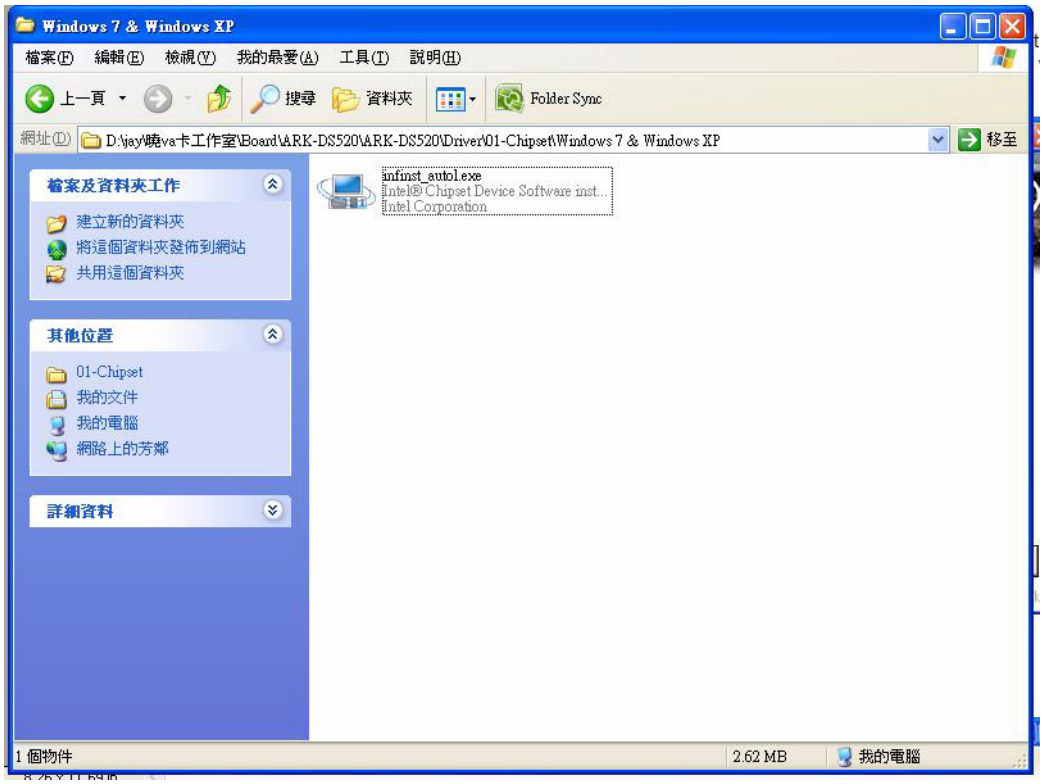
Software Installation

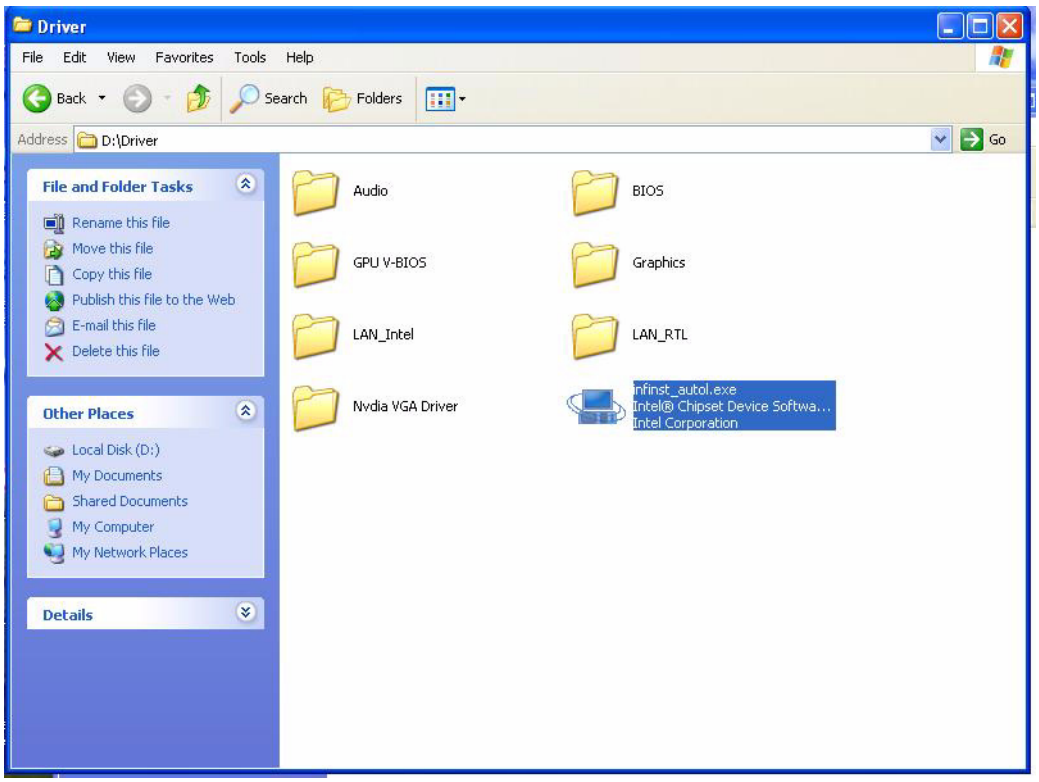
This chapter introduces driver installation.

4.1 Driver Installation

4.1.1 Chipset Driver Installation

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



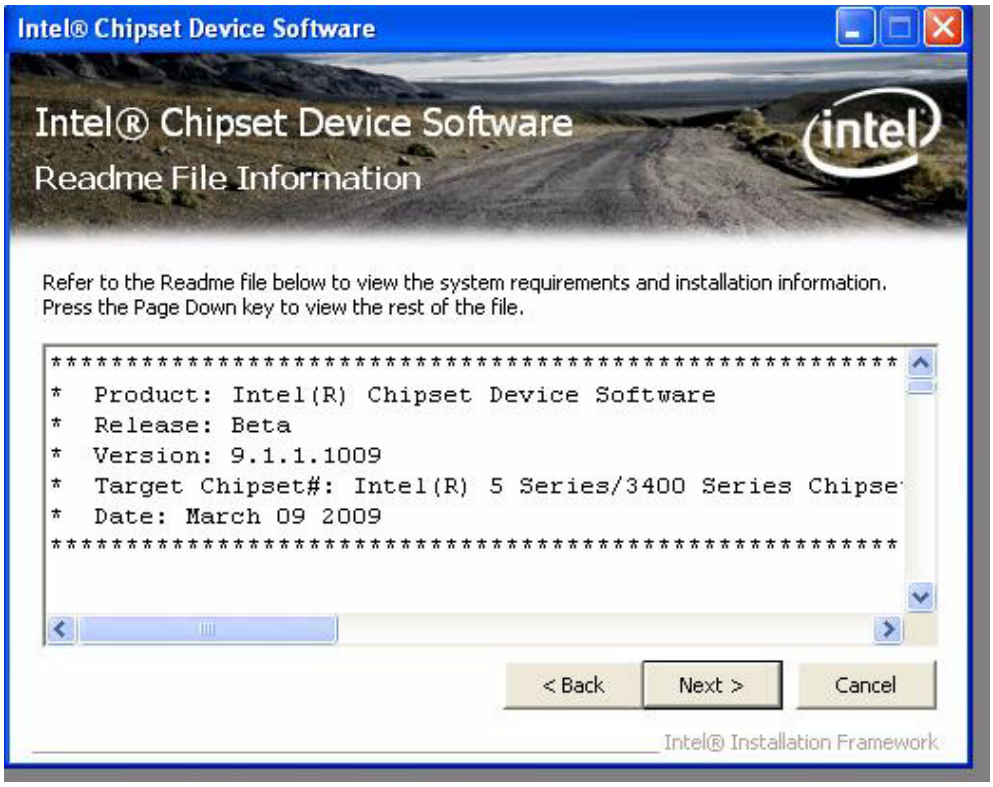


2. Click "Next" button to proceed.

3. Click "Yes" to accept the License Agreement.

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

5. Click "Next" button to continue.

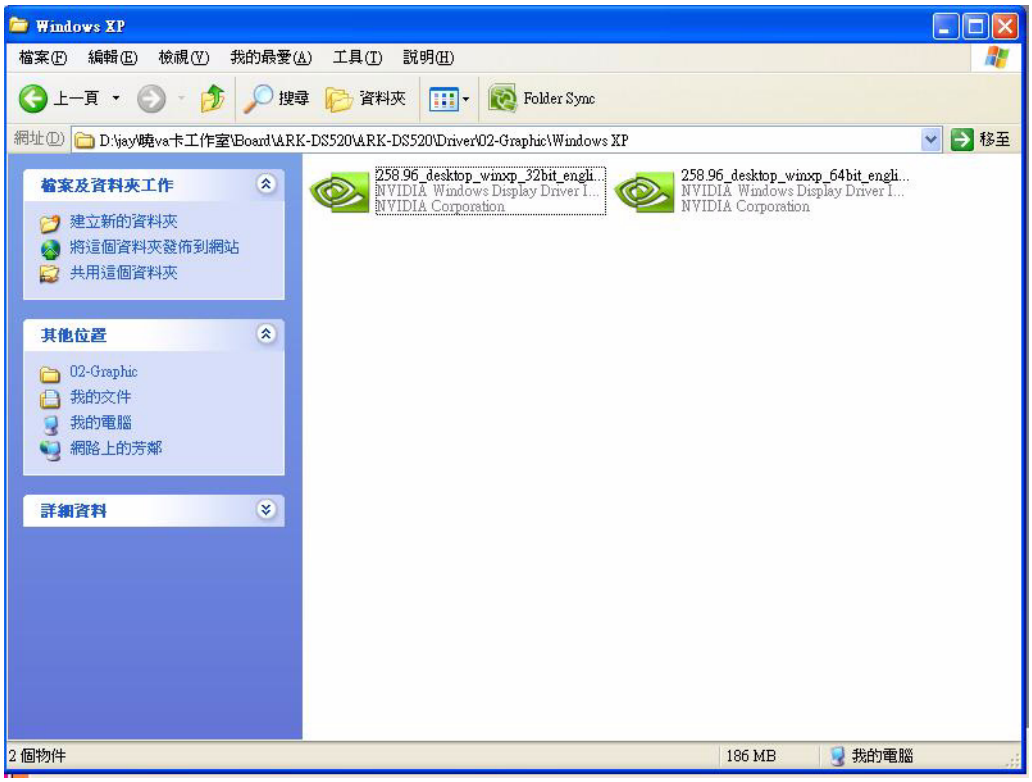


6. Click “Finish” button to go on the next step.

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 will be complete.

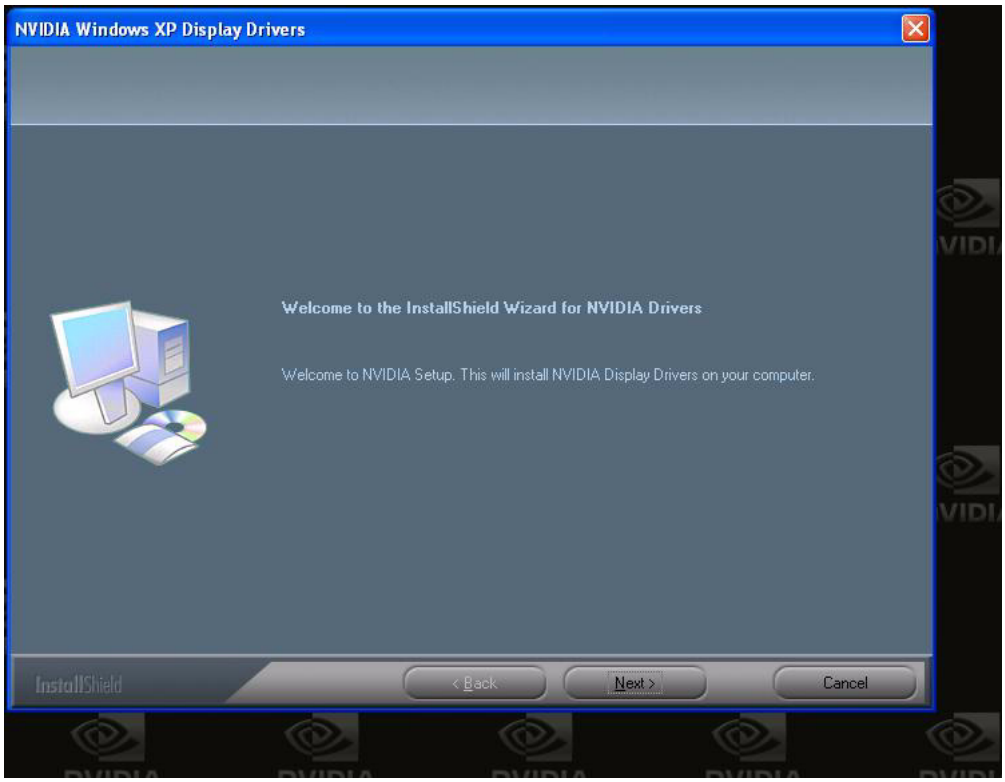
4.1.2 Graphic Driver Installation

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

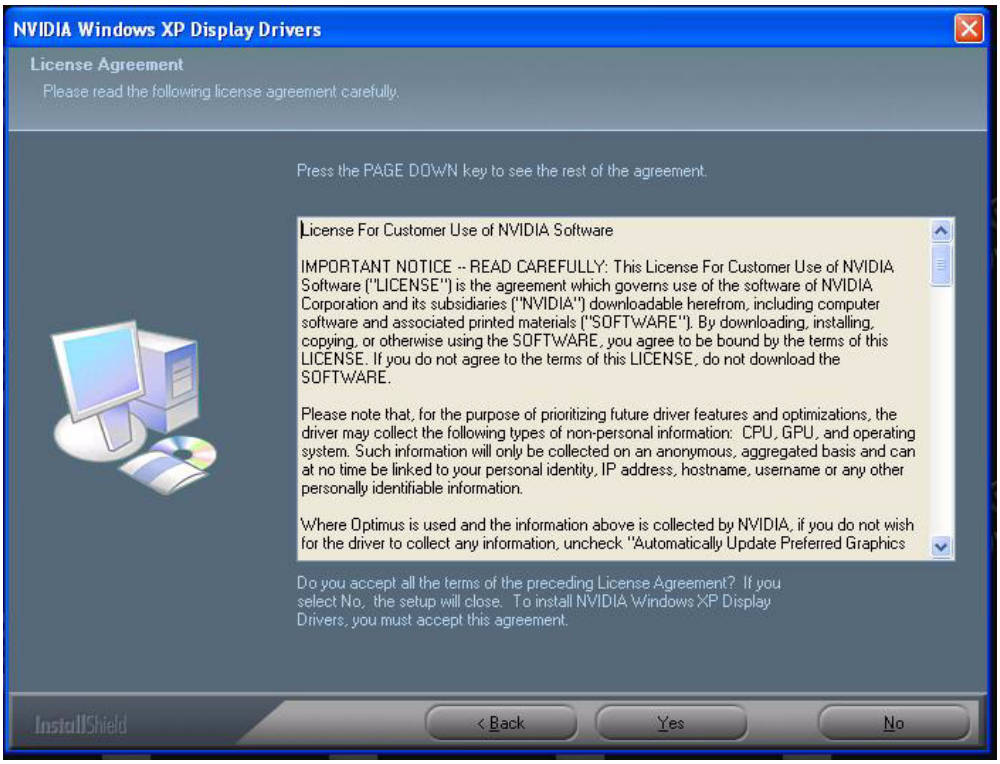


2. Select the path you want to install. Click “OK” button to continue installation.

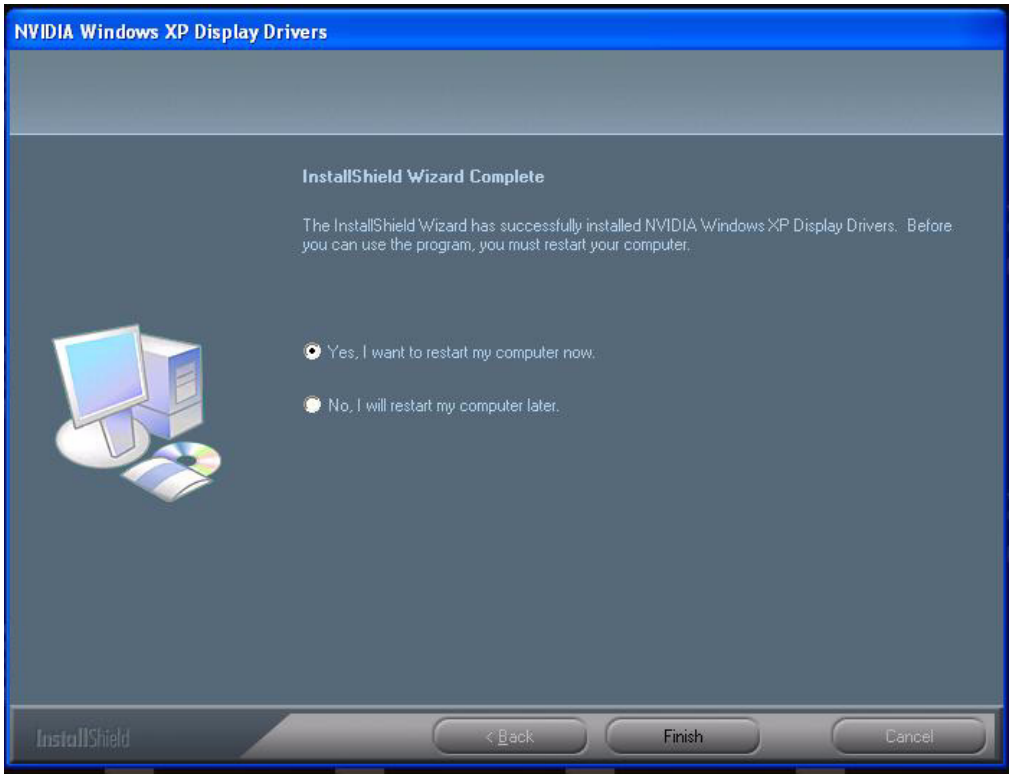
3. Click "Next" button to skip through welcome window.



4. Click "Yes" to accept the License Agreement.

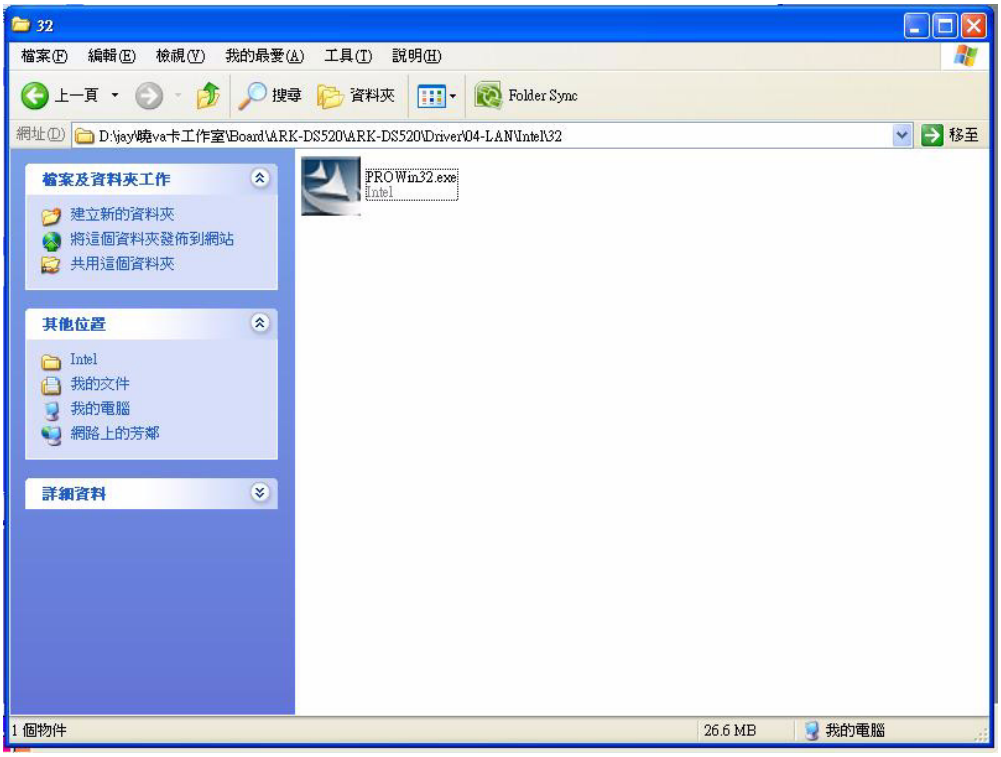


5. Select “Yes, I want to restart my computer now” and click “Finish” at the bottom. The computer will restart automatically and the driver installation will be complete.

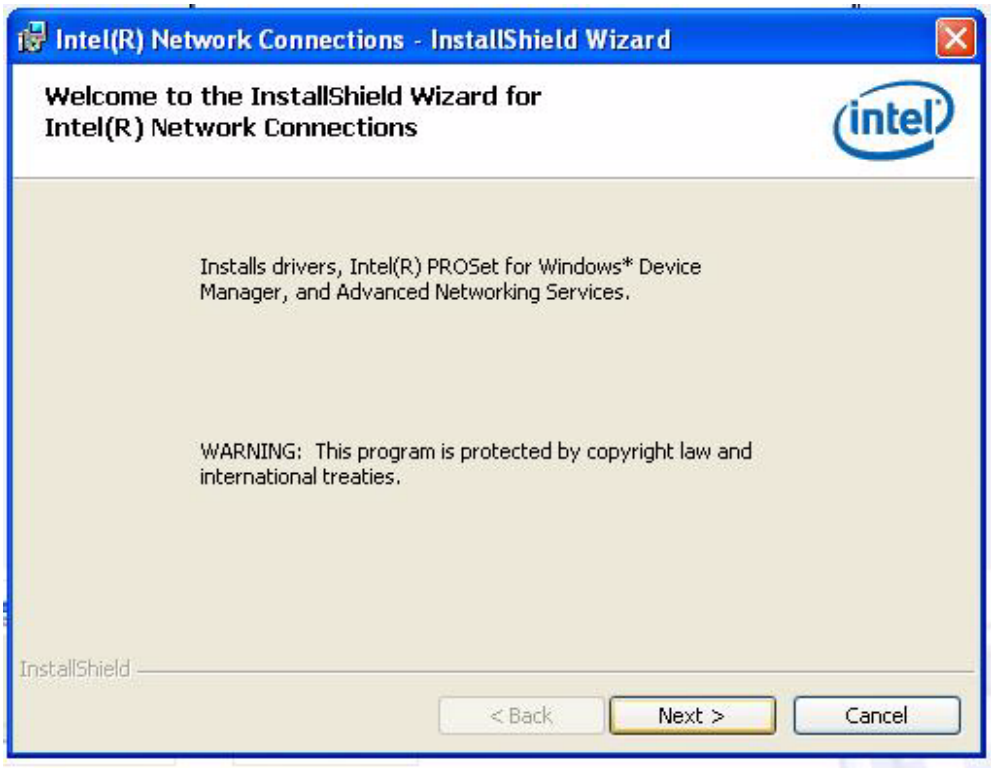


4.1.3 LAN Driver Installation

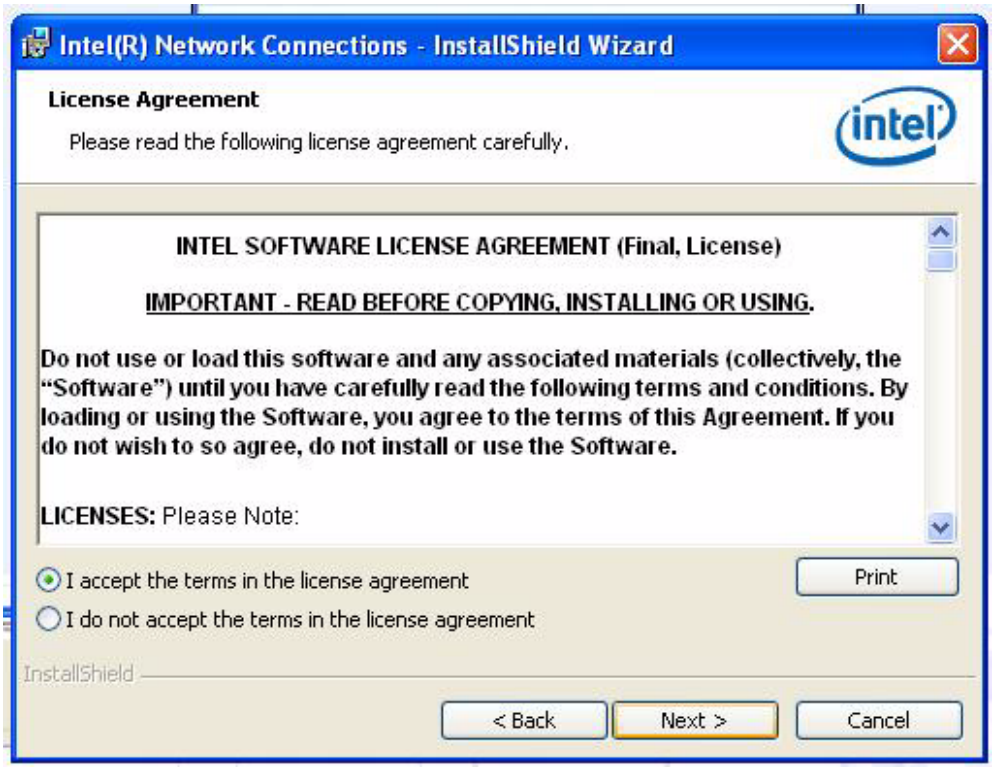
1. Change folder address to \Drivers\LAN. And double click to execute Setup.exe.



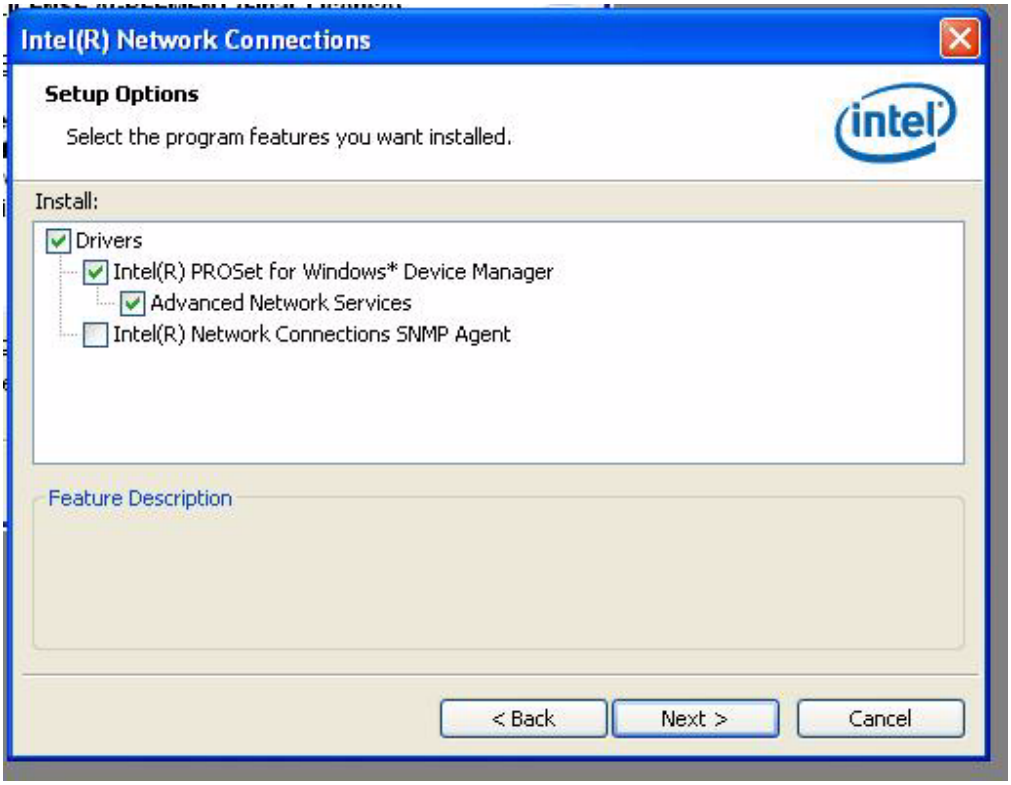
2. Click the "Next" button to proceed to the next step.



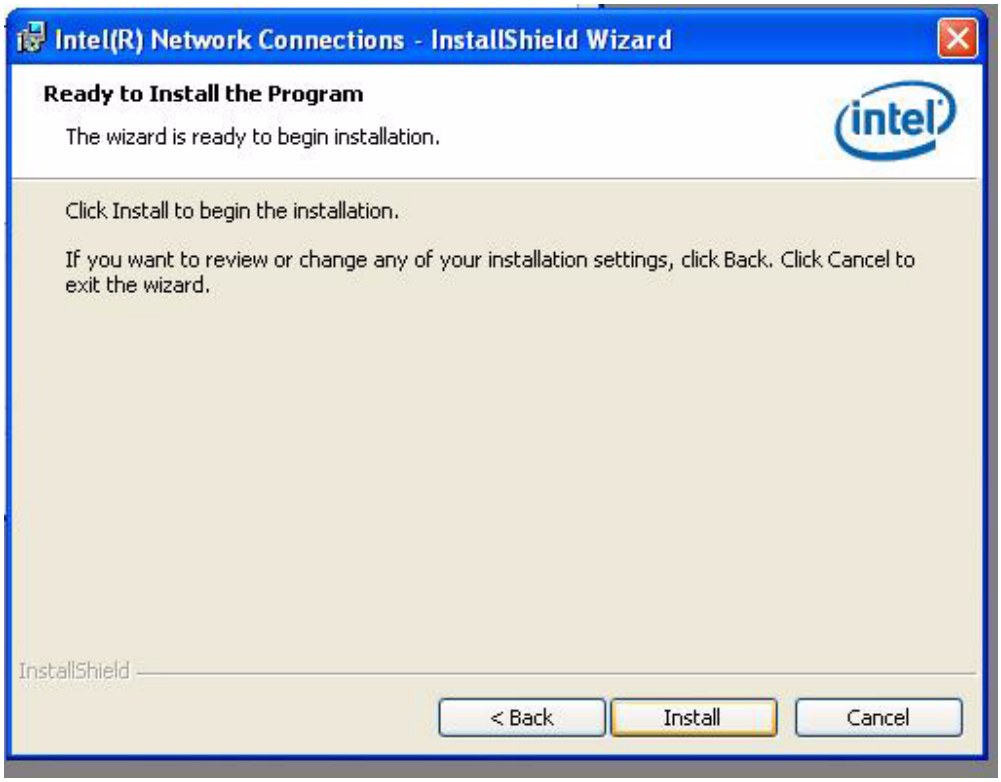
3. Select “I accept the terms in the license agreement” and click “Next” button to accept License Agreement.



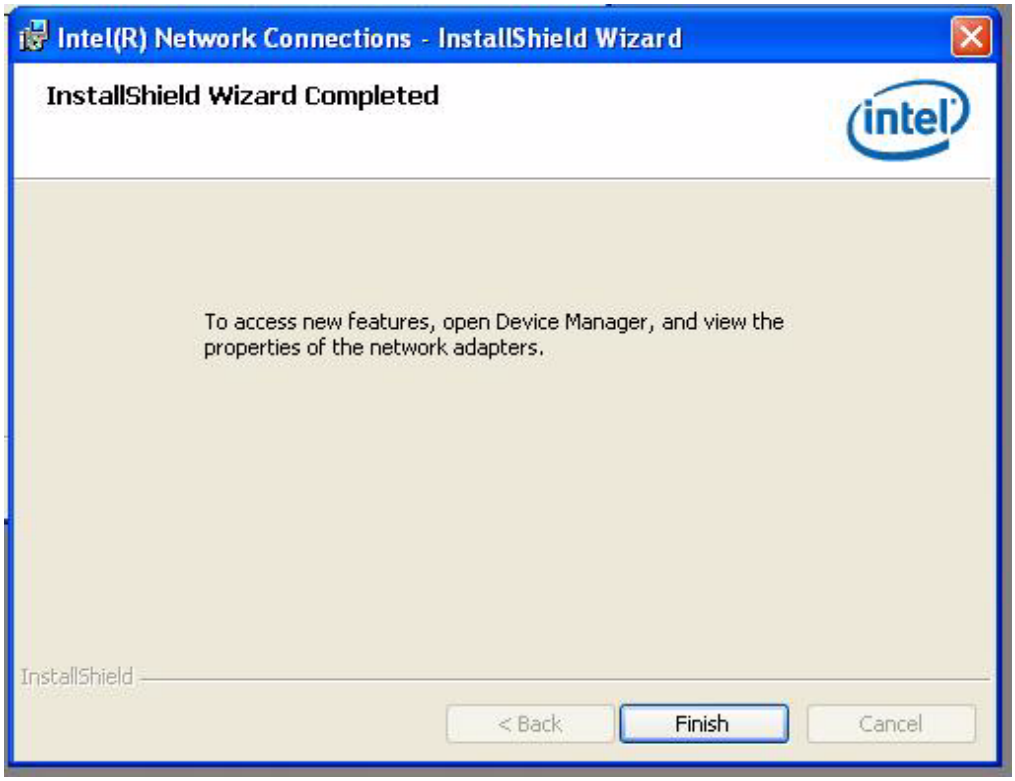
4. Select “Drivers\Intel(R) PROSet for Windows* Device Manger\Advanced Network Services” and click “Next” button.



5. Click “Install” button to continue installation.

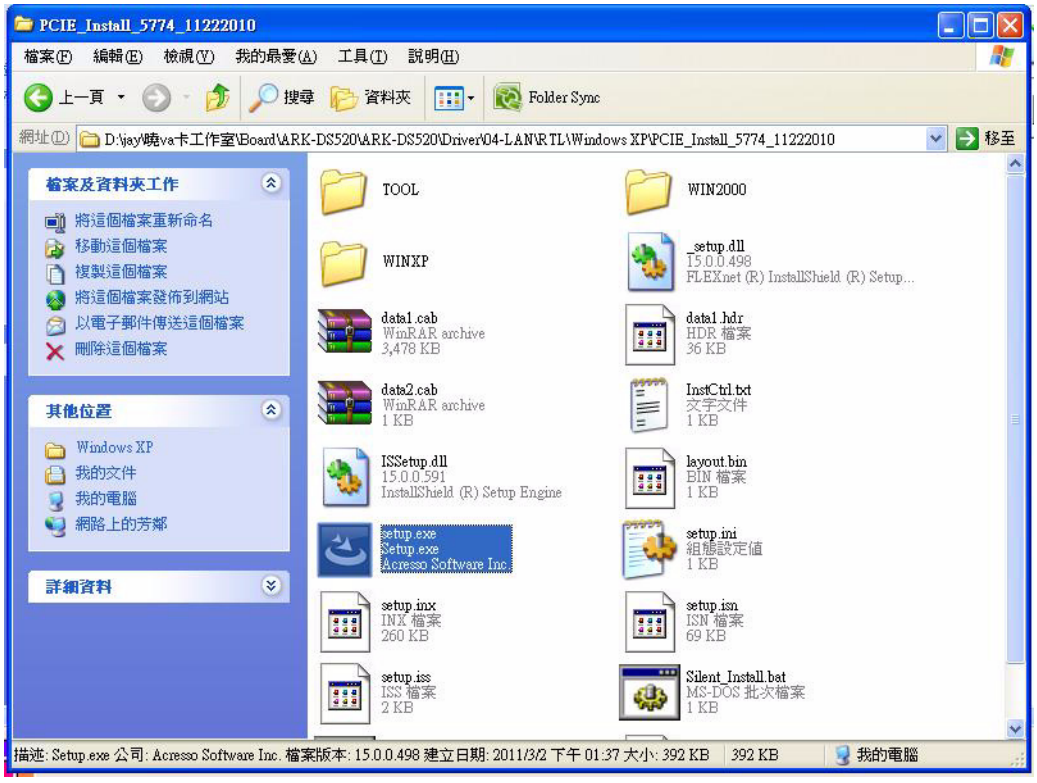


6. The network driver installation is now complete. Click the “Finish” button to exit InstallShield.

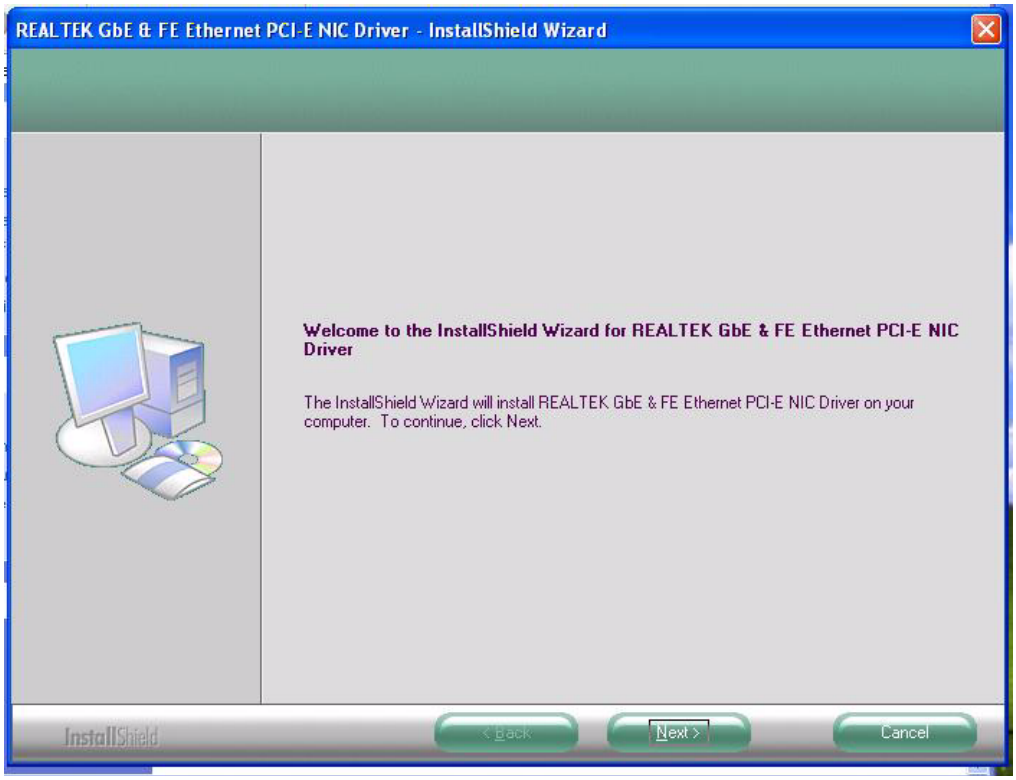


4.1.4 LAN Driver Installation (RTL)

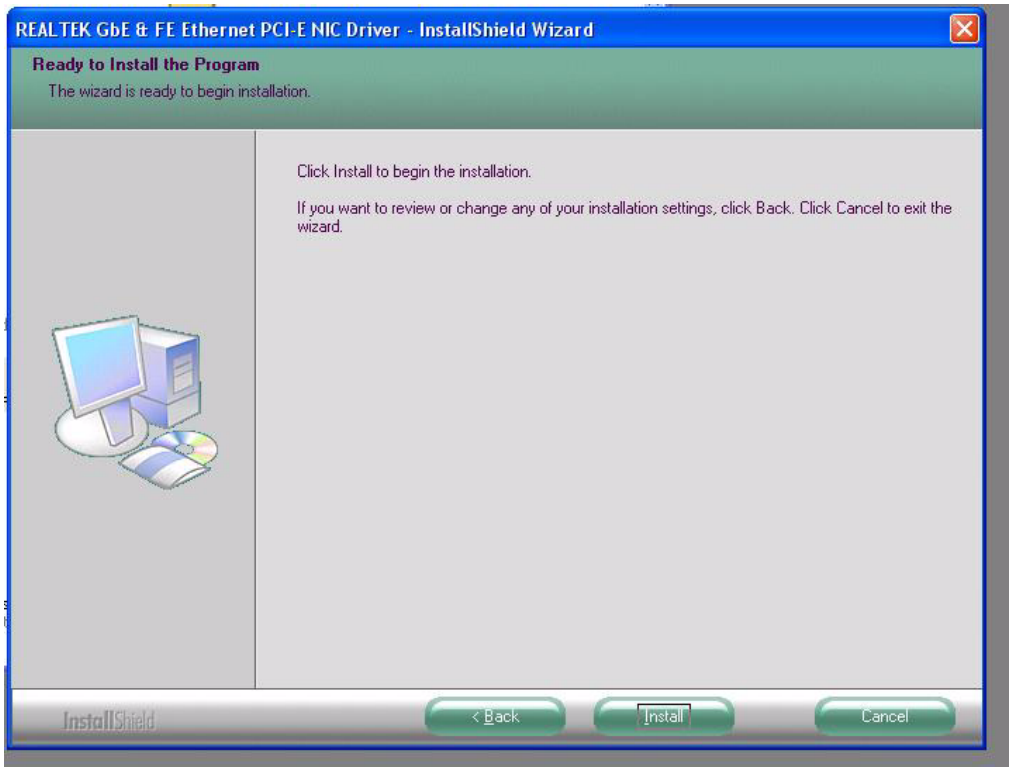
1. Change folder address to \Drivers\LAN\RTL. And double click to execute Setup.exe.



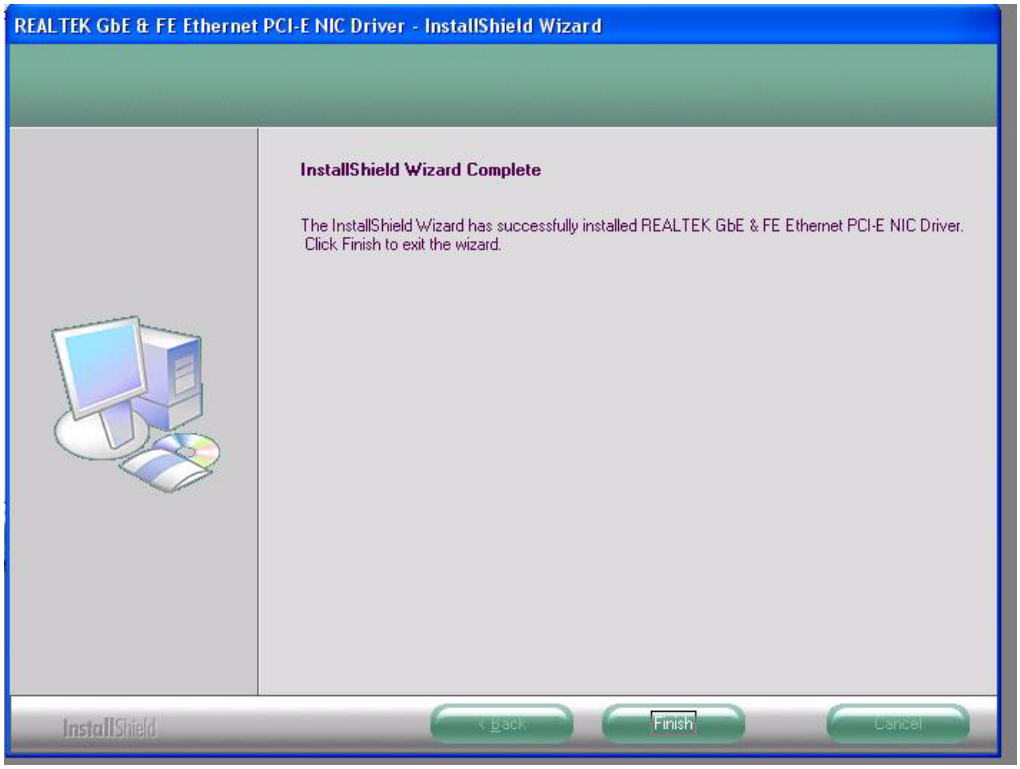
2. Click “Next” button to proceed to the next step.



3. Click “Install” button to continue installation.

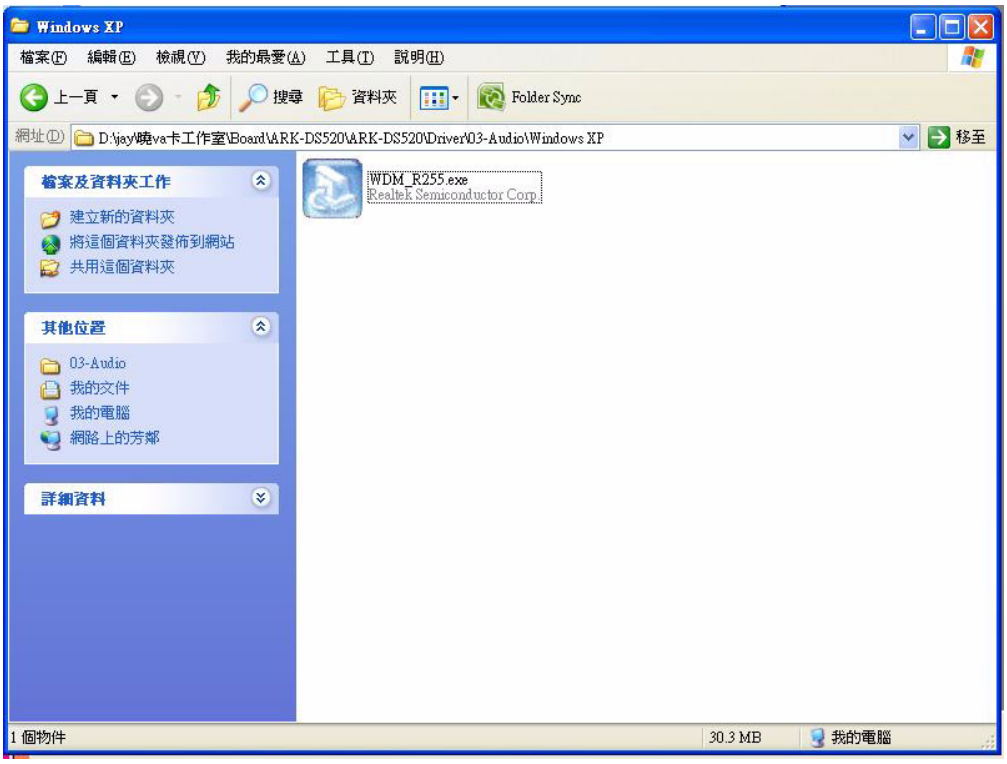


4. The network driver installation is now complete. Click the “Finish” button to exit InstallShield.

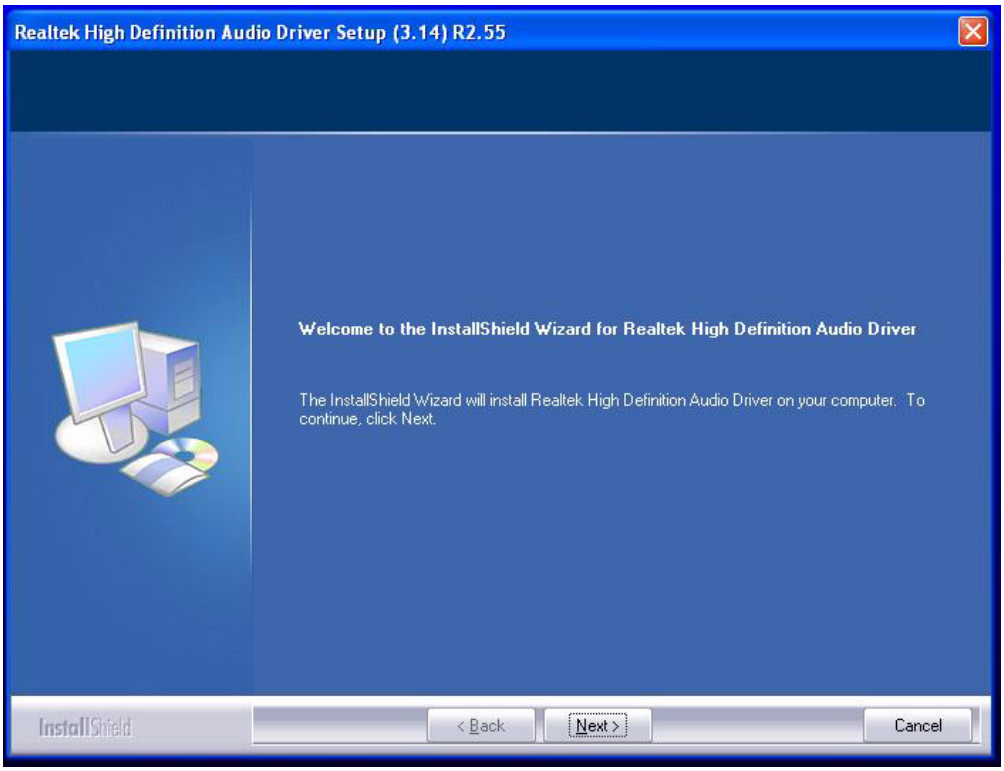


4.1.5 Audio Driver Installation

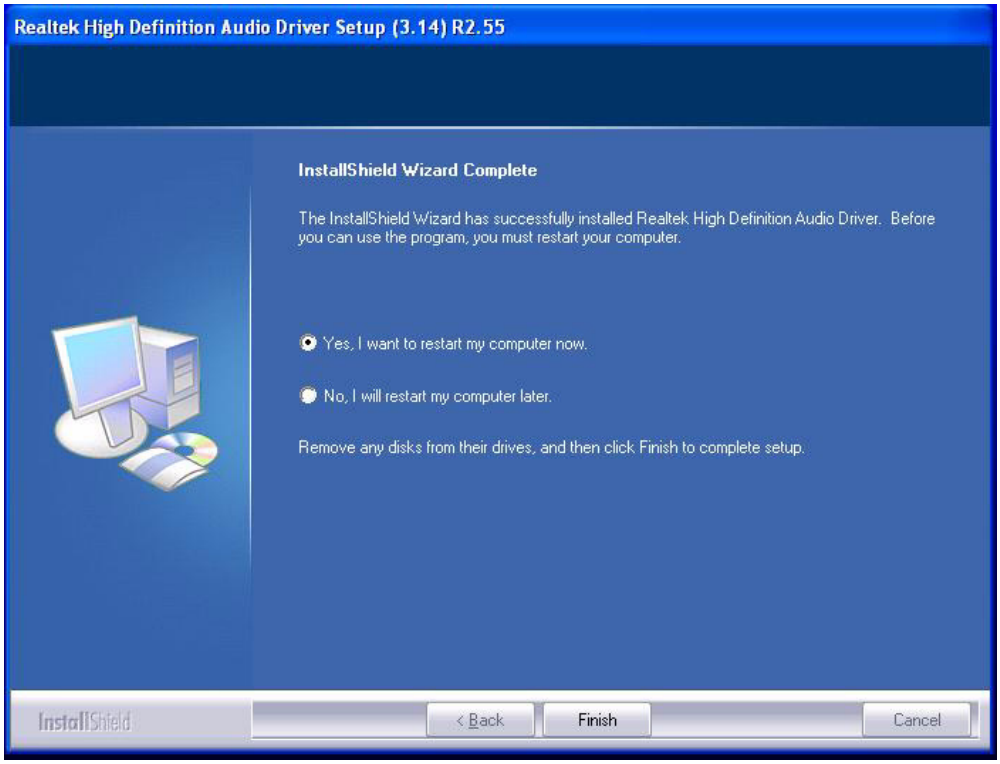
1. Change folder address to \Drivers\Audio. And double click to execute WDM_R255.exe.



2. Click “Next” button 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 will be complete.



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