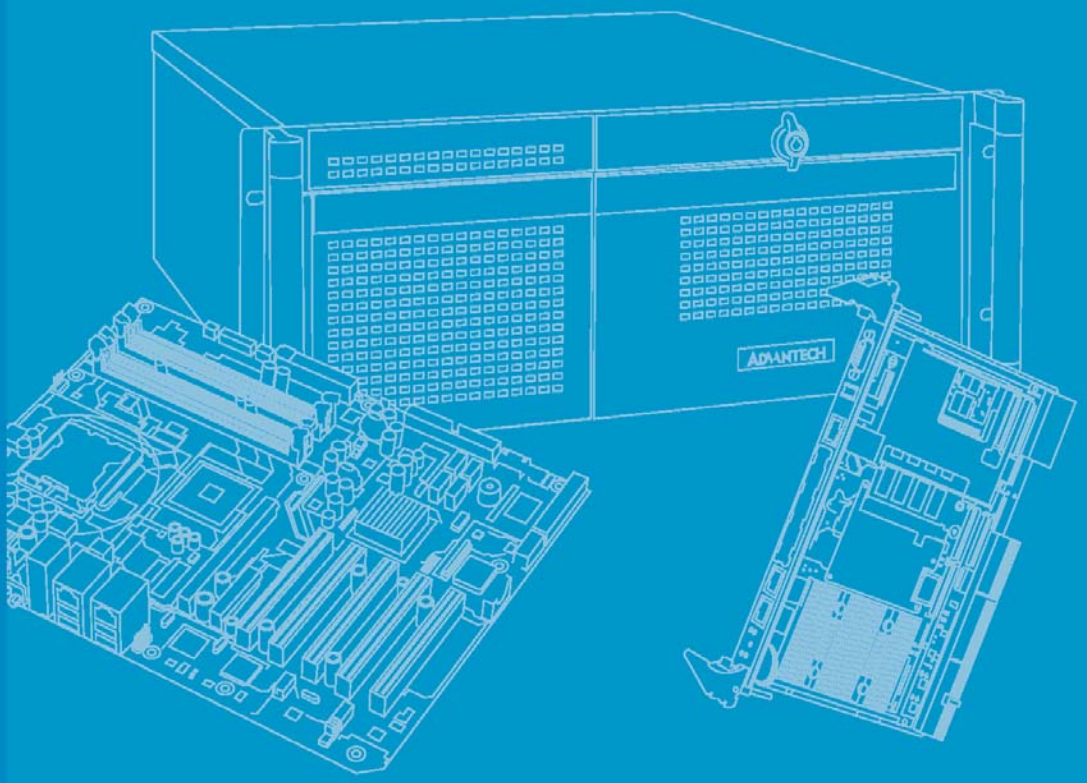

User Manual

ARK-DS220

OPS ION2-Based Digital Signage Platform

ADVANTECH

Enabling an Intelligent Planet

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

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.

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1. Visit the Advantech website at http://support.advantech.com 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.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advan-tech.com

Packing List

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

- 1 x ARK-DS220 Unit
- 1 x Diver/Utility CD/Manual
- 1 x China RoHS
- 1 x Simplified Chinese User Manual for CCC

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 into 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).

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

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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Chapter 1

General Introduction

This chapter gives background information on ARK-DS220 series.

1.1 Introduction

The ARK-DS220 complies with Intel OPS (Open Pluggable Specification) standard and is powered by an Intel Atom D525 dual-core processor (fan-based) and Intel Atom N455 single-core processor (fanless) with integrated NVIDIA GT218 (ION2) graphic module for Full HD playback. Compliant with the Open Pluggable Specification (OPS), its slot-in module design effectively lowers deployment and field maintenance costs to simplify device installation, usage, maintenance and upgrades.

ARK-DS220 OPS media player enables digital signage manufacturers to deploy systems faster, with lower costs for development and implementation. Its slot-in module is connected via a JAE 80-pin connector, and includes the HDMI, DVI-D, DP, UART, and USB2.0 signals. The player-screen communication interface via UART and HDMI CEC provides status reporting and control, and also supports digital audio/video signals via HDMI or display port, for picture-perfect content reproduction. ARK-DS220 also supports 1x GigaLAN, 1x COM ports, and 2x USB2.0 ports giving a great selection for data communication in display applications. The entire design makes digital signage applications more intelligent and connected.

1.2 Product Features

1.2.1 General

- Integrated NVIDIA GT218 (ION2) graphic module for Full HD playback
- Designed compliant with OPS (Open Pluggable Standard)
- Embedded Intel® Atom™ D525 dual-core (fan-based) or Intel® Atom™ N455 single-core processor (fanless)
- Supports HDMI, DP, UART, and USB2.0 via JAE 80-pin connector
- Slot-in integration, easy maintenance

1.2.2 Display

- Support up to 1920 x 1080 (via OPS interconnection) 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)
- **Max.:** 30 W (CPU is Intel Atom D525 1.8 GHz)

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
- **Graphic Chipset:** nVidia GT218-ILV-B1
- **Video Memory Size:** Independent display memory 512 MB
- **BIOS:** AMI 16 Mbit Flash BIOS
- **System Memory:** 1 x DDR3 204-pin SODIMM sockets, supports up to 4 GB (w/ D525); or 2 GB (w/ N455)
- **HDD:** Supports 1 x 2.5" SATA HDD (max 9.5mm height)
- **Watchdog Timer:** Single chip watchdog 255-level interval timer, setup by software

- **I/O Interface:**
  - 1 x JAE TX25-80P-LT-H1E Plug
  - 1 x HDMI (via OPS interconnection)
  - 1x Display Port (via OPS interconnection)
  - 1 x VGA (D-sub 15-pin)
  - 2 x USB 2.0 compliant ports
  - 2 audio phone jacks for Mic-in, Line-out
  - 1 x COM (RS-232)
  - 1 x MiniPCIe (Internal)
- **Ethernet Chipset:** 1 x Intel 82567V
  - 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
- **Resolution:**
  - HDMI/DP: up to 1920 x 1080 (via OPS interconnection)
  - VGA: up to 2048 x 1536 @ 60 Hz

1.4 Mechanical Specifications

1.4.1 Dimensions

200 x 118 x 30 mm (OPS compliant)

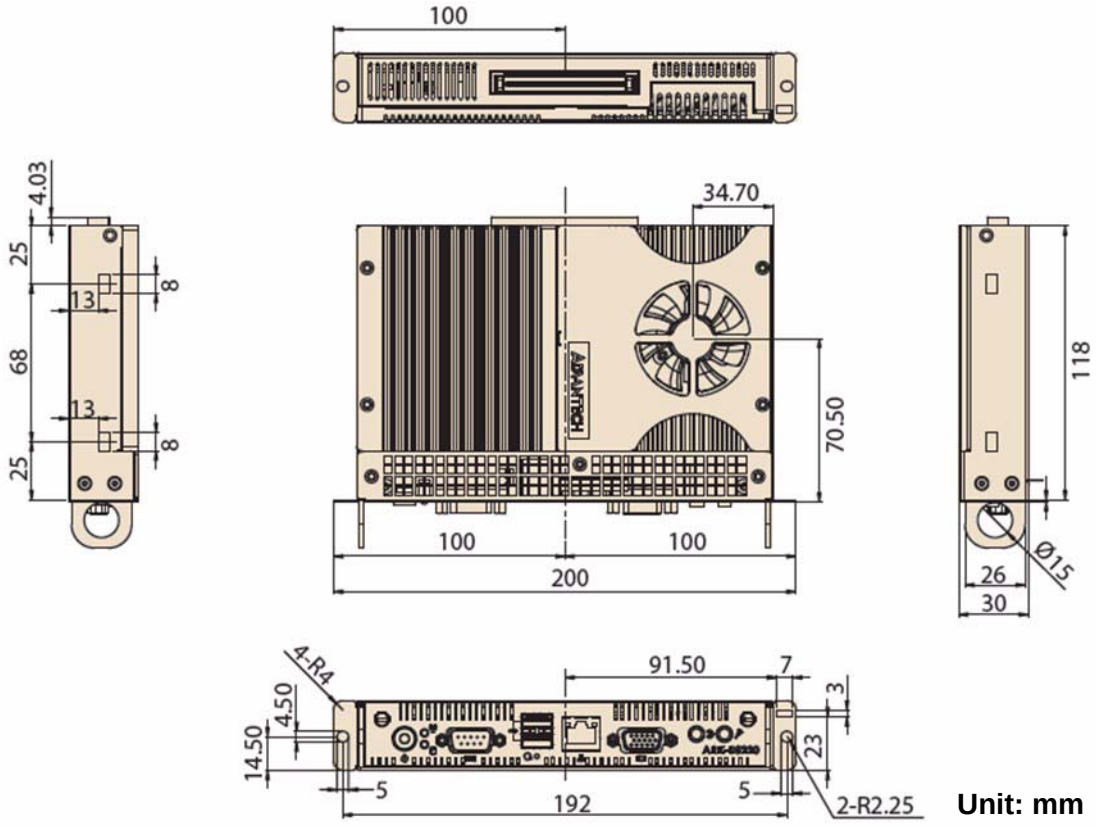


Figure 1.1 ARK-DS220 Mechanical Dimensions

1.4.2 Weight

1.5 kg (3.3 lb)

1.5 Power Requirements

1.5.1 System Power

12 V ~ 24 V DC-in (via OPS interconnection)

1.5.2 RTC Battery

3 V/190 mAH BR2032L

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 ~ 158° 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, BSMI, CCC

1.6.7 EMC

CE, FCC, BSMI

Chapter 2

Hardware Installation

This chapter introduces external I/O and the installation of ARK-DS220 Hardware.

2.1 ARK-DS220 I/O Connectors

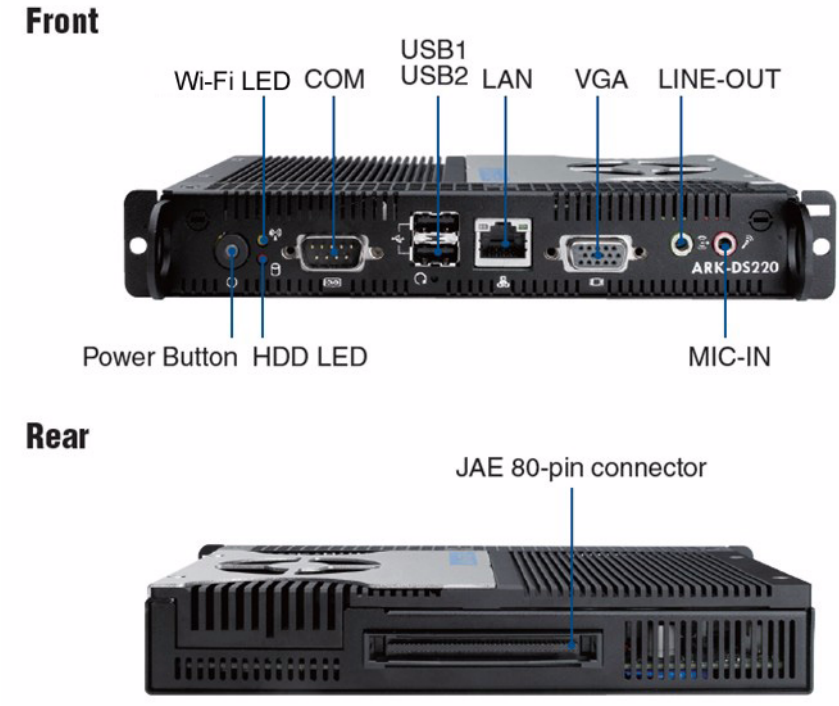


Figure 2.1 ARK-DS220 I/O connectors

2.2 ARK-DS220 Front Side External I/O Connectors

2.2.1 Power ON/OFF Button

ARK-DS220 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 2.2 Power ON/OFF Button

2.2.2 COM Connector

ARK-DS220 provides one D-sub, 9-pin connector, serial communication interface port. The ports support RS-232 mode communications.

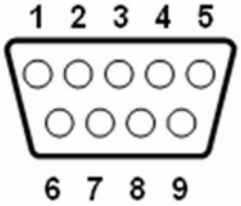


Figure 2.3 COM Connector

Table 2.1: COM Connector Pin Assignments	
Pin	**Signal Name**
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.2.3 USB 1~2 Connectors

ARK-DS220 provides two 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 system.

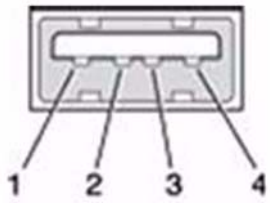


Figure 2.4 USB 1~2 Connectors

Table 2.2: USB 1~2 Connectors Pin Assignments	
Pin	**Signal Name**
1	VCC
2	USB Data-
3	USB Data+
4	GND

2.2.4 Ethernet Connector (LAN)

ARK-DS220 provides one RJ-45 LAN interface connector, fully compliant with IEEE802.3u 10/100/1000 Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators to show its Active/Link status and speed status.

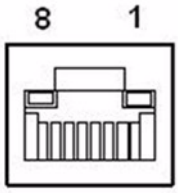


Figure 2.5 Ethernet Connector

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#

2.2.5 VGA Connector

ARK-DS220 provides one high resolution VGA interface 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.

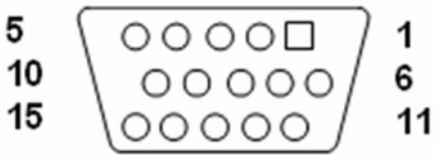


Figure 2.6 VGA Connector

Table 2.4: 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

2.2.6 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 2.7 Line-out and MIC Connector

2.3 JAE TX-25 Plug Connector

ARK-DS220 provides one 80-pin right angle blindmate JAE TX-25 Plug connector, higher tolerance on mating misalignment, enables plug and unplug mechanism between ARK-DS220 and JAE TX-24 Receptacle connectors inside the display panel.

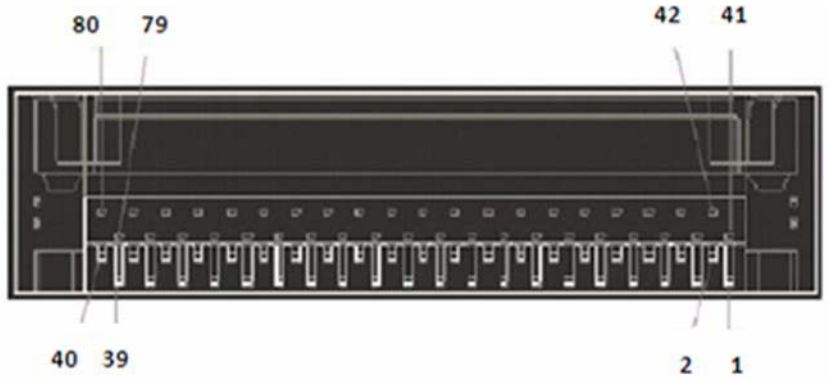


Figure 2.8 JAE TX-25 Plug Connector

Table 2.5: JAE TX-25 Plug Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	DDP_3N	41	RSVD
2	DDP_3P	42	RSVD
3	GND	43	RSVD
4	DDP_2N	44	RSVD
5	DDP_2P	45	RSVD
6	GND	46	RSVD
7	DDP_1N	47	RSVD
8	DDP_1P	48	RSVD
9	GND	49	RSVD
10	DDP_0N	50	SYS_FAN
11	DDP_0P	51	UART_RXD
12	GND	52	UART_TXD
13	DDP_AUXN	53	GND
14	DDP_AUXP	54	StdA_SSRX-
15	DDP_HPD	55	StdA_SSRX+

Table 2.5: JAE TX-25 Plug Connector Pin Assignments			
16	GND	56	GND
17	TMD_CLK-	57	StdA_SSTX-
18	TMD_CLK+	58	StdA_SSTX+
19	GND	59	GND
20	TMDS0-	60	USB_PN2
21	TMDS0+	61	USB_PP2
22	GND	62	GND
23	TMDS1-	63	USB_PN1
24	TMDS1+	64	USB_PP1
25	GND	65	GND
26	TMDS2-	66	USB_PN0
27	TMDS2+	67	USB_PP0
28	GND	68	GND
29	HDMI_DDC_DATA	69	AZ_LINEOUT_L
30	HDMI_DDC_CLK	70	AZ_LINEOUT_R
31	HDMI_HPD	71	HDMI_CEC
32	GND	72	PB_
33	+12 V ~ +24 V	73	PS_ON#
34	+12 V ~ +24 V	74	PWR_STATUS
35	+12 V ~ +24 V	75	GND
36	+12 V ~ +24 V	76	GND
37	+12 V ~ +24 V	77	GND
38	+12 V ~ +24 V	78	GND
39	+12 V ~ +24 V	79	GND
40	+12 V ~ +24 V	80	GND

2.4 Hardware Installation

2.4.1 Memory Installation

1. Remove the bottom cover by loosening 6 fixing screws.
2. Insert the memory into the SODIMM socket.
3. Place the thermal pad (Dimension: L-60 mm x W-20 mm x H-2 mm) onto the memory.
4. Replace the bottom cover and secure with screws.

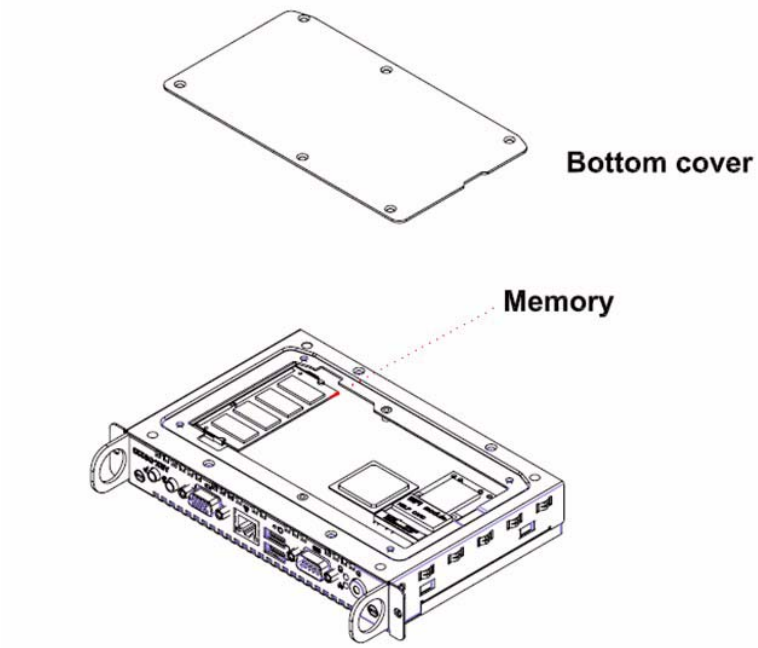


Figure 2.9 Memory Installation

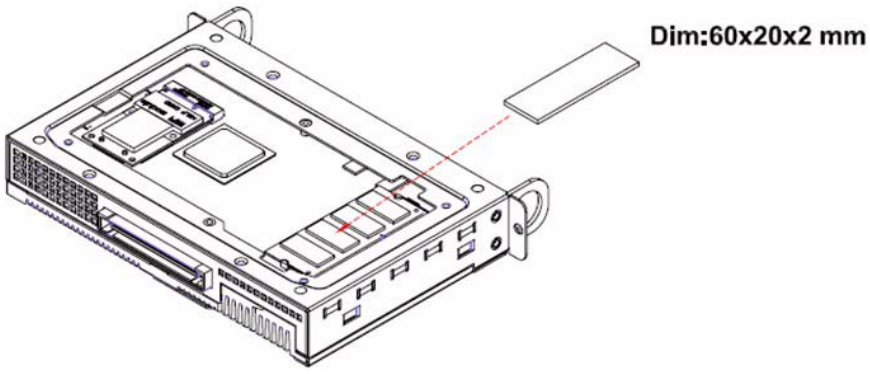


Figure 2.10 Thermal Pad Placement

2.4.2 HDD Installation

1. Assembly HDD module:
   - Assemble the 2.5-inch SATA HDD on HDD bracket with 4 screws.
   - Place the thermal pad (Dimensions: L-59 mm x W-32.5 mm x H-2.5 mm) onto the HDD.

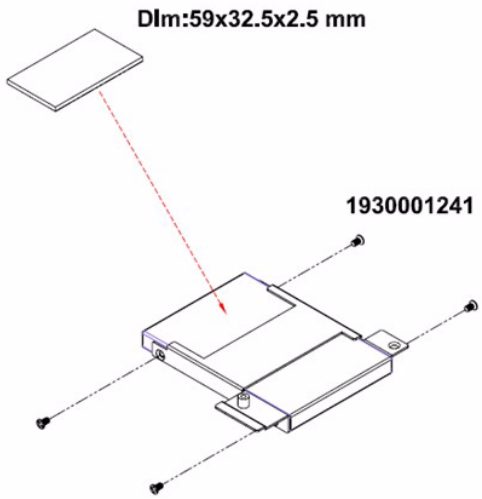


Figure 2.11 Assembly HDD module

2. Install HDD module into the system.
3. Secure HDD module with front faceplate by screws.
4. Place the heatsink module and secure with screws.

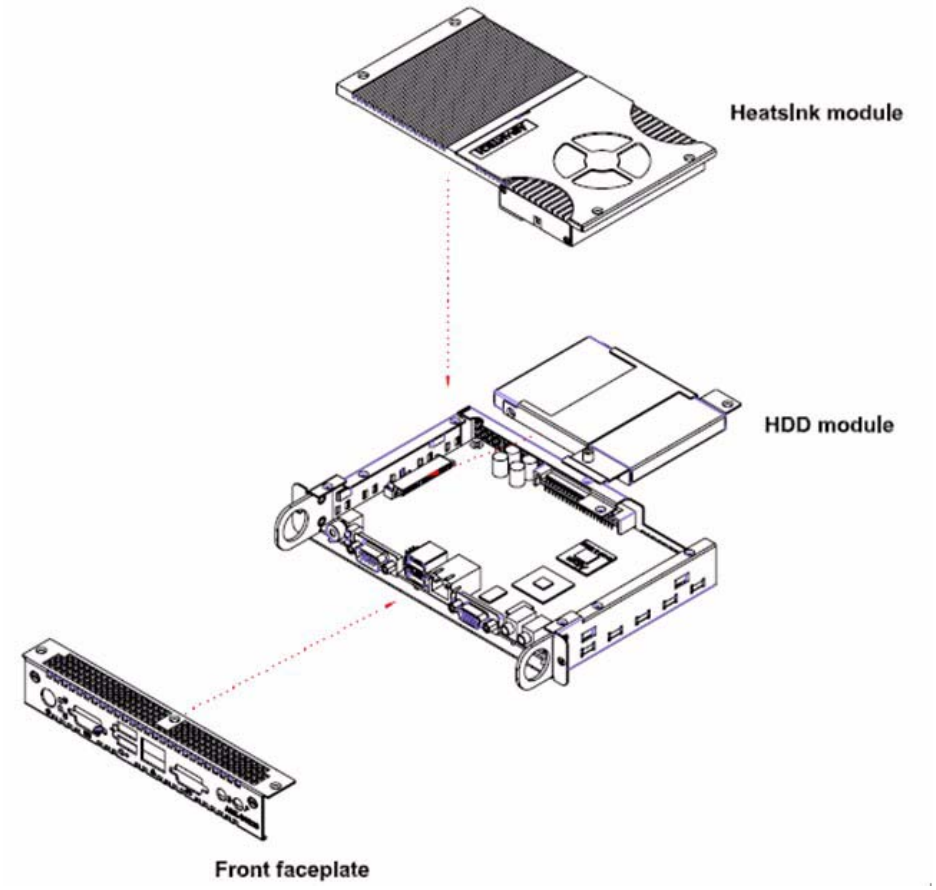


Figure 2.12 HDD Installation

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-DS220 series BIOS setup screens.

AMIBIOS 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.

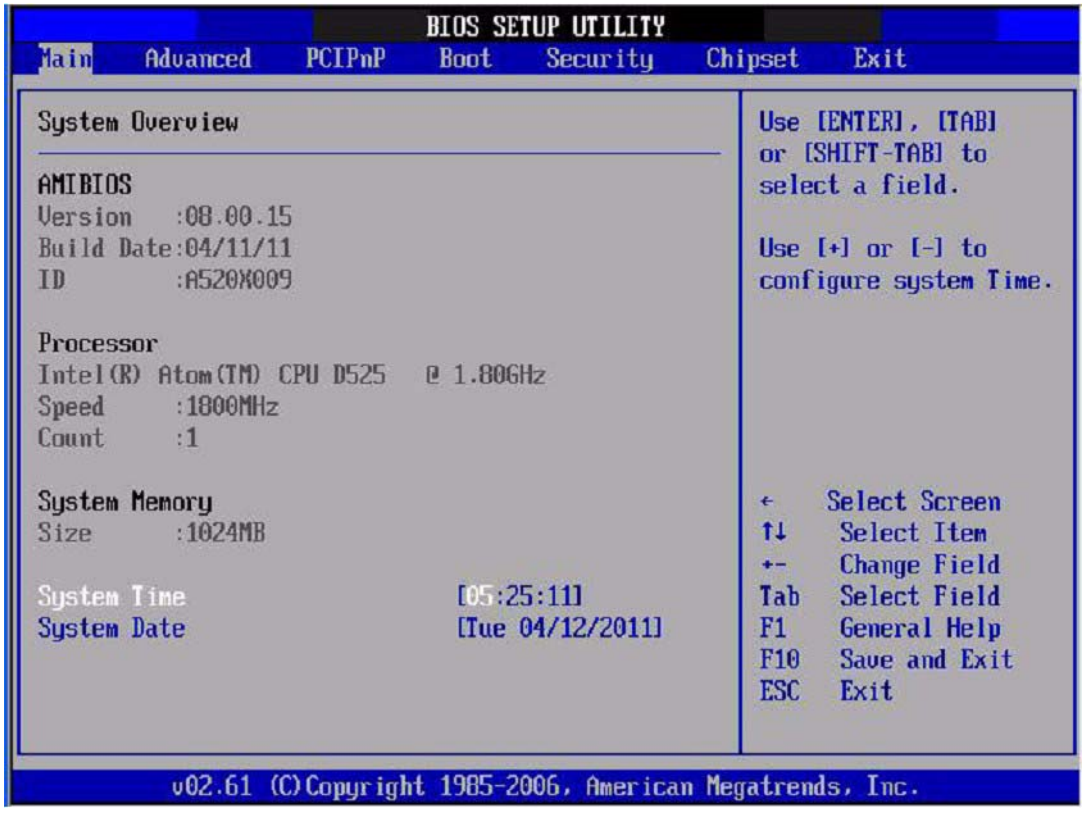


Figure 3.1 Setup Program Initial Screen

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 this section. The Main BIOS Setup screen is shown below.

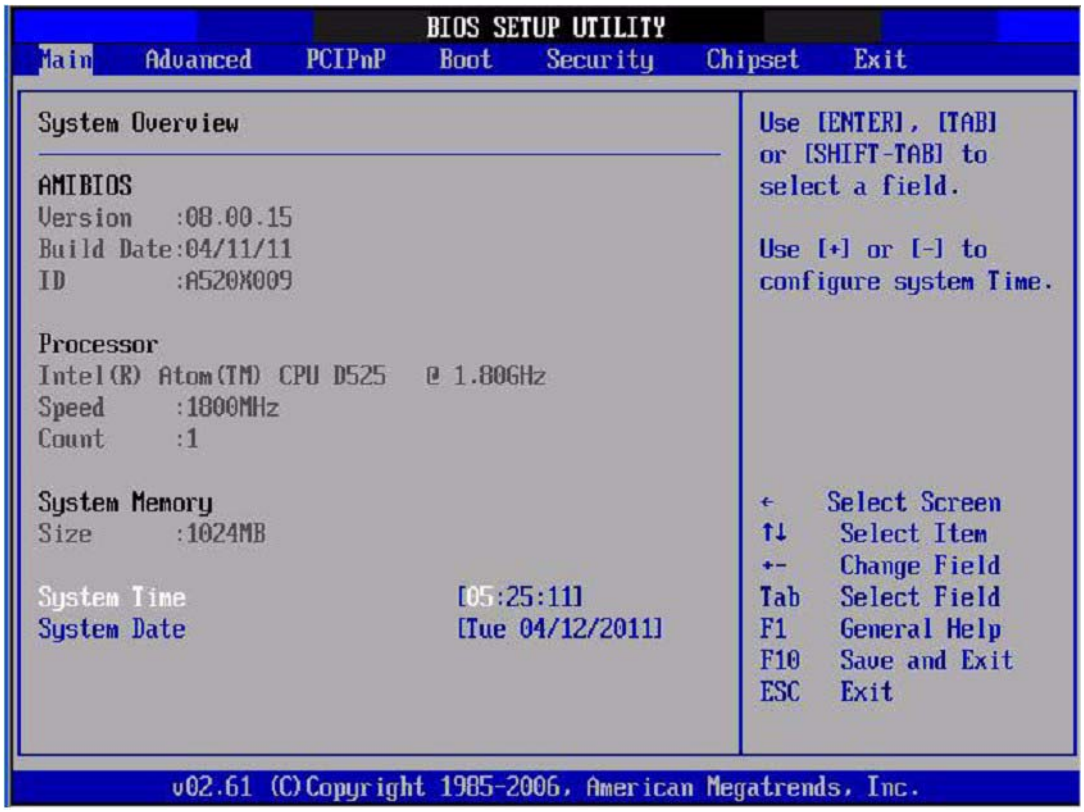


Figure 3.2 Main Setup Screen

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-DS220 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 Settings

- **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

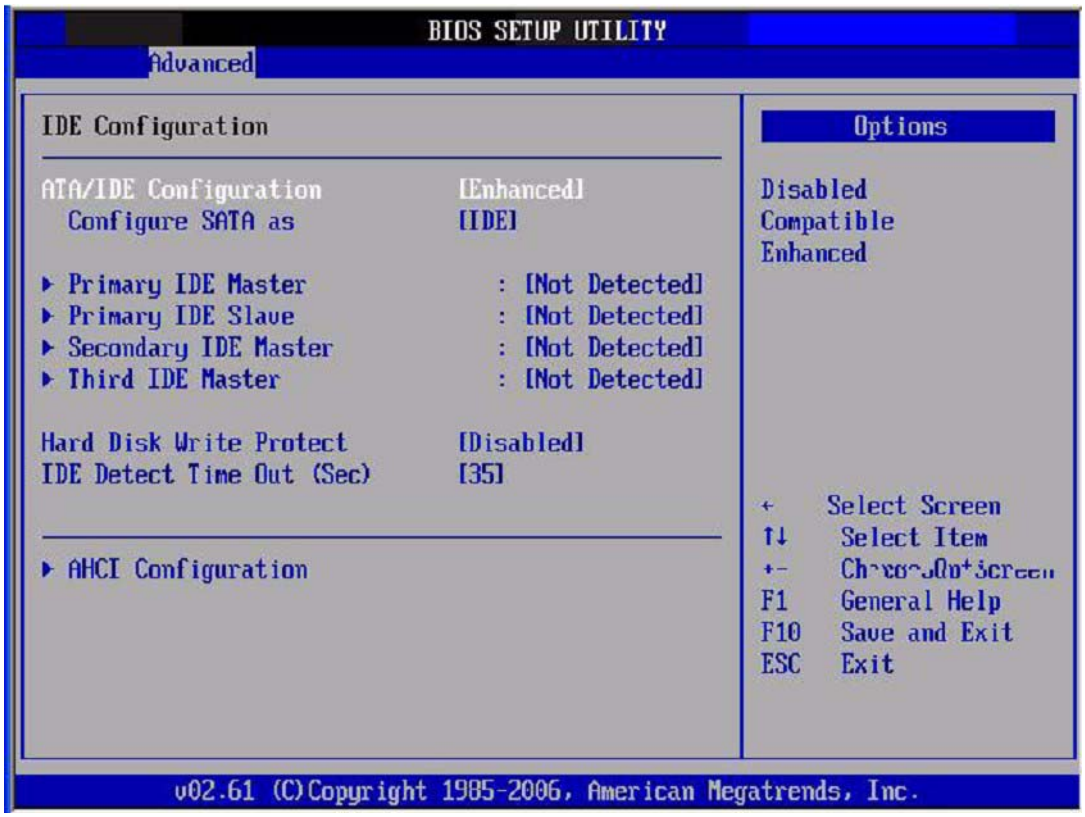


Figure 3.5 IDE Configuration

- **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

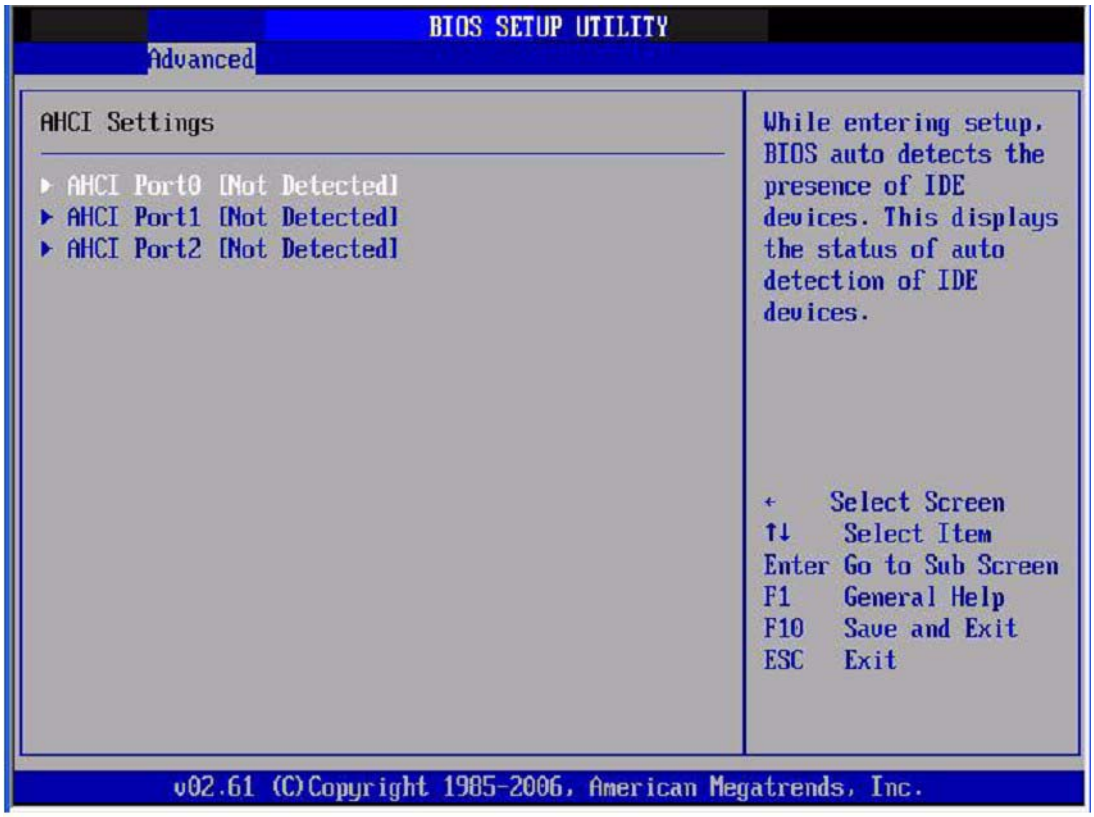


Figure 3.6 AHCI Configuration

- **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

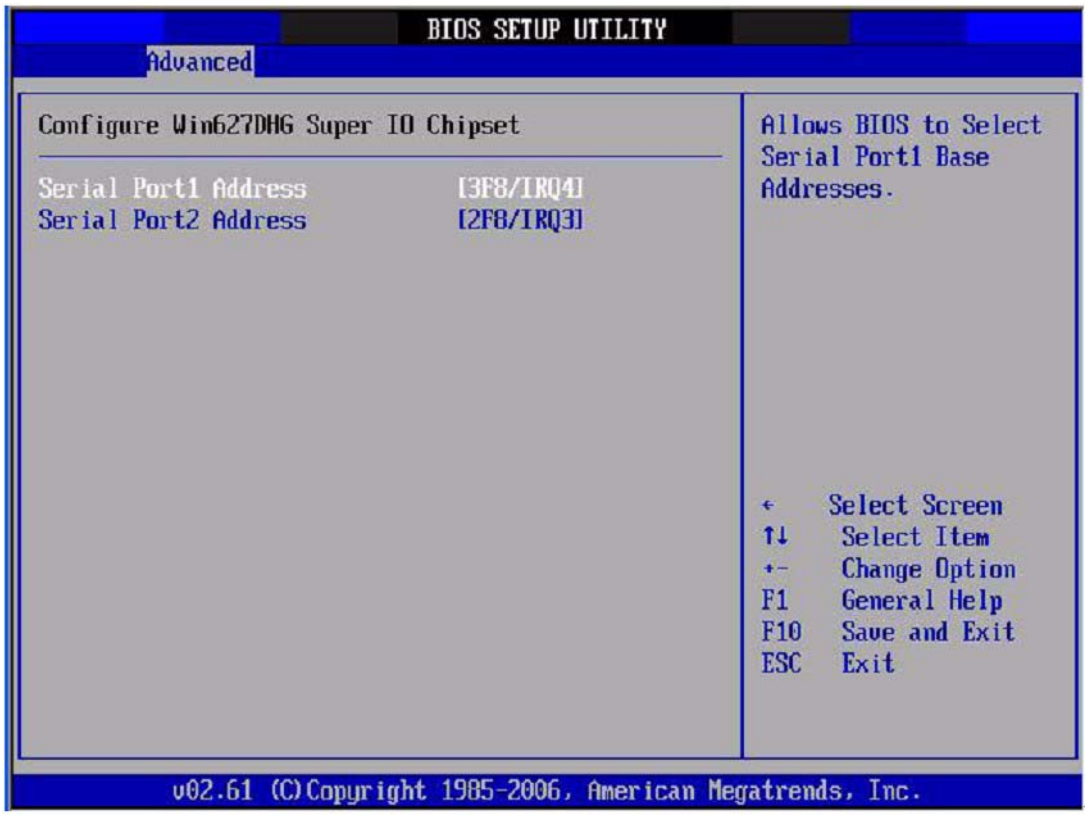


Figure 3.7 Super I/O Chipset Configuration

- **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.

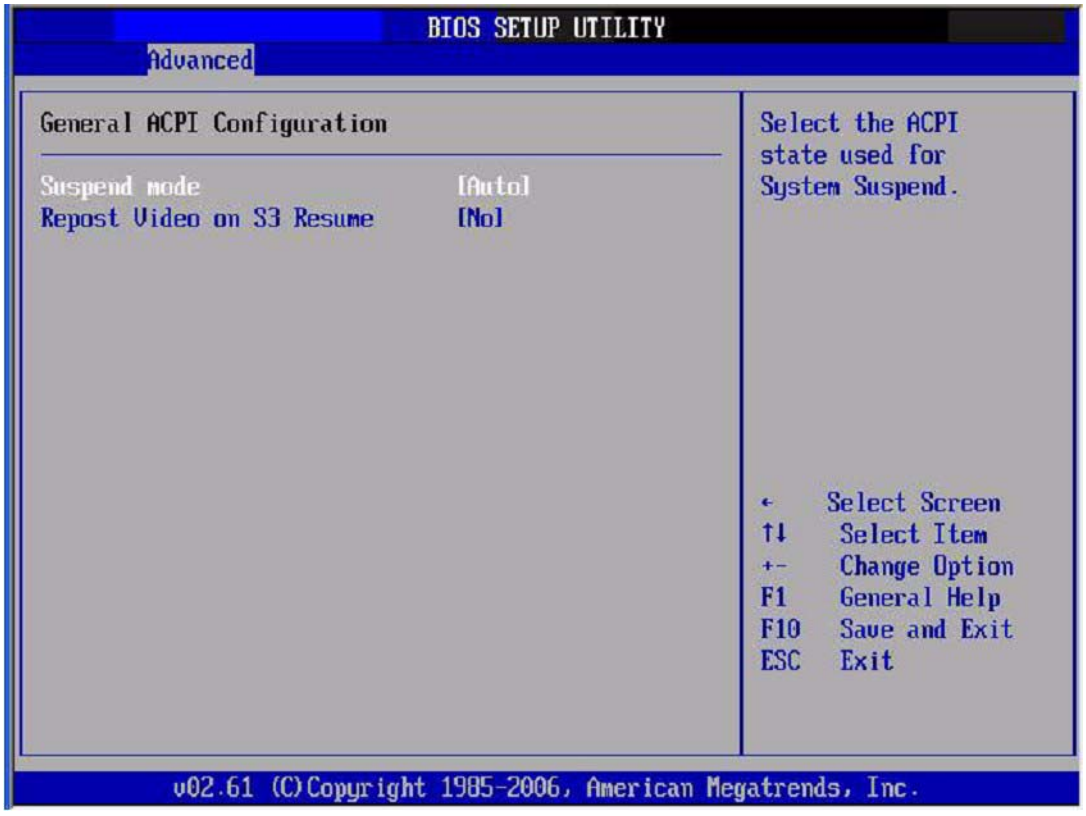


Figure 3.10 General ACPI Configuration

– 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**

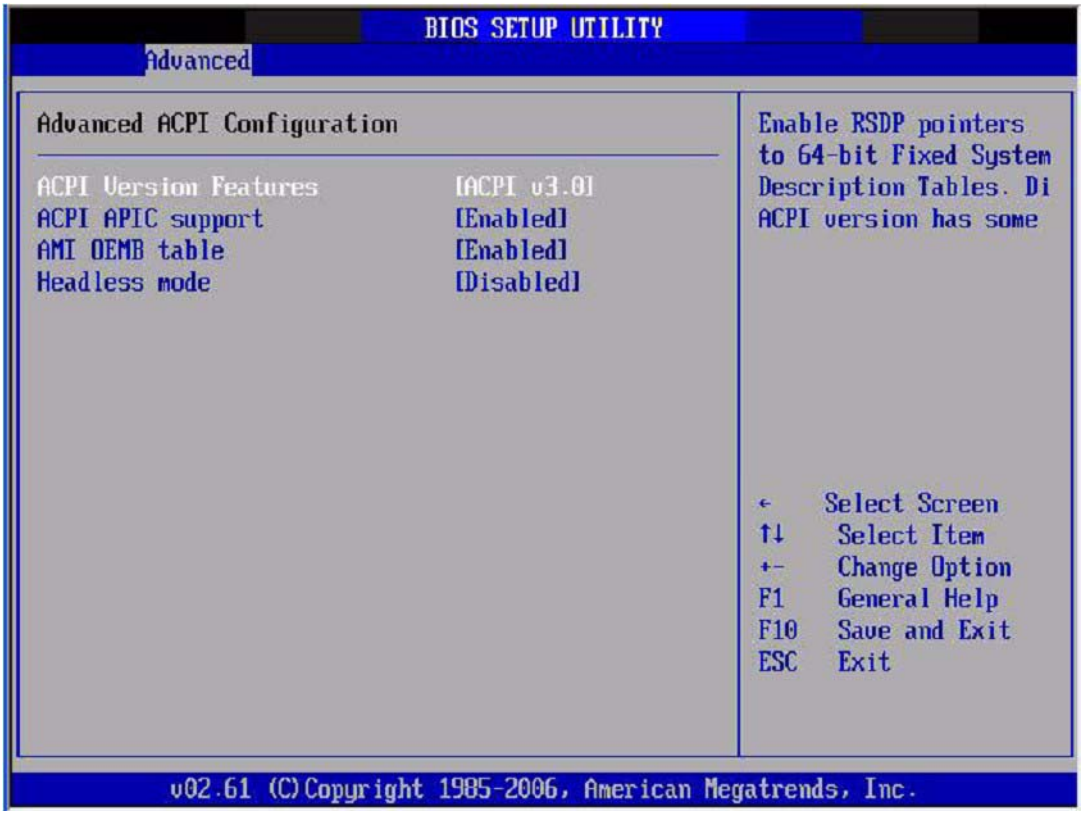


Figure 3.11 Advanced ACPI Configuration

– 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

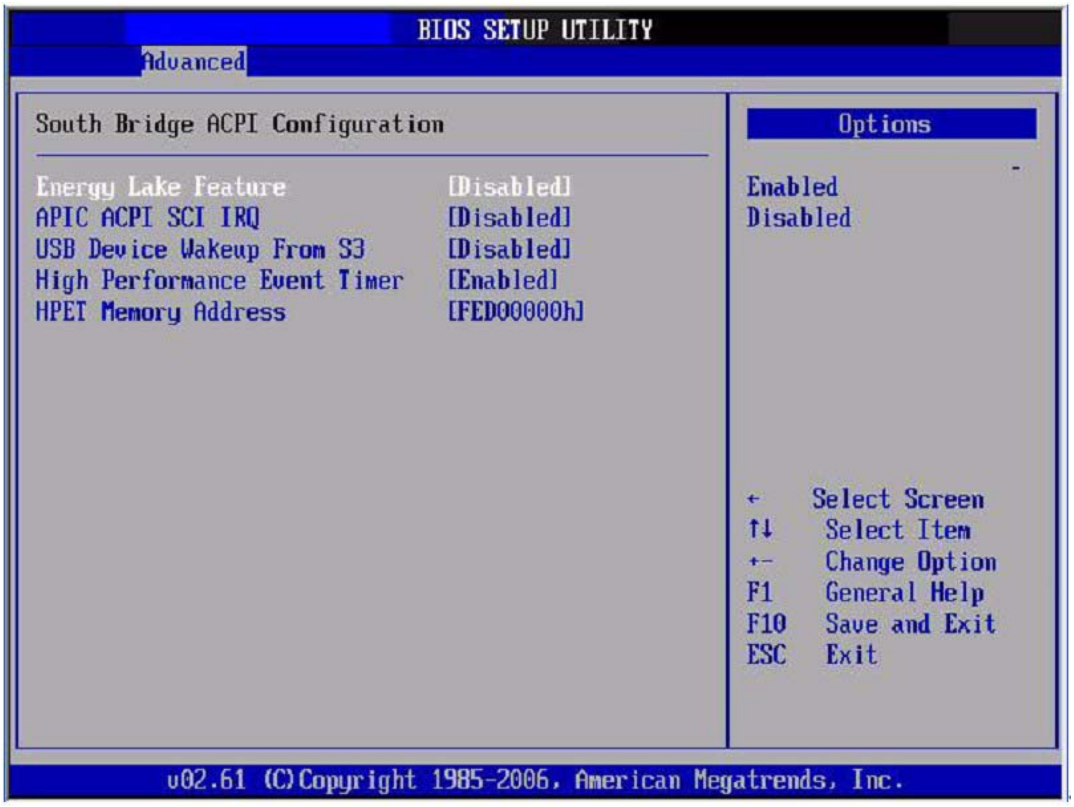


Figure 3.12 Chipset ACPI Configuration

- 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

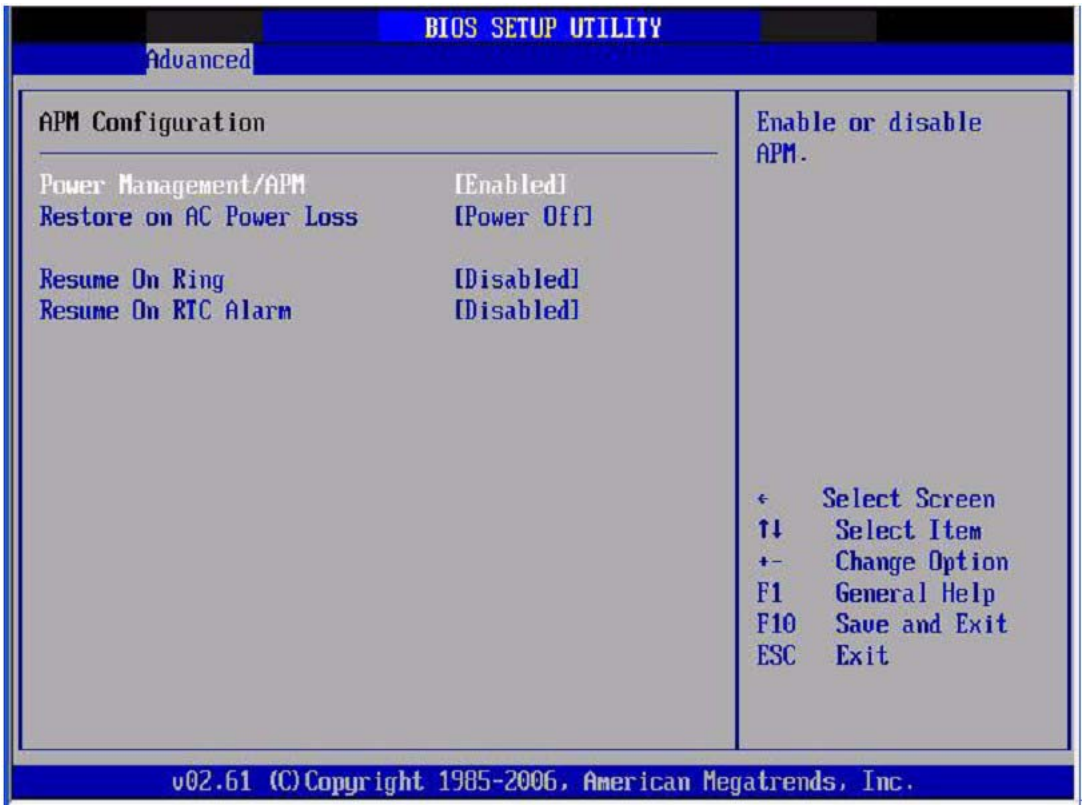


Figure 3.13 APM Configuration

- **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

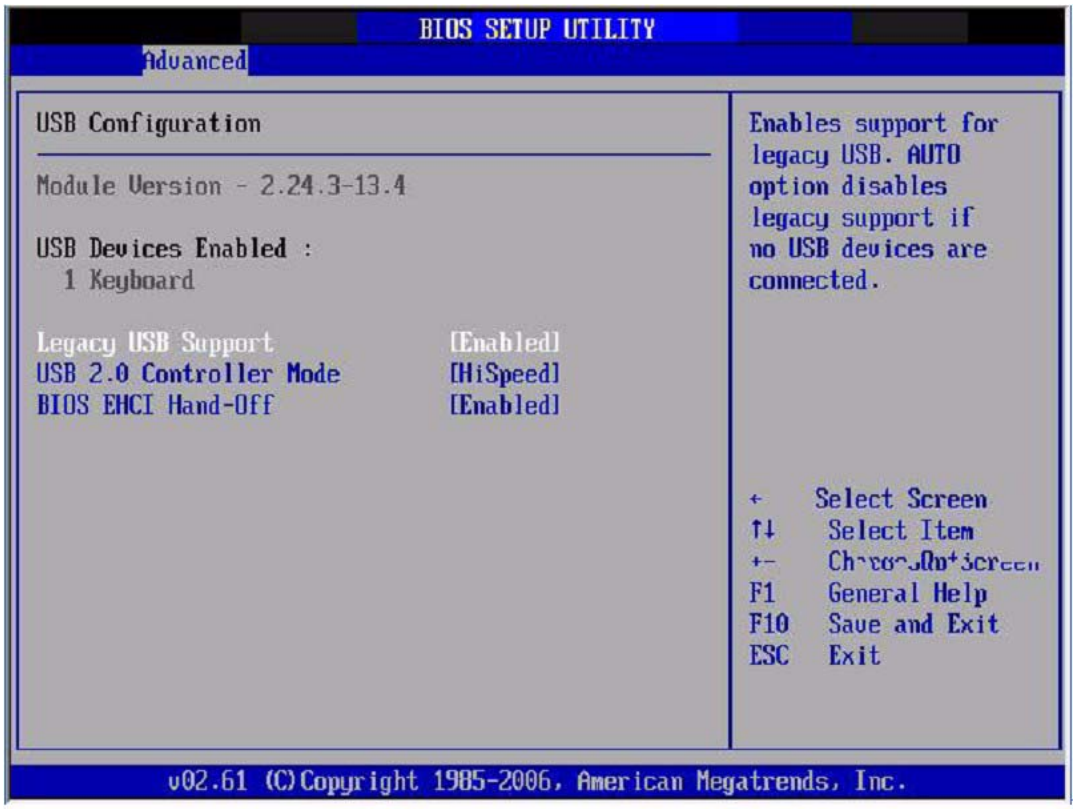


Figure 3.14 USB Configuration

- **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-DS220 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 boot up.

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

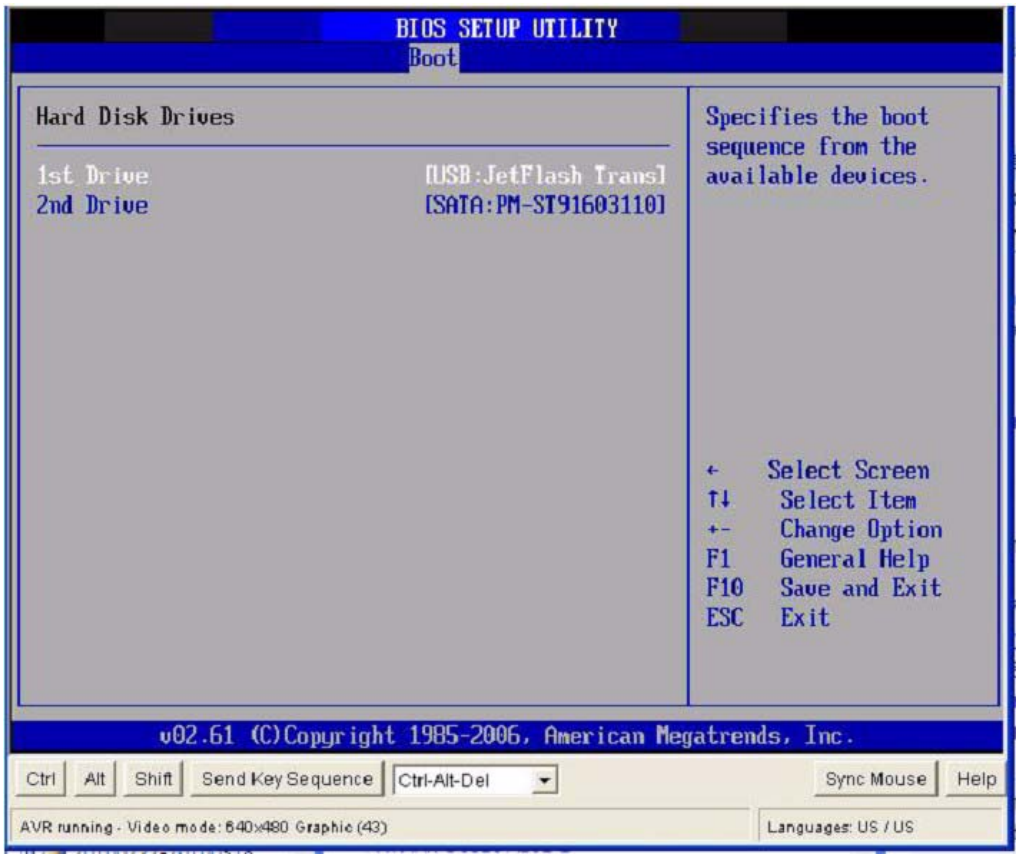


Figure 3.19 BIOS Setup Hard Disk Drives

- **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-DS220 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

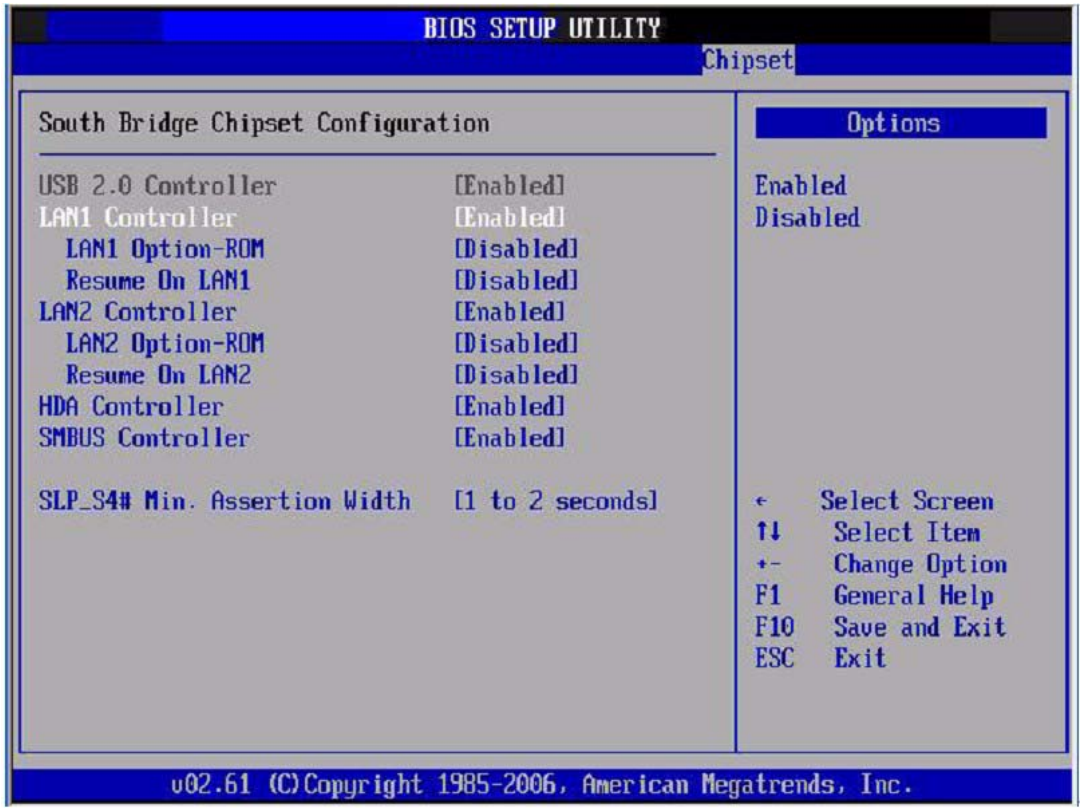


Figure 3.23 South Bridge Chipset Configuration

- **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
- **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 Options

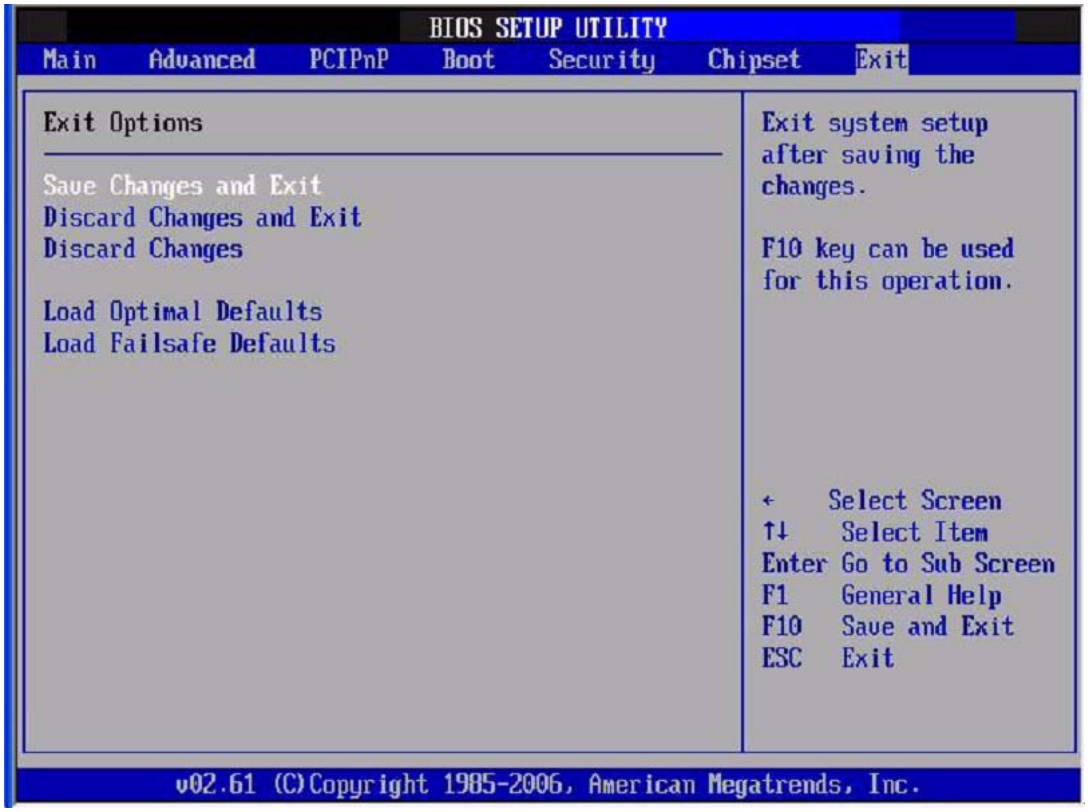


Figure 3.24 Exit Options

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-DS220 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-DS220 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

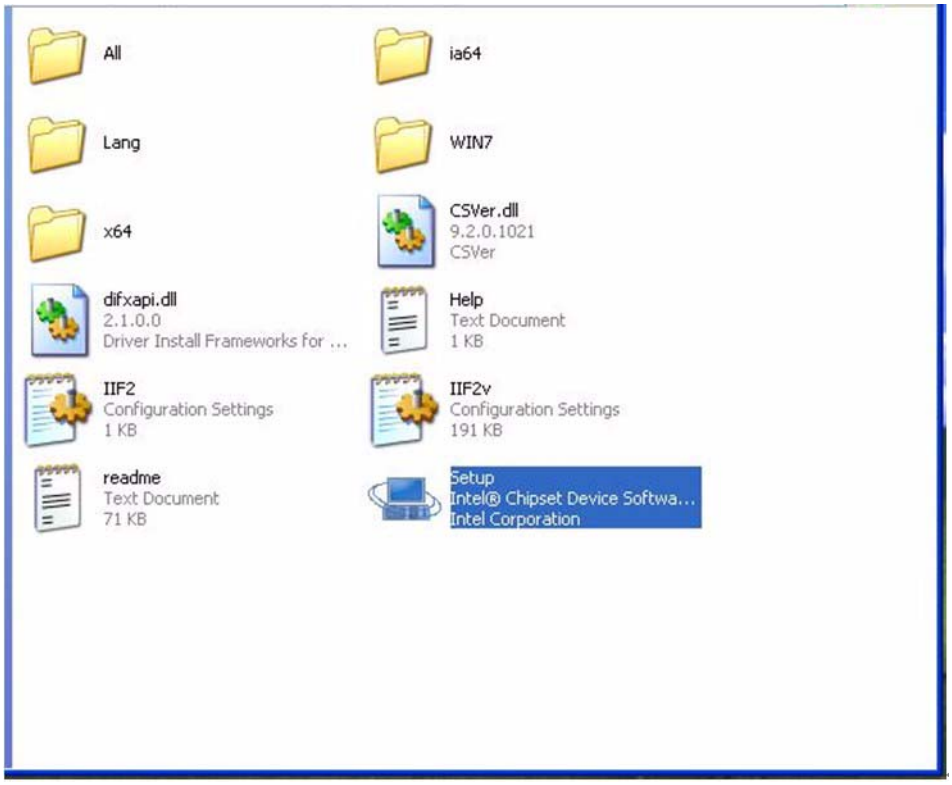
Software Installation

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 Setup.



2. Click "Next" button to proceed.

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

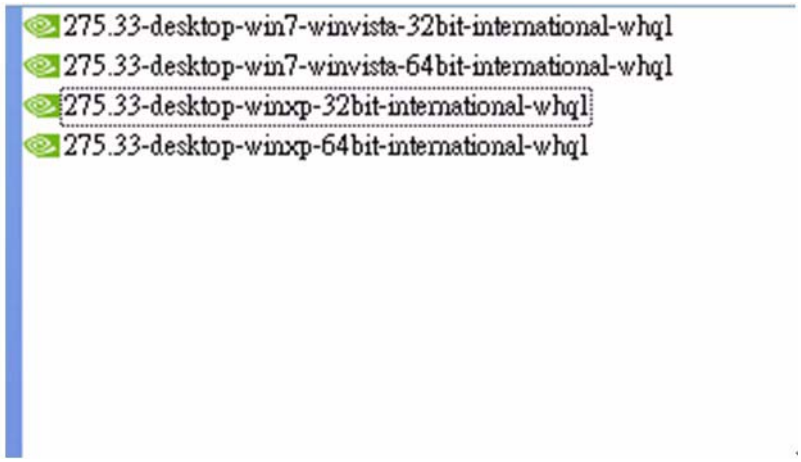
4. Click "Next" to exit Readme File Information window.

5. Click "Next" button to continue.

6. 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

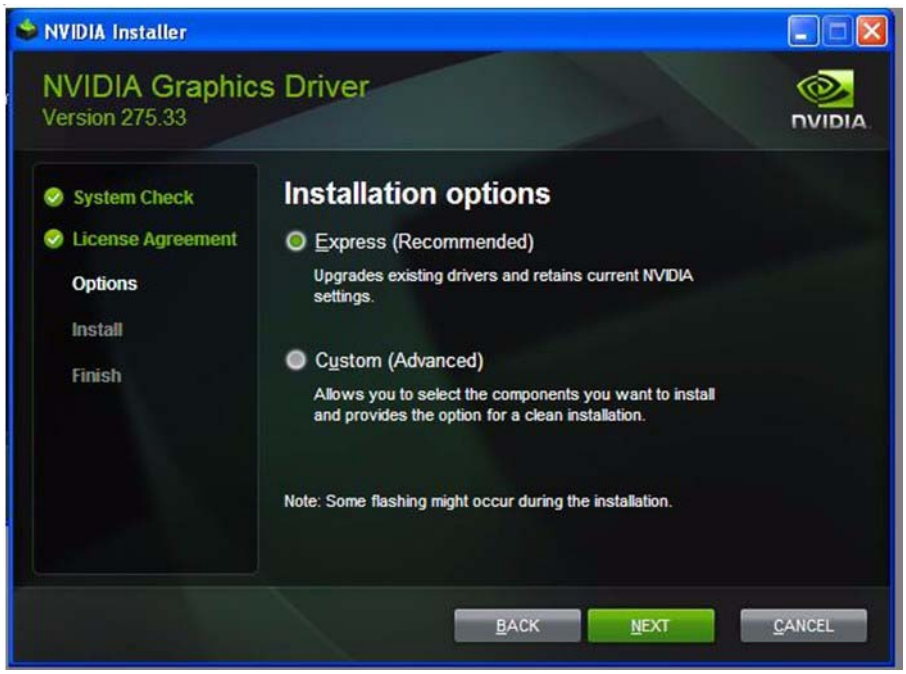
1. Change folder address to \Drivers\VGA and double click Setup.exe.



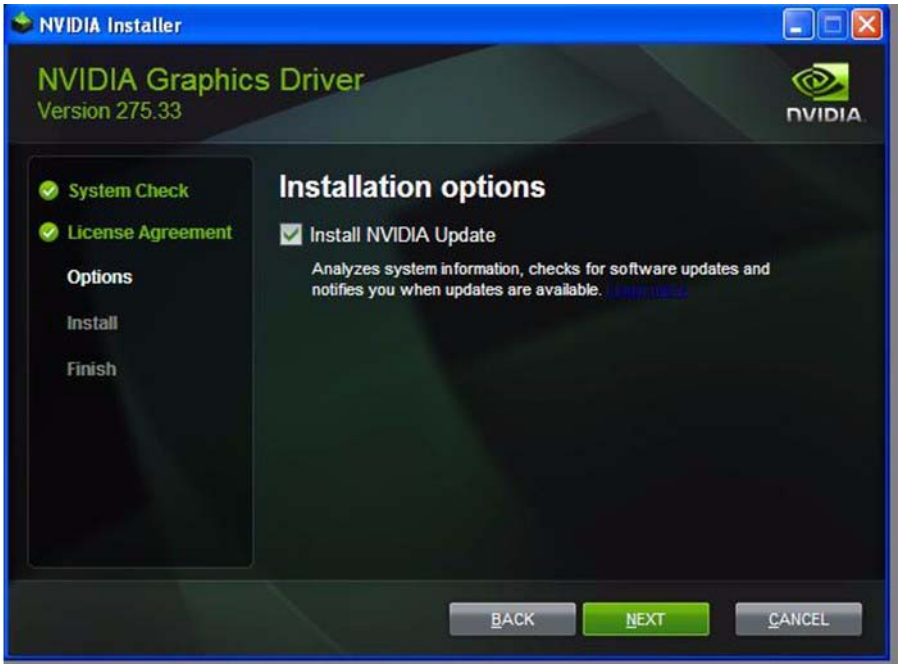
2. Select the path you want to install. Click “OK” button to continue installation.

3. Click "AGREE AND CONTINUE" to accept the License Agreement.

4. Select “Express” to install drivers, and click “Next” button to continue.



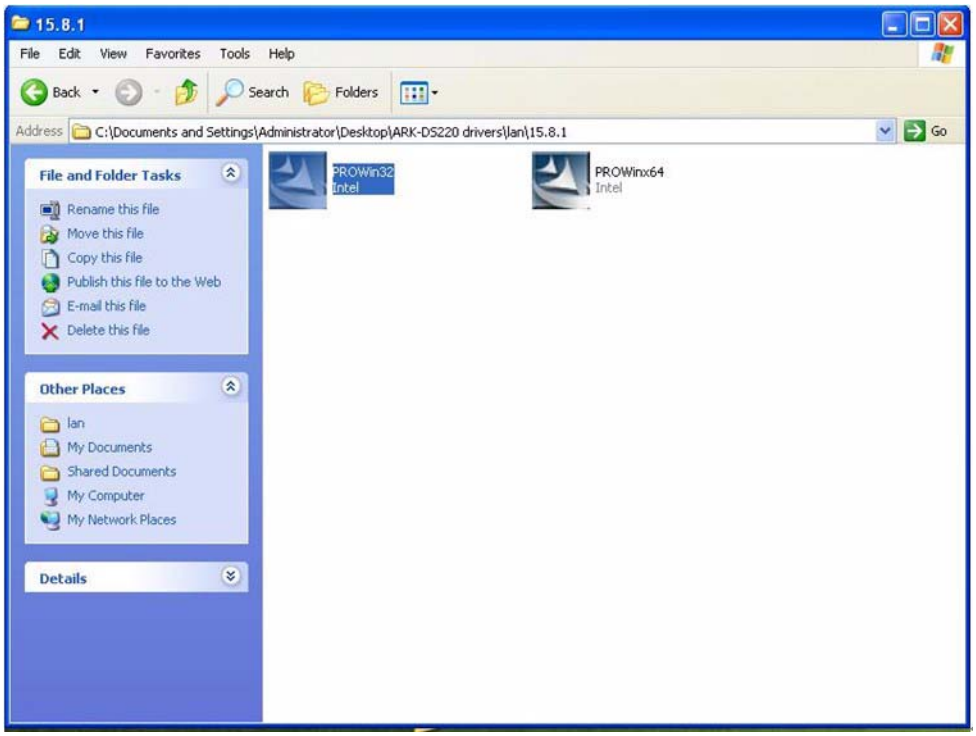
5. Tick “Install NVIDIA Update”, and click “Next” button to continue.



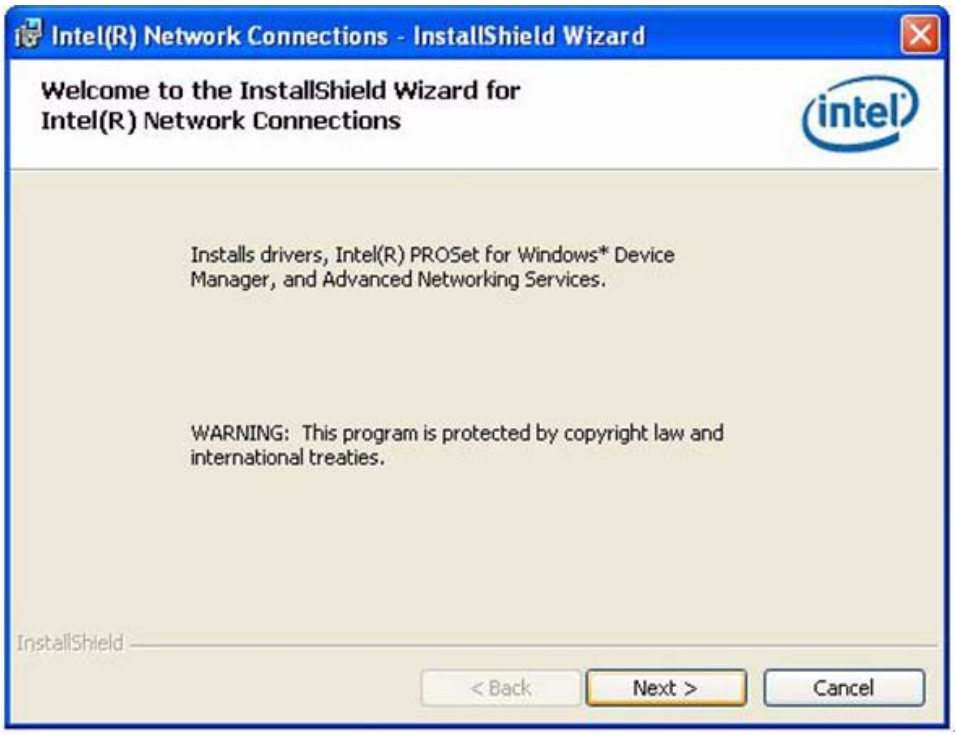
6. Click “Restart Now” on the bottom.
The computer will restart automatically and the driver installation will be complete.

4.1.3 LAN Driver Installation

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

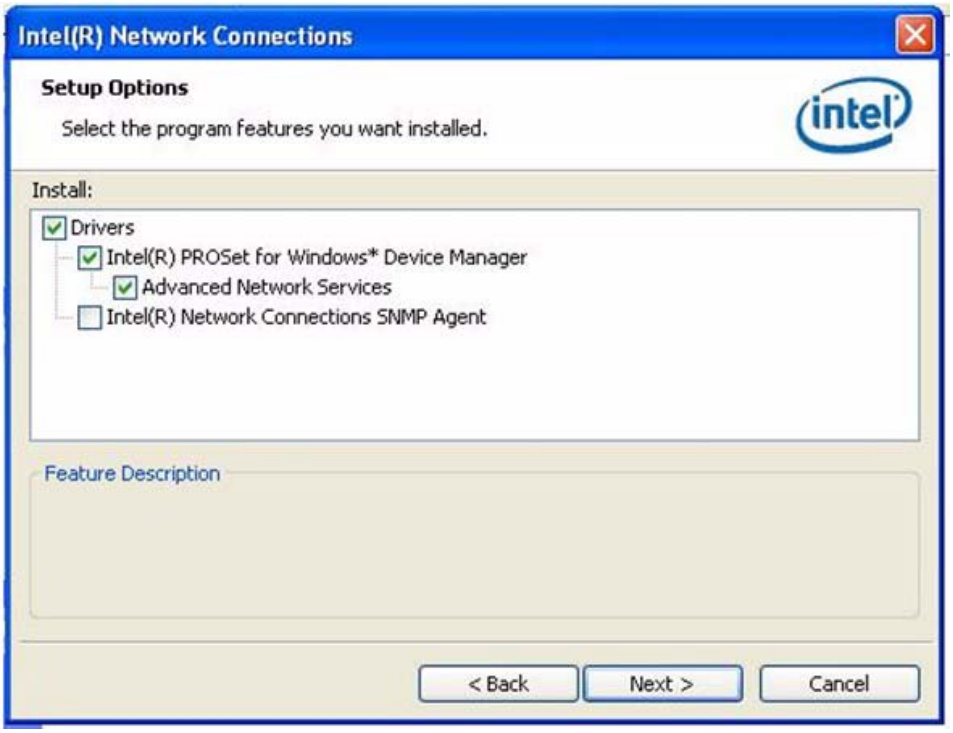


2. Click the "Next" button to proceed to the next step.

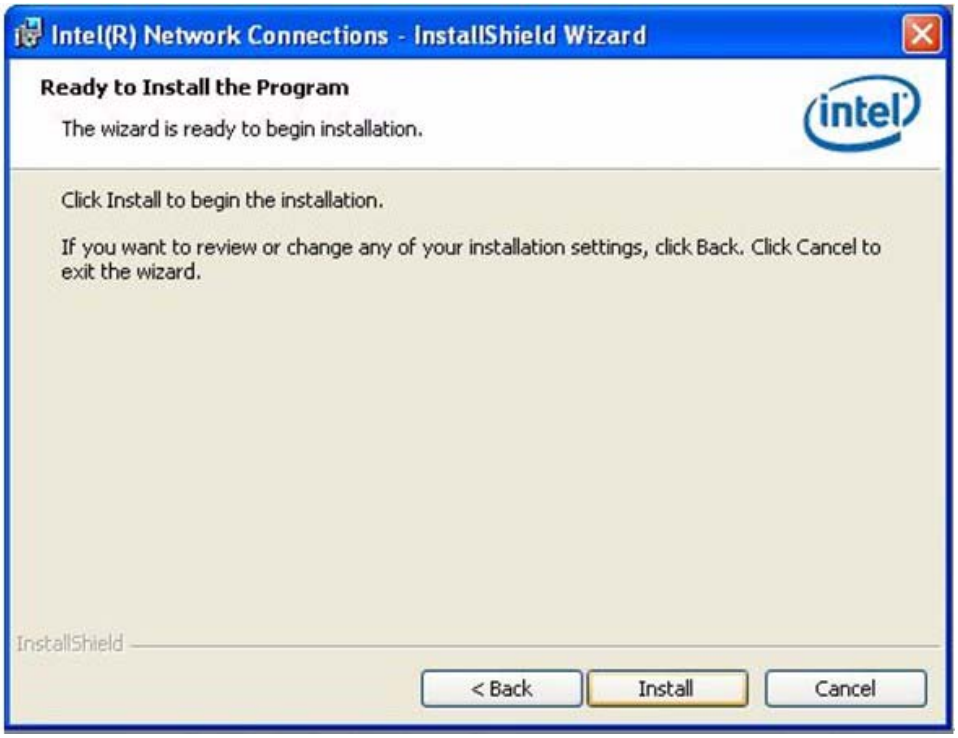


3. Select “I accept the terms in the license agreement” and click “Next” button to accept License Agreement.

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



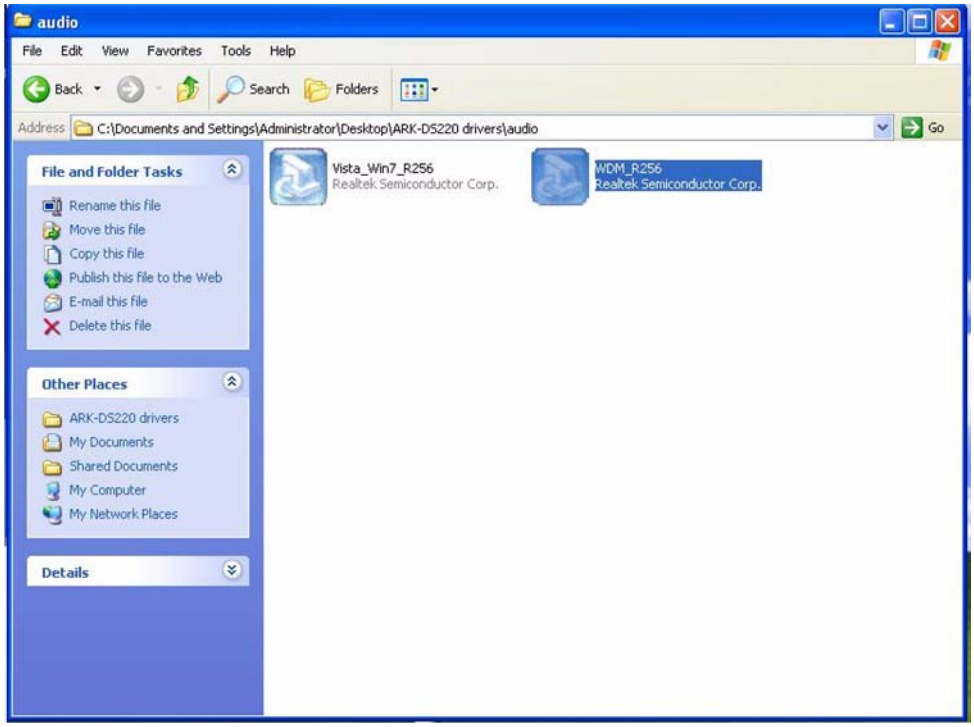
5. Click “Install” button to continue installation.



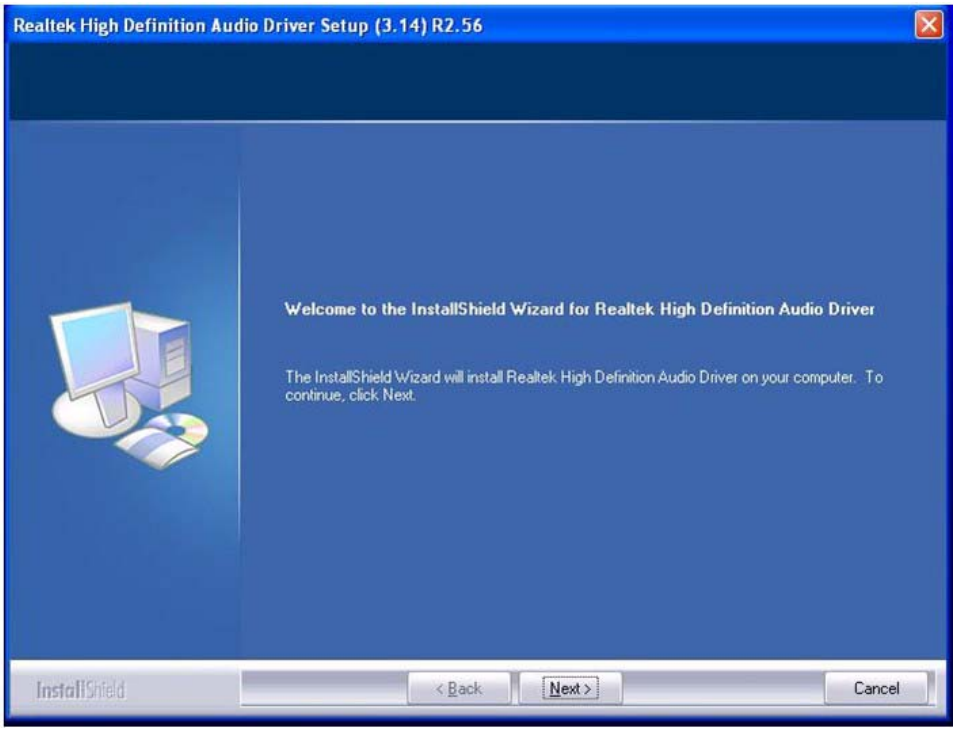
6. The network driver installation is now complete. Click the “Finish” button to exit InstallShield.

4.1.4 Audio Driver Installation

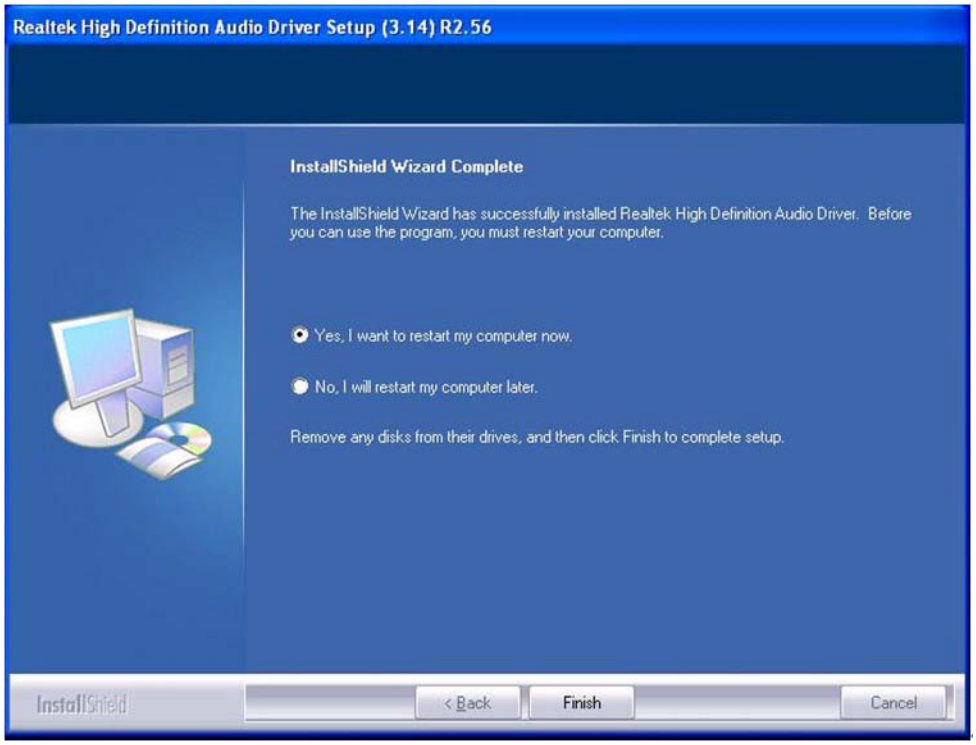
1. Change folder address to \Drivers\Audio. And double click to execute WDM_R256.exe.



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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