NEXCOM International Co., Ltd.

Multi-Media Solutions

Digital Signage Platform NDiS 164

User Manual

NEXCOM International Co., Ltd.
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www.nexcom.com

Contents

PREFACE

Copyright

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: http://www.nexcom.com. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2002/95/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a 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.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

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 stable surface during installation. Dropping it or letting it fall may cause damage.
7. Do not leave this equipment in either an unconditioned environment or in a above 40°C storage temperature as this may damage the equipment.
8. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
13. Never pour any liquid into an opening. This may cause fire or electrical shock.
14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
15. If one of the following situations arises, get the equipment checked by service personnel:

    a. The power cord or plug is damaged.

    b. Liquid has penetrated into the equipment.

    c. The equipment has been exposed to moisture.

    d. The equipment does not work well, or you cannot get it to work according to the user's manual.

    e. The equipment has been dropped and damaged.

    f. The equipment has obvious signs of breakage.
16. Do not place heavy objects on the equipment.
17. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
18. 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.
19. The computer is provided with CD drives that comply with the appropriate safety standards including IEC 60825.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.
3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning: Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution: Information to avoid damaging components or losing data.

Note: Provides additional information to complete a task easily.

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http://www.nexcom-jp.com

Package Contents

Before continuing, verify that the NDiS 164 package that you received is complete. Your package should have all the items listed in the following table.

Item	P/N	Name	Specification	Qty
1	60233ATA16X00	SATA CABLE	SATA FEMALE 7-PIN	1
2	60233PW102X00	SATA POWER CABLE	SATA 15-PIN TO 3022H-04 4-PIN PITCH 5.08mm, L: 80mm	1
3	50311F0119X00	I HEAD BOLTS SCREW LONG	I 3x12.5 AXISx 8.5mm SCREW x4mm	4
4	6029900037X00	DOW CORNING 340 Silicone Heat Sink Compound (3g)		1
5	7400060002X00	(N)POWER ADAPTER FSP:FSP060-1AD101C (N09001)	60W 12V/5A MINI DIN 4P	1
6	602DCD0258X00	(N)NDiS 164 CD DRIVER		1
7	5060100019X00	DAMPER INSIDE DIA. KITAGAWA:VB-1209-80BK	6mm/OUTSIDE DIA.12mm H:9mm TPS (BLACK)	4
8	50344C0056X00	COPPER POST 10x5xM3	WITH MALE/FEMALE (FEMALE)10mmx(MALE)5mmxM3	1
9	50344C0067X00	COPPER POST LONG FEI:16x5xM3mm(NI)	WITH MALE/FEMALE (FEMALE)16mmx(MALE)5mmxM3	1
10	50311F0100X00	ROUND HEAD SCREW W/SPRING+FLAT WASHER LONG FEI:P3x6L	P3x6 iso/SW6x0.5 NI	2
11	6023300227X00	SATA DOM POWER CABLE	MOX1.25 2P TO MOX1.25 2P L=50mm	1
12	5043330314X00	FOOT BRACKET	190x24x6mm	2
13	50311F0120X00	ROUND HEAD SCREW LONG	S/W PRING+FLAT WASHER P6# 32Tx1/4/SW7x0.8NI	4

Ordering Information

The following provides ordering information for NDiS 164.

- NDiS 164 (P/N: 10W00016400X0)
  - AMD Athlon™ 64 / 64 X2 family processor
  - AMD 780E/SB710 chipset

Chapter 1: Product Introduction

Overview

Front

Rear

Key Features

- Powerful Digital Signage Player with AMD Athlon™ 64 / 64 X2/PhenomII X4 processor
- Slim and Compact Design
- AMD 780E/SB710 solution
- 2 x HDMI
- 2 x Audio
- Dual GbE LAN
- 4 x USB
- 6 x Serial ports
- 1 x 2.5" SATA HDD / SATA DOM
- ATI Radeon HD 3200 GPU

Hardware Specifications

Main Board (NDiB 164)

Processor

- AMD AM2+ socket
- Supports AMD AM2 / Athlon™ 64 / 64 X2 series processor
- AMD embedded processor list (Longevity CPU)
  - Athlon™ 64 X2 4200+, 2.2GHz
  - Athlon™ 64 X2 3600+, 1.9GHz
  - Athlon™ 64 X2 3400e, 1.8GHz
  - Athlon™ 64 3100+, 2.0GHz
  - Athlon™ 64 3000+, 1.8GHz
  - Athlon™ 64 2600+, 1.6GHz

Chipset

- Northbridge: AMD 780E
- Southbridge: AMD SB710

Main Memory

- Two 240-pin DDR2 DIMM sockets
- Supports DDR2 800MHz SDRAM with unbuffered and non-ECC memory module up to 4GB
- The supported memory capacity will depend on the memory size allocated by the OS

Graphics

- Graphics chip
  - AMD 780E integrated with ATI Radeon HD3200 based core
- HDMI Interface
  AMD 780E integrated with ATI Radeon HD3200 supports:
  - HDMI A1: HDMI signal from NB 780E
  - HDMI A2: DVI signal from NB 780E
- Resolution
  - Wide screen resolution supports up to 1920x1080p

Network

- One Realtek 8111C-GR PCI Express Gigabit Ethernet controllers
  - One RJ45 connectors with LED
- Supports PXE LAN boot ROM for Ethernet boot up.
- Supports Wake on LAN

Storage

- 2 SATA ports
- 1 SATA 2.5 HDD
- 1 SATA DOM

Audio

- IDT 92HD206 8-channel HD AUDIO CODEC
- Supports 2 independent line-out jacks (two stack phone jacks)

Expansion Slots

- One Mini-PCIe slot - supports Wireless LAN module
- One Mini PCIe slot - supports TV tuner module

I/O Interfaces

- IrDA
  - Onboard IrDA pin header (Tx/Rx)
- Serial
  - Two COM ports support RS232
  - One 2x6 pin Terminal port for 4 RS232 (Tx/Rx)
- USB
  - Four USB 2.0 ports
  - Two USB ports with Type A double-stack each on Edge I/O
  - 2x5 pin-header x1 for USB x2. Supports u-DOC x1.
- Edge I/O
  - ATX Power-on button
  - Power-on LED (Green)
  - Storage LED (Yellow)
  - Reserved holes for Wifi antenna, TV tuner antenna
- Others
  - One onboard buzzer
  - Three 3-pin fan connectors (for CPU, System)
  - One 4-pin header SMBus 2.0 controller
  - One 2.5" HDD power DC output (Big-4P)

Power Supply

- Internal
  - +12V +/-5% DC input
  - 4-pin Mini-DIN power jack
  - ATX power mode
- External adapter
  - +12V DC output 60W

RTC Battery

- On chip RTC with battery backup
- RTC tolerance less than 2 sec (24 hours) under 25°C environment

BIOS

- AMI system BIOS
- Plug and Play supported
- Advanced Power Management and Advanced Configuration & Power Interface
- 8Mbit flash ROM

System Management

- Monitoring
  - Monitors 4 voltages, 3 temperatures and 3 fan speeds
  - 4 voltages (+3.3V, +5V, +12V, Vcore)
  - 3 temperatures (CPU and two external temperature sensors)
  - 2 fan speeds (CPU and system fans)
- Watchdog
  - Watchdog timeout is programmable by software from 1 second to 255 seconds and from 1 minute to 255 minutes
  - Tolerance: 15% under room temperature 25°C

NDiS 164 System

Physical Characteristics

- Dimensions (W x D x H)
  - 272mm x 195mm x 44mm (1U Height)
- Color
  - Black
- Mounting
  - Wall mount bracket
- Cooling system
  - Main chip's heat sink and 2 high speed system fans

External I/O

- Front I/O
  - One power-on LED (green)
  - One HDD LED (yellow)
- Rear I/O
  - ATX Power-on switch
  - Two HDMI connectors
  - Two stack phone-jacks for line-out; total of 2 independent line-out connectors
  - One RJ45 port with LEDs for 10/100/1000Mbps Ethernet
  - Two dual-stack USB connectors; total of 4 USB ports
  - One dual-stack DB9 connector, total of two RS-232 ports
  - One Mini-DIN 4-pin +12V DC-in jack
  - Reserved for optional antenna of WiFi
  - Reserved for optional antenna of TV

Storage

- One 2.5" SATA HDD bay

Environment

- Operating temperature: 0~40°C
- Storage temperature: -20°C~85°C
- Relative humidity (non-condensing): 90%

Vibration

Non-operating (X-Y-Z): Sine vibration (HDD/SSD)

- Sine wave vibration test - Acceleration: 1g rms
  - Frequency: 5 – 500 Hz
  - Test axis: X,Y,Z axis
  - Test time: 10 minutes per axis
  - Total test time: 90 minutes

Operating (X-Y-Z): Random vibration (SSD)

- Random vibration test (operating) - Acceleration: 2g rms
  - Frequency: 5 – 500 Hz
  - Test axis: X,Y,Z axis
  - Test time: 1 hour per axis
  - Total test time: 3 hours

Operating (X-Y-Z): Random vibration (HDD)

- Random vibration test (operating) - Acceleration: 0.3 g rms
  - Frequency: 5 – 500 Hz
  - Test axis: X,Y,Z axis
  - Test time: 1 hour per axis
  - Total test time: 3 hours

Shock

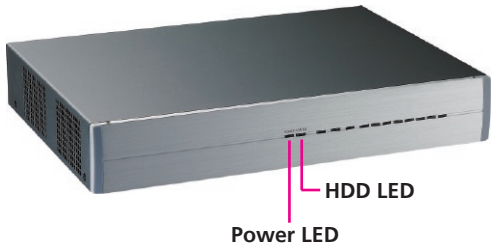
- 30g peak acceleration (16 msec. duration) - HDD

Certificate

- CE
- FCC Class A

Getting to Know NDiS 164

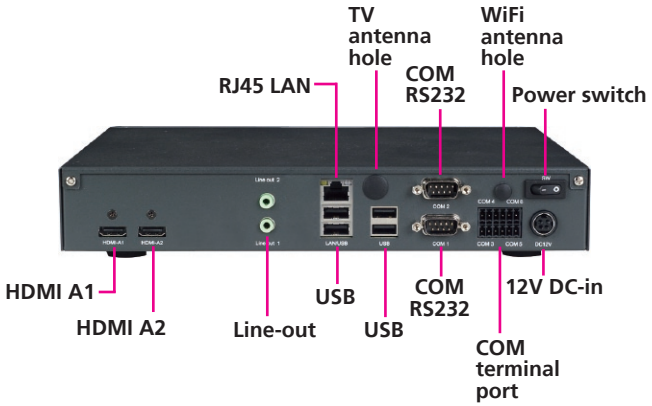
Front Panel



Power LED
Indicates the power status of the system.

HDD LED
Indicates the status of the hard drive.

Rear Panel



RJ45 LAN
Used to connect the system to a local area network.

TV Antenna Hole
Used to install the TV tuner antenna.

COM
The COM port supports RS232 compatible serial devices.

Wifi Antenna Hole
Used to install the Wifi antenna.

Power Switch
Press to power-on or power-off the system.

HDMI A1
Supports HDMI signal from NB 780E. Used to connect digital audio/video HD display.

HDMI A2
Supports DVI signal from NB 780E. Used to connect digital audio/video HD display.

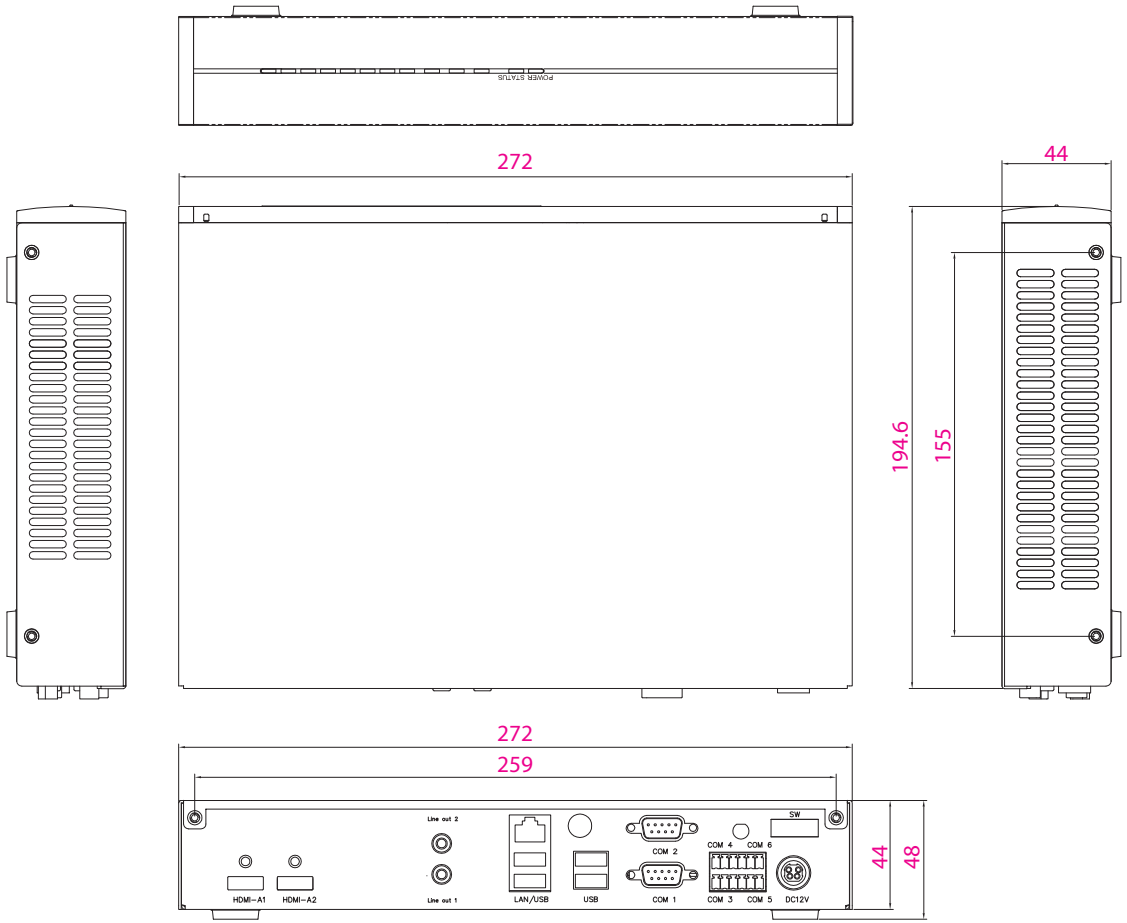
Line-out
Used to connect a speaker.

USB
Used to connect USB 2.0/1.1 devices.

COM Terminal Port
Supports 4x RS232 compatible serial devices.

+12V DC Input
Used to plug a DC power cord.

Mechanical Dimensions



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers on the motherboard. Note that the following procedures are generic for all NDiS 164.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers Screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

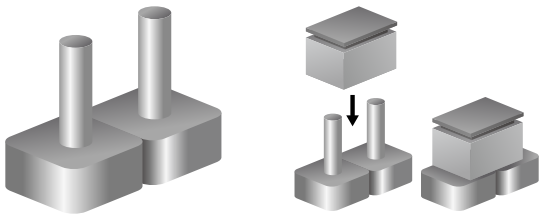
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

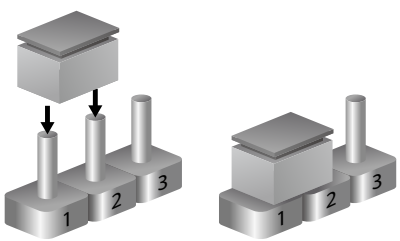
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **short**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **open**.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



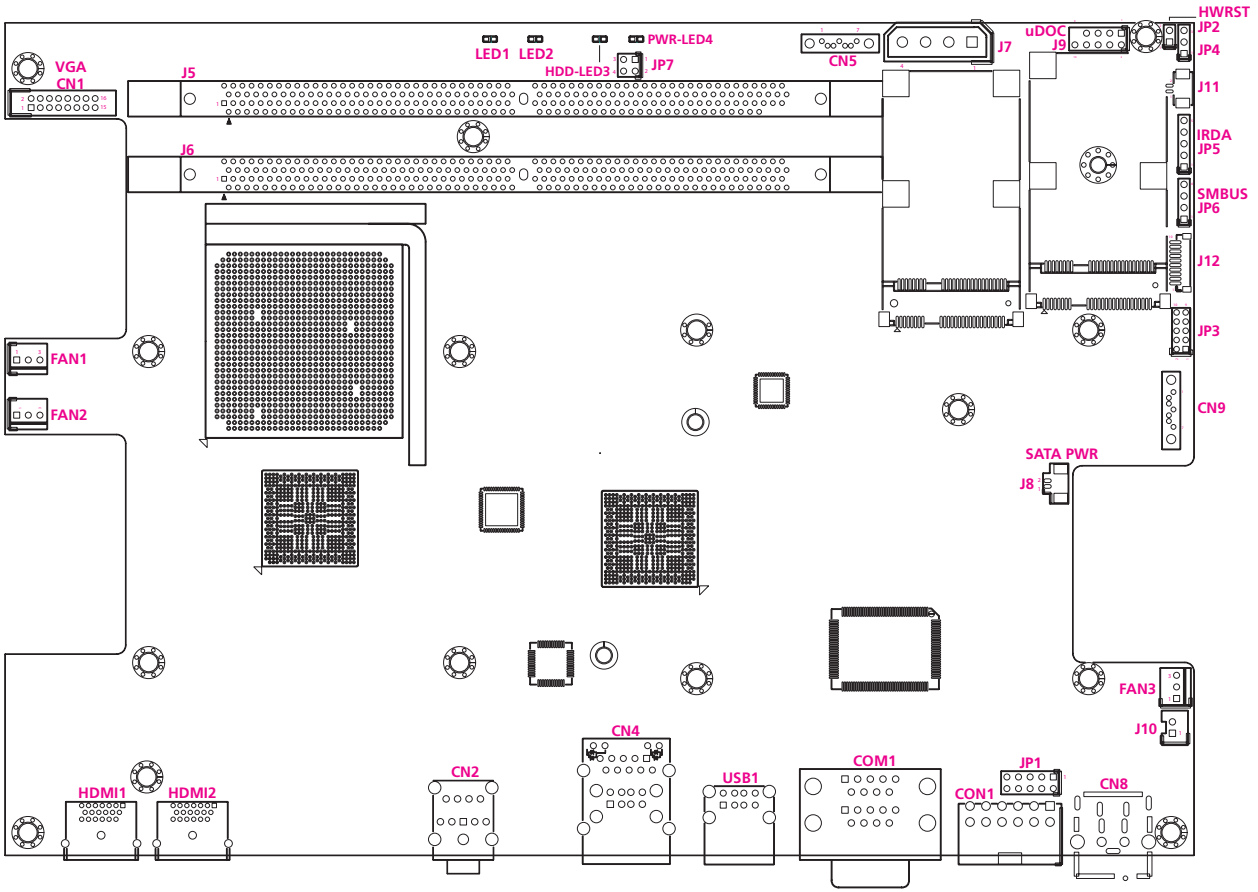
Three-Pin Jumpers: Pins 1 and 2 Are Short



Locations of the Jumpers and Connectors

NDiB 164

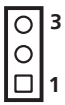
The figure on the right is the NDiB 164 motherboard which is the motherboard used in the NDiS 164 system. It shows the locations of the jumpers and connectors.



Jumpers

Clear CMOS Select

Connector size: 1x3, 2.54mm
Connector location: JP4



Pin No.	Status	Function Description
1-2	Short (default)	VBAT IN
2-3	Short	Clear CMOS

Hardware Reset

Connector size: 1x2, 2.5mm
Connector location: JP2

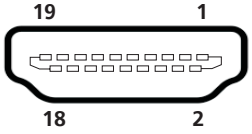
Pin No.	Status	Function Description
1-2	Open (default)	Normal
1-2	Short	Reset#

Connector Pin Definitions

External I/O Interface

HDMI Type A Connector

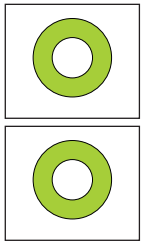
Connector size: 19-pin
Connector location: HDMI 1-4 J1, J2



Pin	Definition	Pin	Definition
1	HDMI D2P	2	HDMI_GND
3	HDMI D2N	4	HDMI D1P
5	HDMI_GND	6	HDMI D1N
7	HDMI D0P	8	HDMI_GND
9	HDMI D0N	10	HDMI LKP
11	HDMI_GND	12	HDMI LKN
13	NC	14	NC
15	HDMI_CTL_CLK	16	HDMI_CTL_SDA
17	HDMI_GND	18	+5V
19	HDMI_HDP		

Line-out Jacks

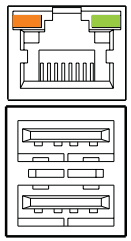
Connector size: 5-pin jack, 25.9x12.6x17.0mm
Connector location: CN2



Pin	Definition	Pin	Definition
1	GND		
2	LOUT_L1	22	LOUT_L2
3	NC	23	NC
4	NC	24	NC
5	LOUT_R1	25	LOUT_R2

Dual USB and LAN Ports

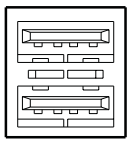
Connector size: RJ-45 and Dual USB
Connector location: CN4



Pin	Definition	Pin	Definition
1	USB0_VCC	2	USB_0#
3	USB_0	4	U0_GND
5	USB1_VCC	6	USB_1#
7	USB_1	8	U1_GND
9	LAN_VCC	10	LAN_MDI0P
11	LAN_MDI0N	12	LAN_MDI1P
13	LAN_MDI1N	14	LAN_MDI2P
15	LAN_MDI2N	16	LAN_MDI3P
17	LAN_MDI3N	18	GND
19	LAN_LED1+	20	LAN_ACTLED#
21	LAN_LED2+	22	LAN_LED2-

Dual USB Ports

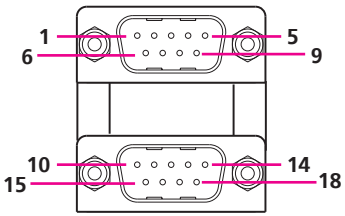
Connector size: Dual USB
Connector location: USB1



Pin	Definition	Pin	Definition
1	+5V	5	+5V
2	USB0_N	6	USB1_N
3	USB0_P	7	USB1_P
4	GND	8	GND

Serial (RS232) Ports

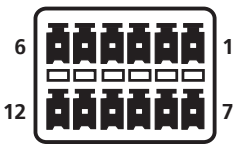
Connector size: DB-9 port
Connector location: COM1



Pin	Definition	Pin	Definition
1	SP_DCD_A	2	SP_RXD_A
3	SP_TXD_A	4	SP_DTR_A
5	GND	6	SP_DSR_A
7	SP_RTS_A	8	SP_CTS_A
9	SP_RI_A	10	SP_DCD_B
11	SP_RXD_B	12	SP_TXD_B
13	SP_DTR_B	14	GND
15	SP_DSR_B	16	SP_RTS_B
17	SP_CTS_B	18	SP_RI_B

COM RX/TX Connector

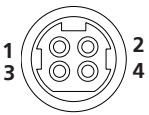
Connector size: 2x6 pin
Connector location: CON1



Pin	Definition	Pin	Definition
1	TXD-6	2	RXD-6
3	GND	4	TXD-4
5	RXD-4	6	GND
7	TXD-5	8	RXD-5
9	GND	10	TXD-3
11	TXD-3	12	GND

DC Power Input

Connector size: 4-pin power jack
Connector location: CN8



Pin	Definition
1	+12V
2	+12V
3	GND
4	GND

Power Switch Button

ATX switch, unlock

Internal Connectors

SATA Power Connector

Connector size: 1x4 pin
Connector location: J7

Pin	Definition
1	+V12S
2	GND
3	GND
4	+V5S

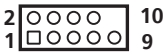
SATA DOM Power Connector

Connector size: 2-pin, JST 2.54 mm pitch
Connector location: J8

Pin	Definition
1	GND
2	+5V

uDOC Connector

Connector size: 10-pin header, 2.0 mm pitch
Connector location: J9



Pin	Definition	Pin	Definition
1	VCC5	2	VCC5
3	USB4#	4	USB5#
5	USB4	6	USB5
7	GND	8	GND
9	NC	10	

IrDA Pin Header

Connector size: 1x5 (2.0mm)
Connector location: JP5

Pin	Definition
1	+5V_ATX
2	NC
3	IR_RX
4	GND
5	IR_TX

SMBus Connector

Connector size: 1x4 (2.54mm)
Connector location: JP6

Pin	Definition
1	+3.3V
2	SMB0_CLK
3	SMB0_DAT
4	GND

SATA Ports

Connector size: Standard Serial ATAII 7P (1.27mm)
Connector location: CN5, CN9

Pin	Definition
1	GND
2	SATA_TXP0 -
3	SATA_TXN0
4	GND
5	SATA_RXN0
6	SATA_RXP0
7	GND

Fan Connectors

Connector size: 3-pin Wafer, 5.08mm
Connector location: FAN1, FAN2, FAN3

Pin	Definition
1	GND
2	+12_ATX
3	FAN SPEED

SATA Status LED

Connector location: LED3

LED Color	Status
Dark	NO DATA TRANSFER ON SATA
Yellow	SATA ACTIVE

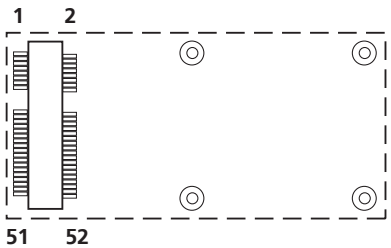
Power Status LED

Connector location: LED4

LED Color	Status
Dark	POWER OFF
Green	+5V POWER ON OK

Mini-PCIe Slots

Connector location: CN6, CN7



Pin	Definition	Pin	Definition
1	WAKE0#	2	+V3.3_MINI
3	NC	4	GND
5	NC	6	+1.5S_MINI
7	PCIE_MINI_CLKREQ#1	8	NC
9	GND	10	NC
11	GPP_CLK1_N	12	NC
13	GPP_CLK1_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINICARD1_DIS#
21	GND	22	PCIE_RST#
23	PCIE_RX1-	24	+V3.3A_MINI
25	PCIE_RX1+	26	GND
27	GND	28	+V1.5S_MINI
29	GND	30	SMB1_CLK
31	PCIE_TX1-	32	SMB1_DAT
33	PCIE_TX1+	34	GND
35	GND	36	USB_6N_L
37	GND	38	USB_6P_L
39	+V3.3A_MINI	40	GND
41	+V3.3A_MINI	42	NC
43	GND	44	LED_WLAN_N
45	NC	46	NC
47	NC	48	+V1.5S_MINI
49	NC	50	GND
51	NC	52	+V3.3A_MINI

Chapter 3: System Setup

Removing the Chassis Cover

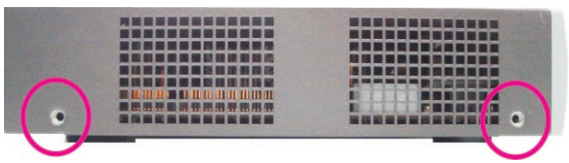
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power source to prevent electric shock or system damage.

1. The six screws on the cover are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

   Remove the screws that are on one side of the chassis.

Left View

2. Remove the screws that are on the other side of the chassis.

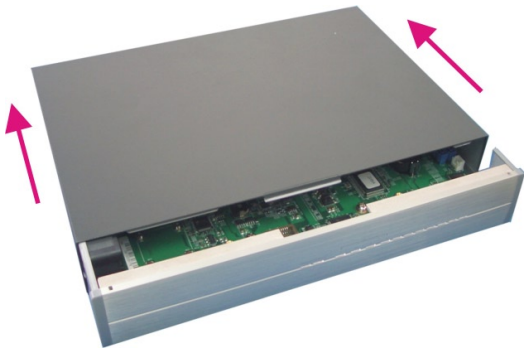


Right View

3. Remove the screws that are at the rear of the chassis.

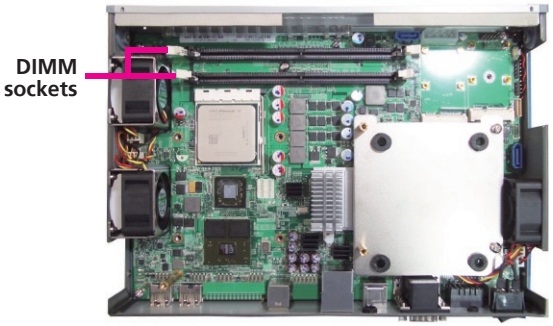
Rear View

4. Slide the cover backward then remove it from the chassis.

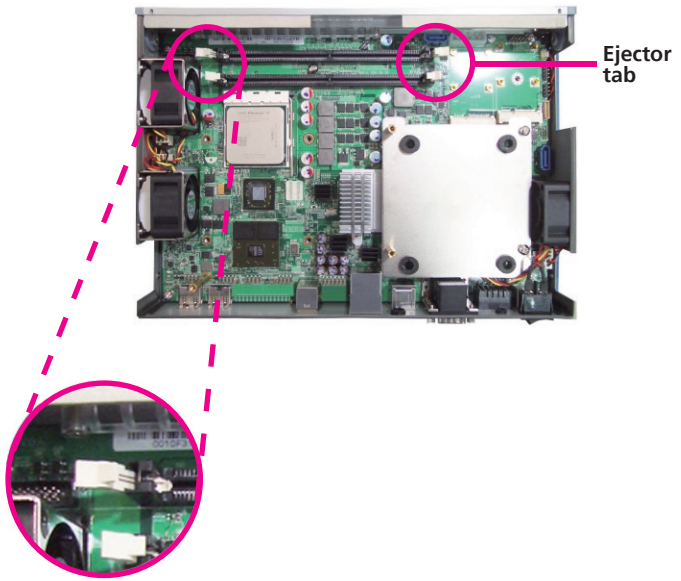


Installing a DIMM

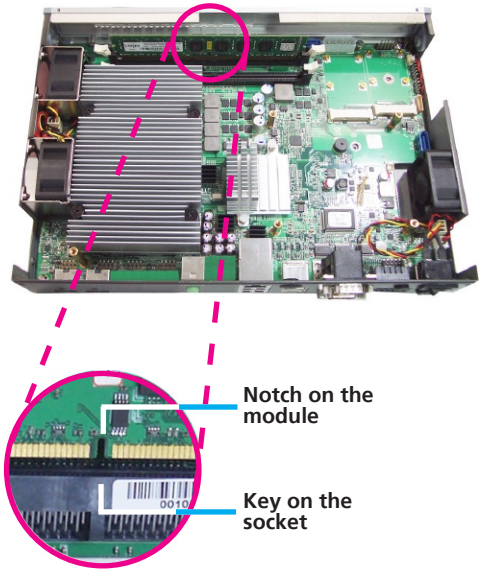
1. Locate for the DIMM sockets on the board.



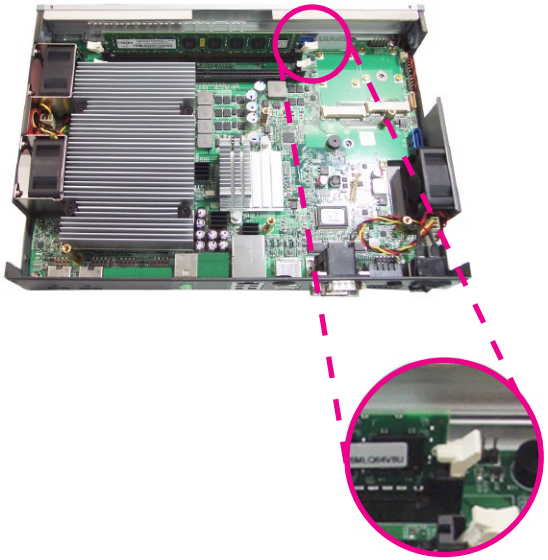
2. Push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.



3. Note how the module is keyed to the socket. Grasping the module by its edges, align the module with the socket so that the "notch" on the module is aligned with the "key" on the socket. The key ensures the module can be plugged into the socket in only one direction.

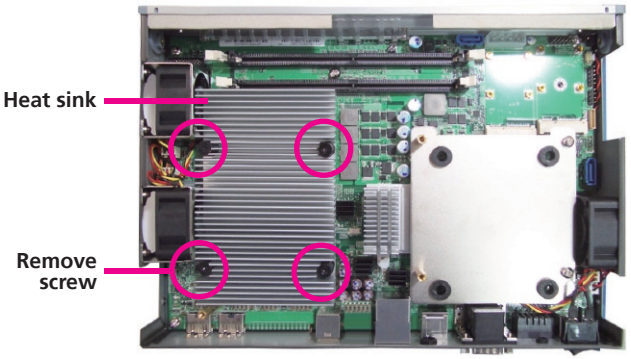


4. Seat the module vertically, pressing it down firmly until it is completely seated in the socket. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



Installing the CPU

1. Loosen the screws that secure the heat sink to the chassis.

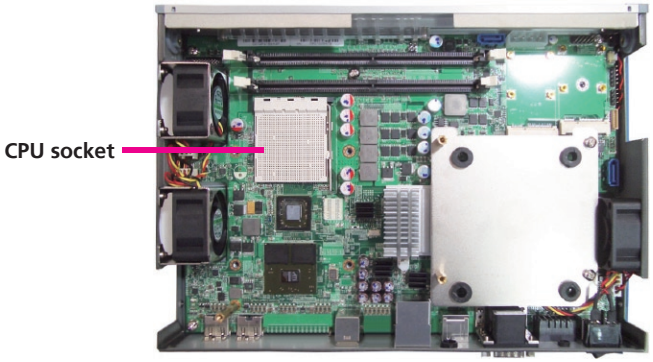


- Make sure all power cables are unplugged before you install the CPU.
- The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure.

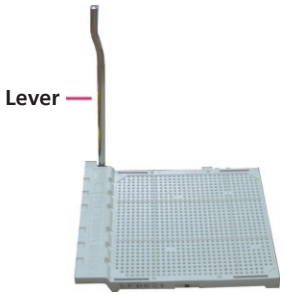
2. Now remove the heat sink to access the CPU socket.

Bottom Side of the Heat Sink

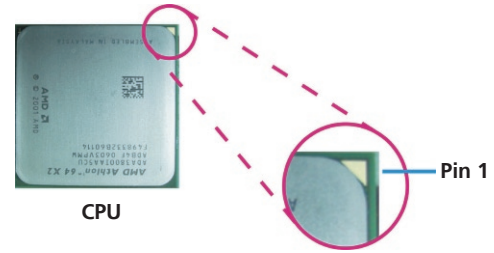
3. The CPU socket is readily accessible after you have removed the heat sink.

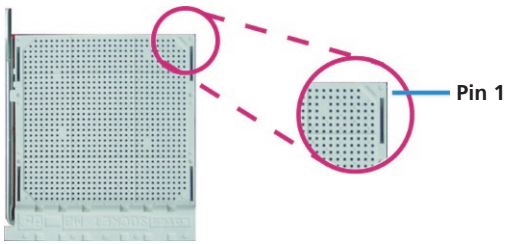


4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to this angle otherwise the CPU will not fit in properly.



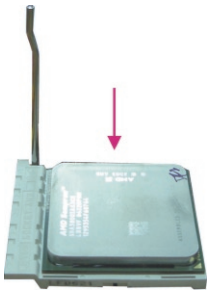
5. Position the CPU above the socket. The gold mark on the CPU must align with pin 1 of the CPU socket.





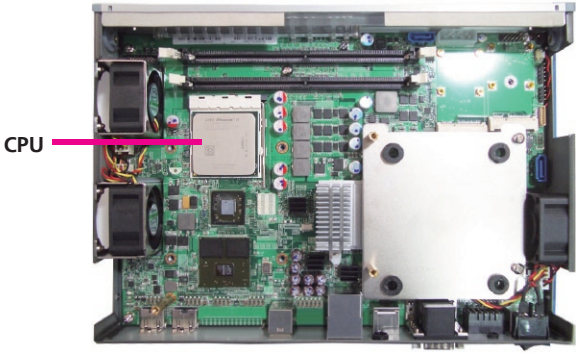
Handle the CPU by its edges and avoid touching the pins.

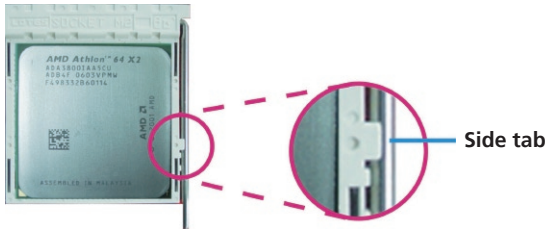
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.



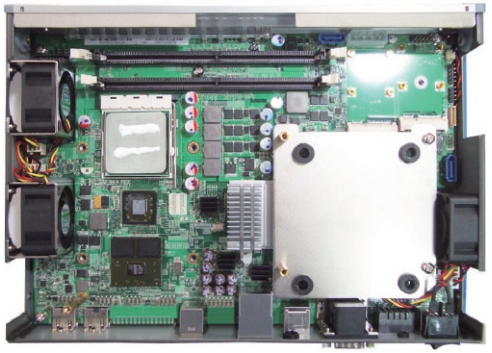
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.

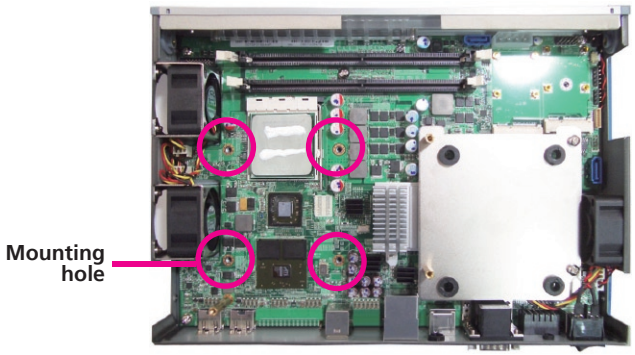




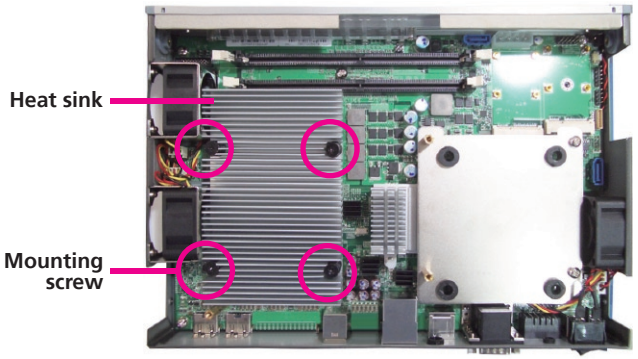
8. Apply thermal paste on top of the CPU. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.



9. The mounting holes on both sides of the CPU socket are used to secure the heat sink to the board.

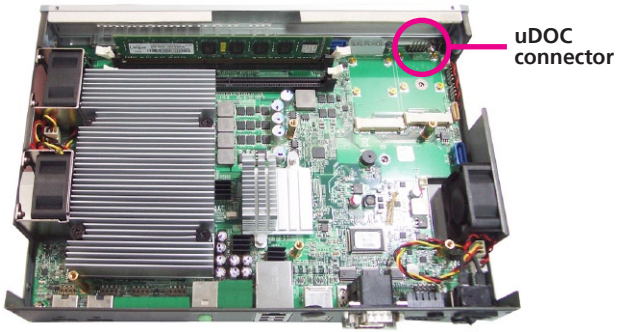


10. Align the mounting screws of the heat sink with the mounting holes on the board then tighten the screws to secure the heat sink in place.

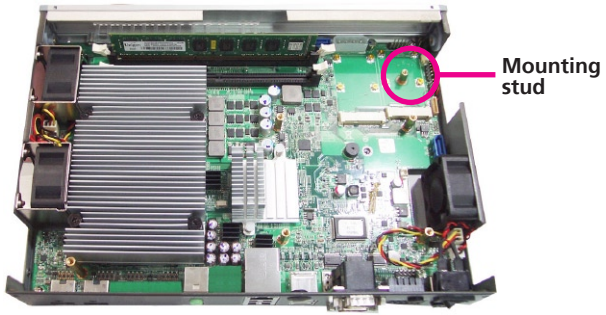


Installing the uDOC Module

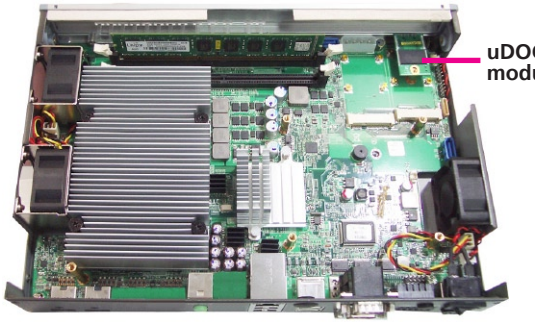
1. Locate for the uDOC connector on the board.

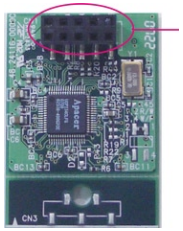


2. Install the provided mounting stud as shown in the illustration below.



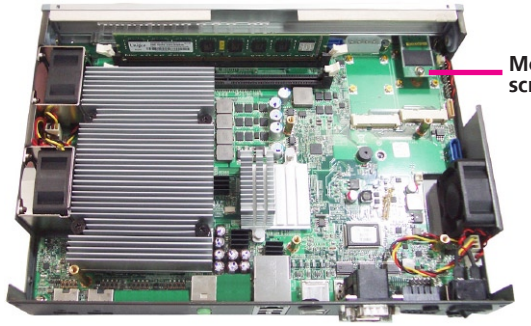
3. Align the connector located on the solder side of the uDOC module to the uDOC connector that is on the board then press it down firmly.





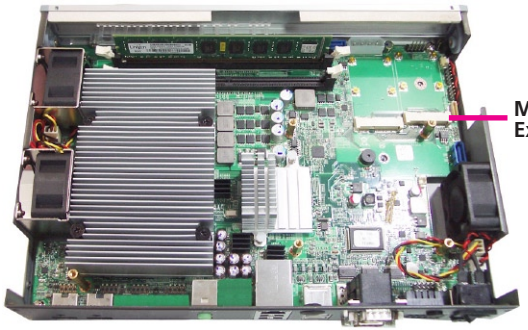
uDOC module
(solder side)

4. Secure the uDOC module with the provided mounting screw.

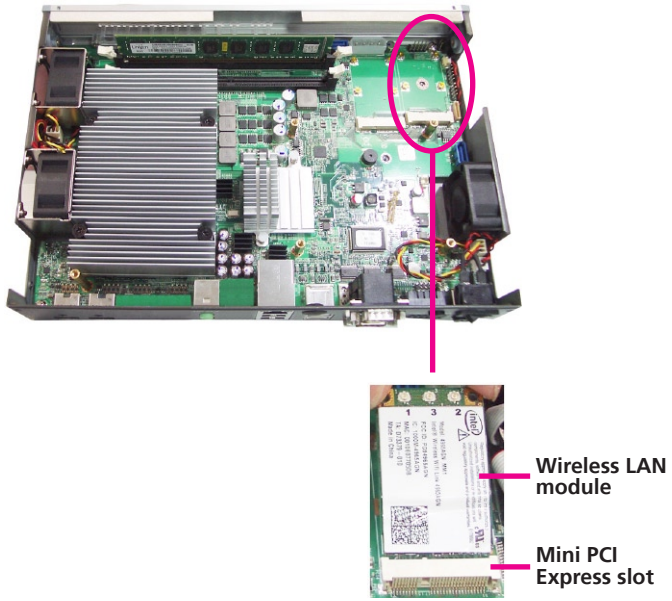


Installing a Wireless LAN Module

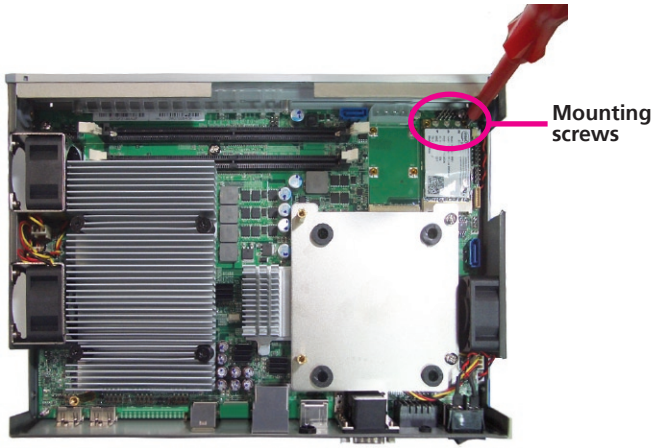
1. Locate for the Mini PCI Express slot on the board.



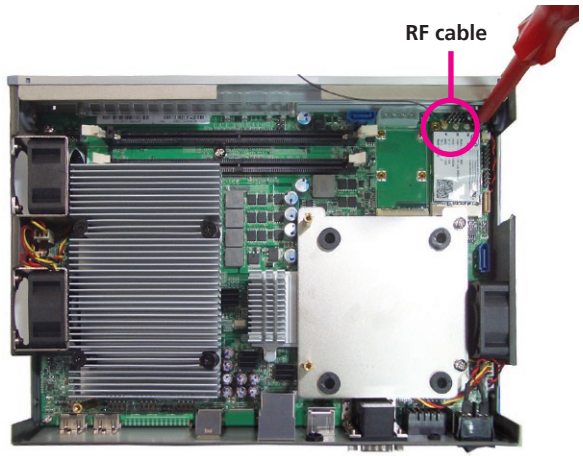
2. Insert the wireless LAN module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

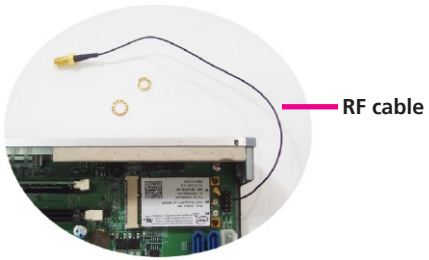


3. Push the module down then secure it with mounting screws.

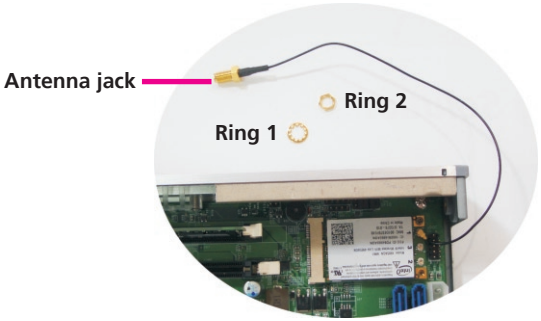


4. Attach one end of the RF cable onto the module.



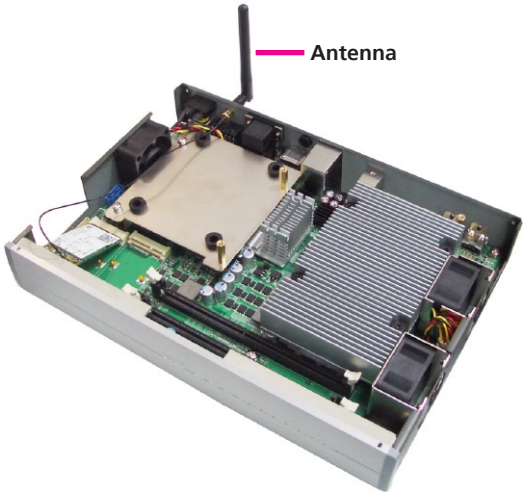


5. Insert the 2 rings (ring 1 then ring 2) onto the WIFI antenna jack end of the cable.



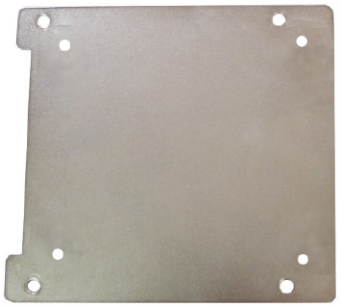
6. Remove the WIFI antenna hole cover that is located at the rear panel of the chassis.

7. Mount the WIFI antenna jack to the antenna hole then connect an external antenna to the WiFi antenna jack.



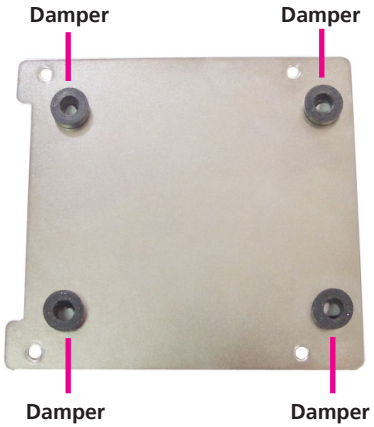
Installing a SATA Hard Drive

1. The drive bay included in the package is used to hold a SATA hard drive.

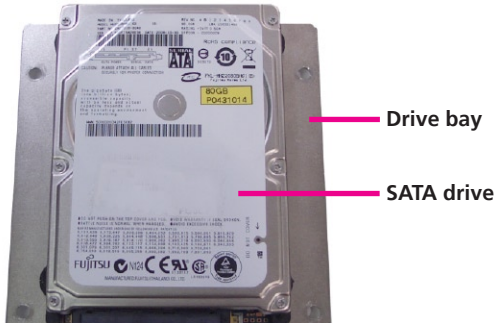


Drive Bay

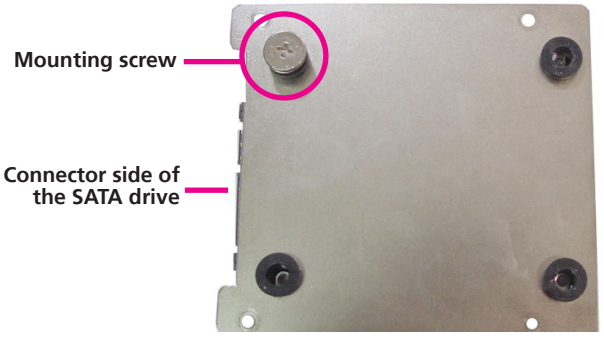
2. Insert the four dampers into the dampter mounting holes.



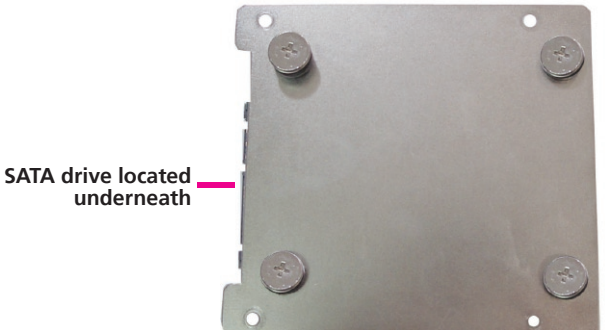
3. Place the SATA drive on the drive bay.



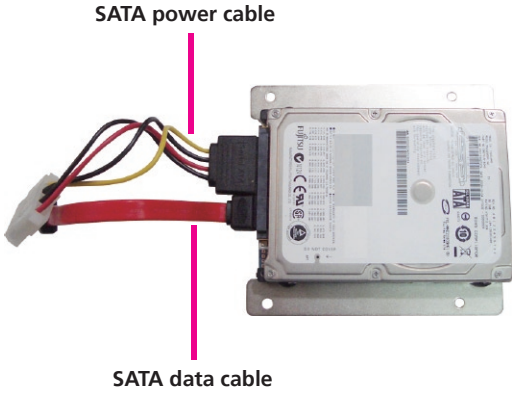
4. Turn to the other side of the bay then use the provided mounting screws to secure the SATA drive to the drive bay.



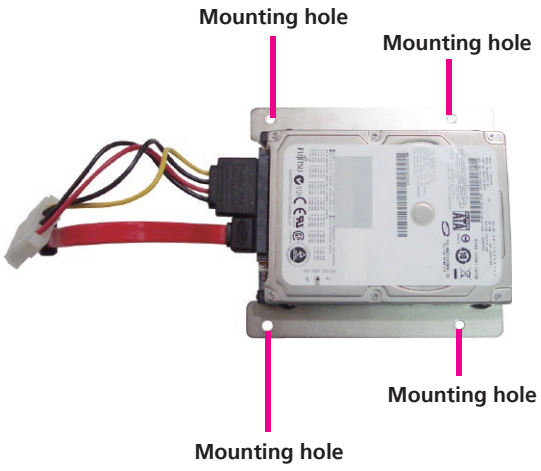
5. The photo below shows the screws mounted on the drive bay.



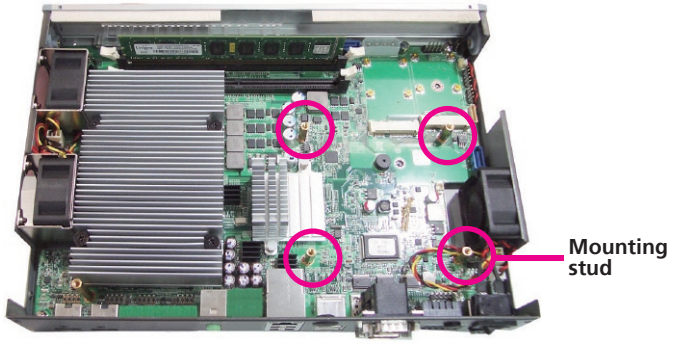
6. Connect the SATA data cable and SATA power cable to the SATA drive.



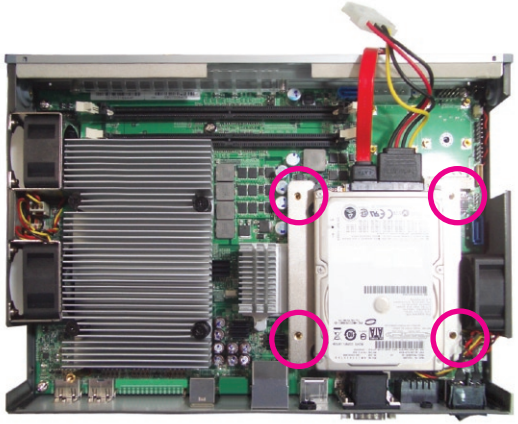
7. The mounting holes on the drive bay are used to secure the bay to the chassis.



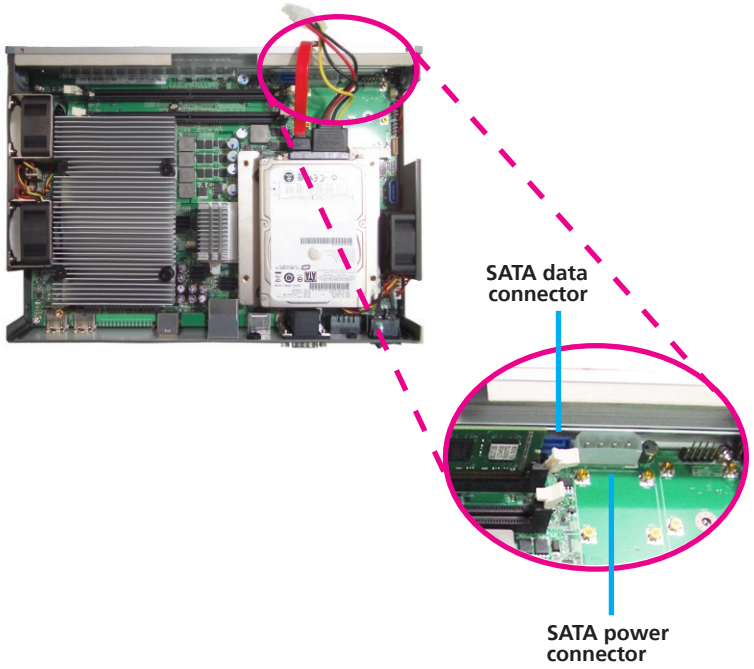
8. Locate for the mounting studs on the board.



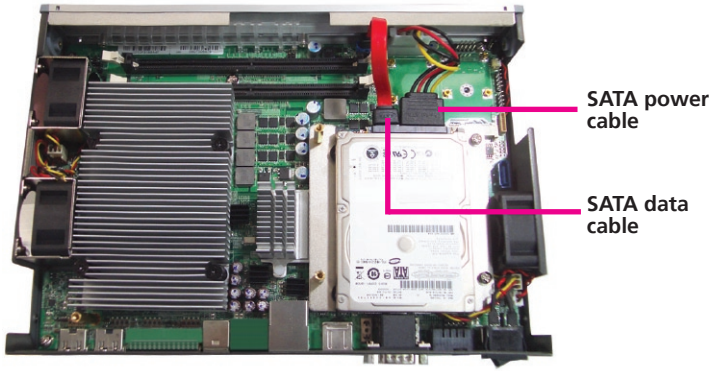
9. Align the mounting holes of the drive bay with the mounting studs on the board then use the provided mounting screws to secure the drive bay in place.



10. Locate for the SATA data connector and the SATA power connector on the board.

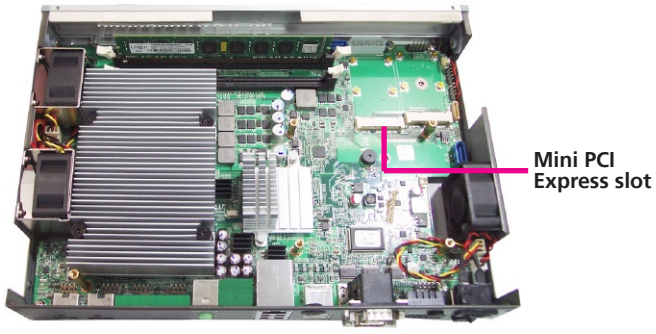


11. Connect the SATA data cable and SATA power cable to the connectors.



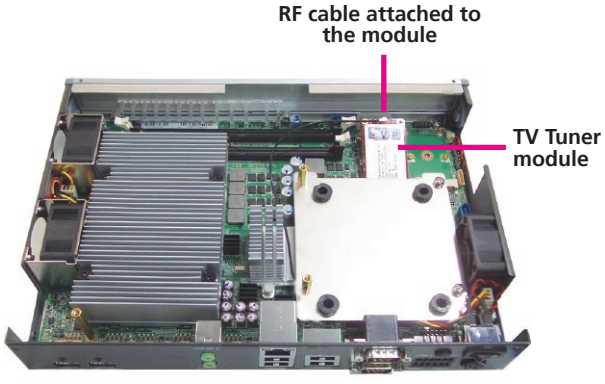
Installing a TV Tuner Module

1. Locate for the Mini PCI Express slot on the board.

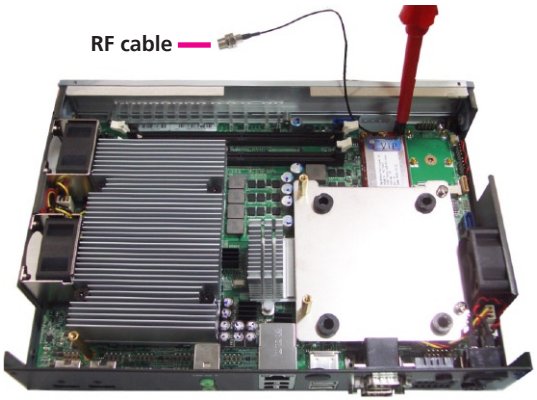


2. Attach one end of the RF cable onto the module.

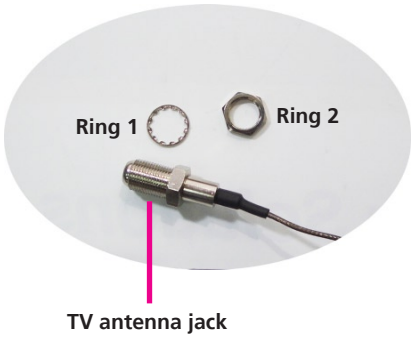
   Insert the TV Tuner module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



3. Push the module down then secure it with mounting screws.

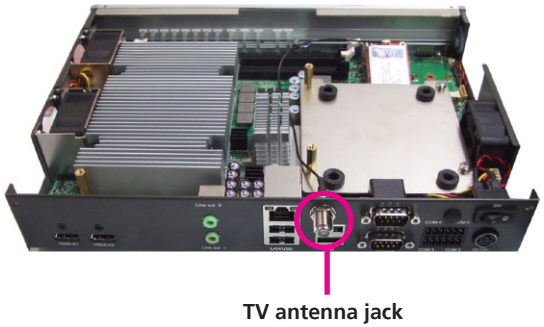


4. Insert the 2 rings (ring 1 then ring 2) into the TV antenna jack.

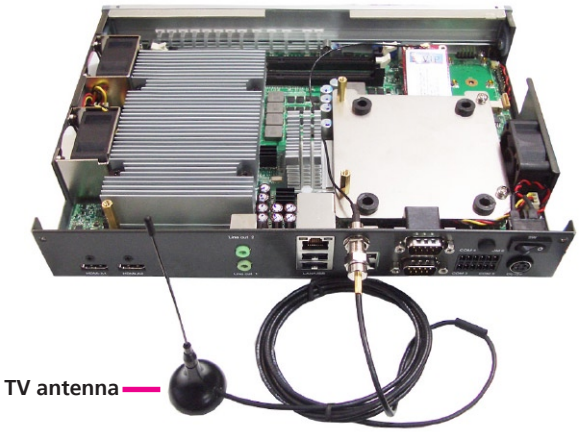


5. Remove the TV antenna hole cover that is located at the rear panel of the chassis.

6. Mount the TV antenna jack to the TV antenna hole.



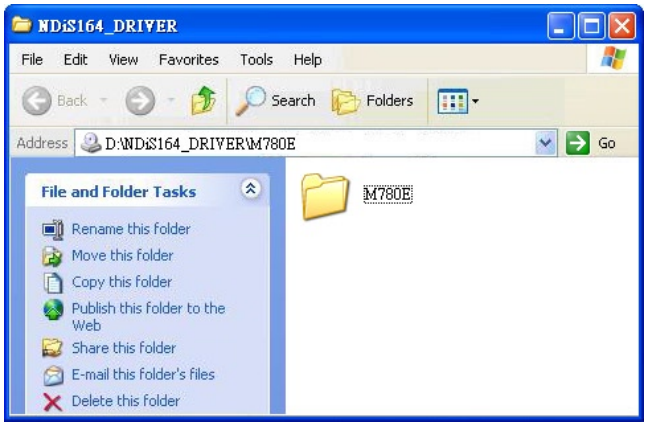
7. Connect an external TV antenna to the TV antenna jack.



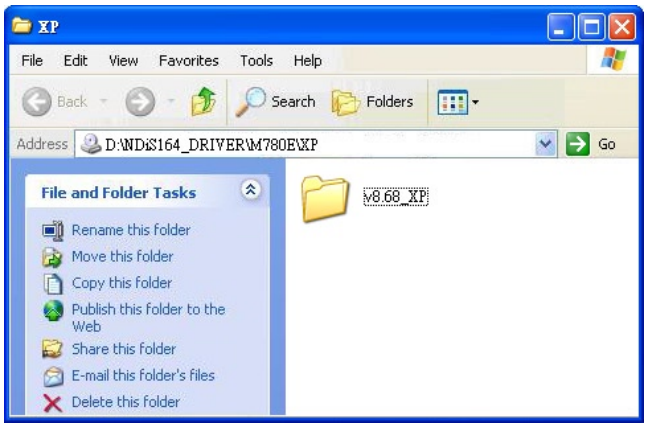
Appendix A: Video Driver Installation and Settings

Installing the Video Driver

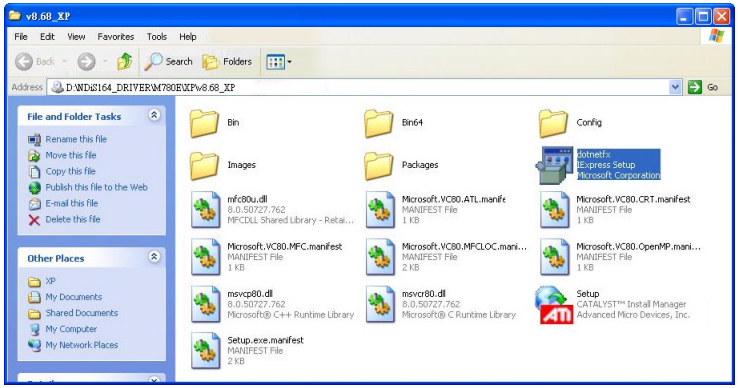
1. Insert the provided CD into a CD-ROM drive.
2. Open the M780E folder.



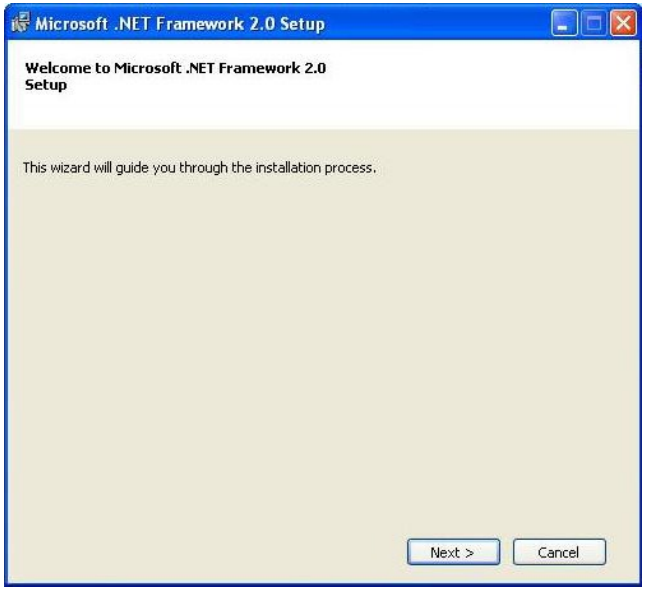
3. Open the required system folder, for instance XP.



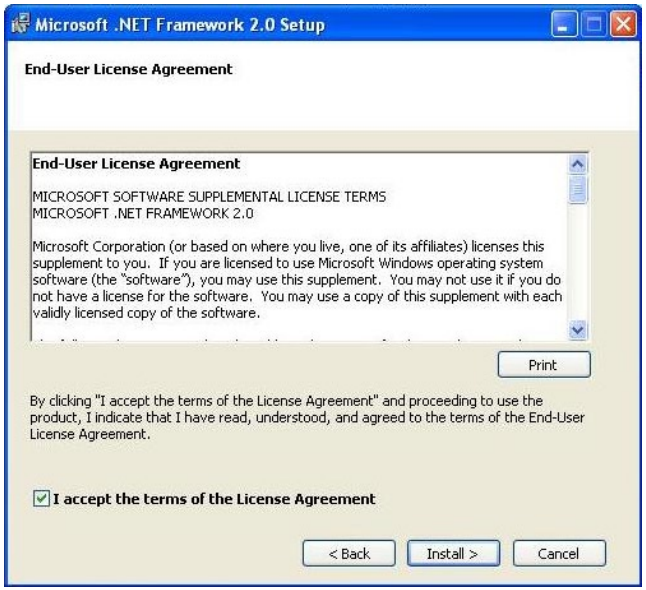
4. Run Framework 2.0 dotnetfx setup.



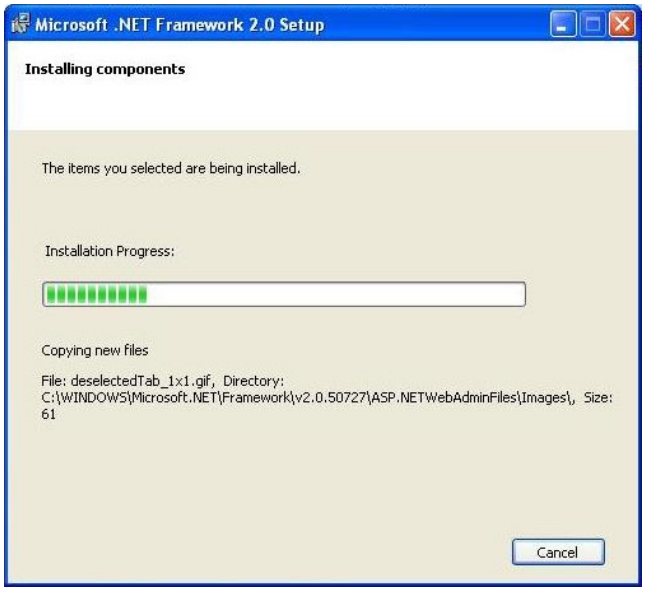
5. Click “Next” install .NET Framework 2.0.



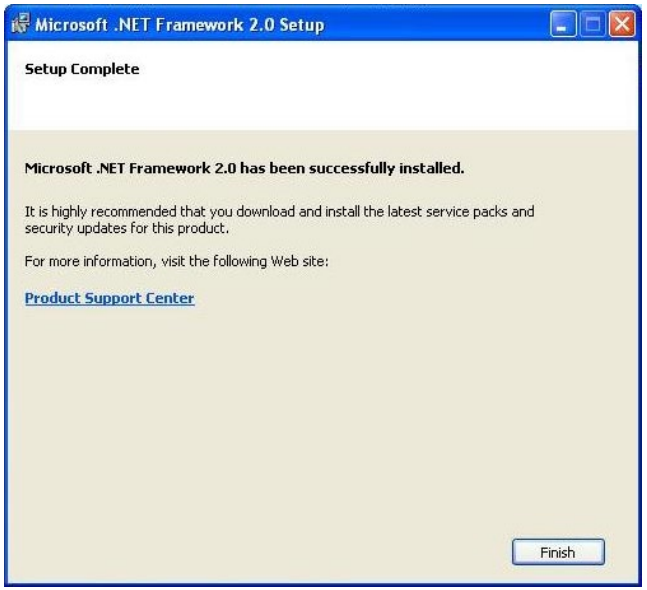
6. Read the license agreement then click accept Install.



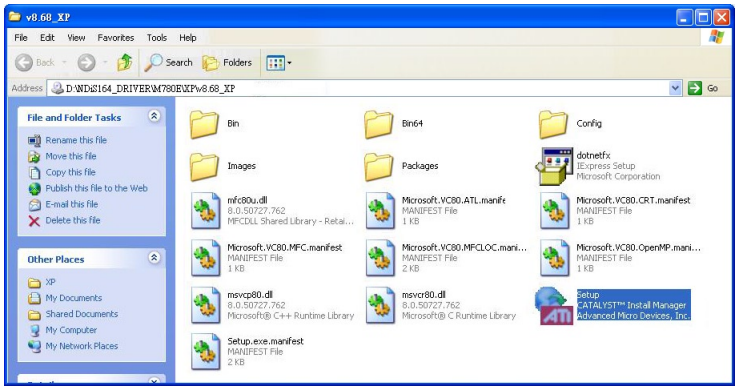
7. Run Setup.



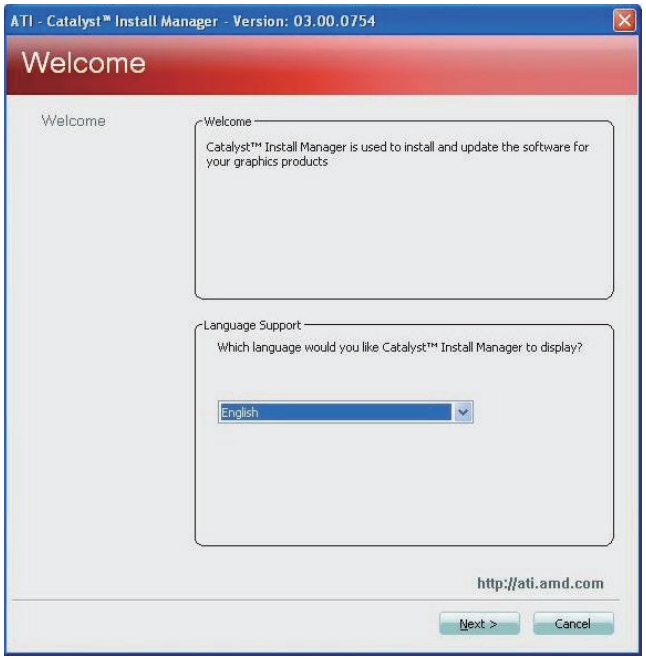
8. Setup complete then click Finish.



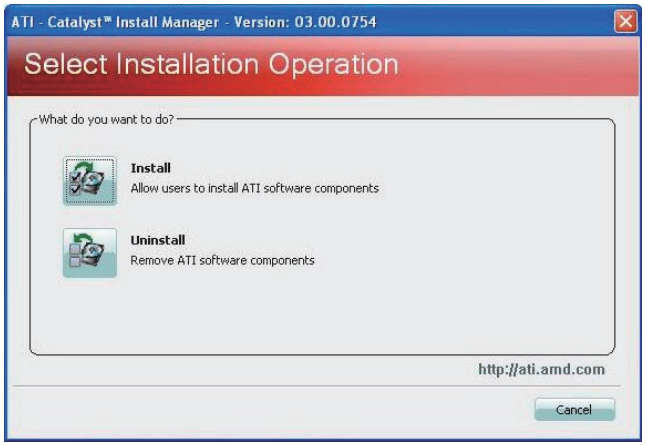
9. Run Setup.



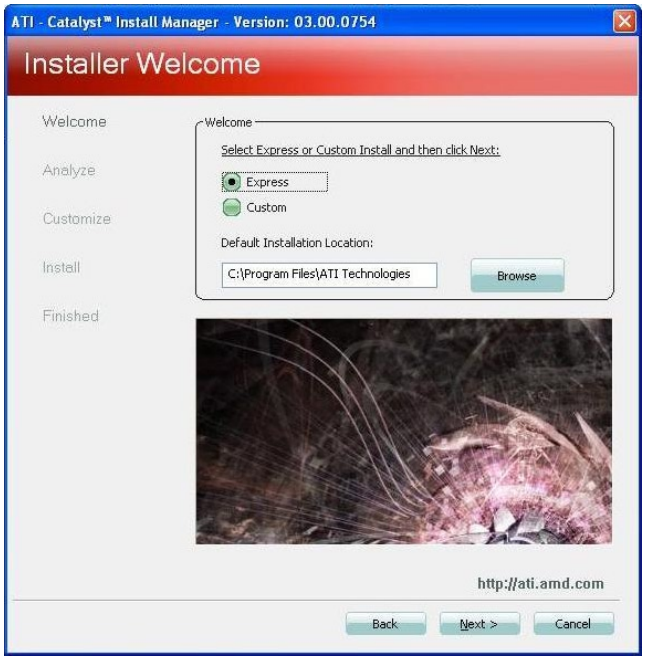
10. Select language support then click Next.



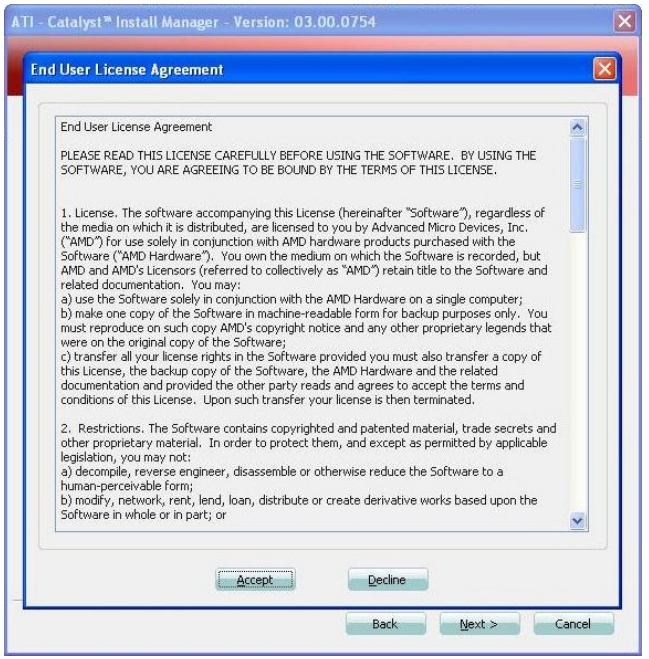
11. Select Express then click Next.



12. Click "Express" then click Next.



13. Read the license agreement then click Next.

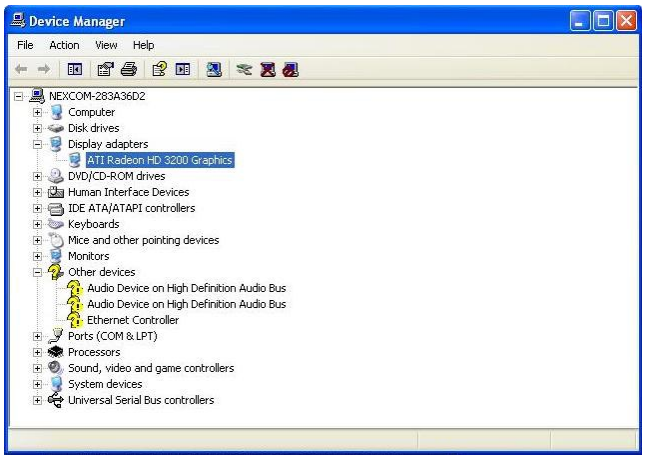


14. Click "Yes", system reboot.

15. After restarting the system, you can view the status of the VGA driver in the Device Manager list.

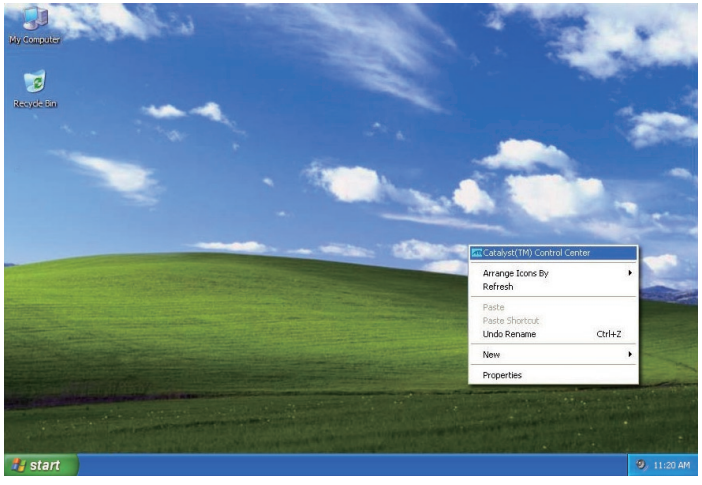
    To open Device Manager, click Start, and then click Control Panel. Double-click System. On the Hardware tab, click Device Manager.

    The list below shows the VGA driver successfully installed in the system.

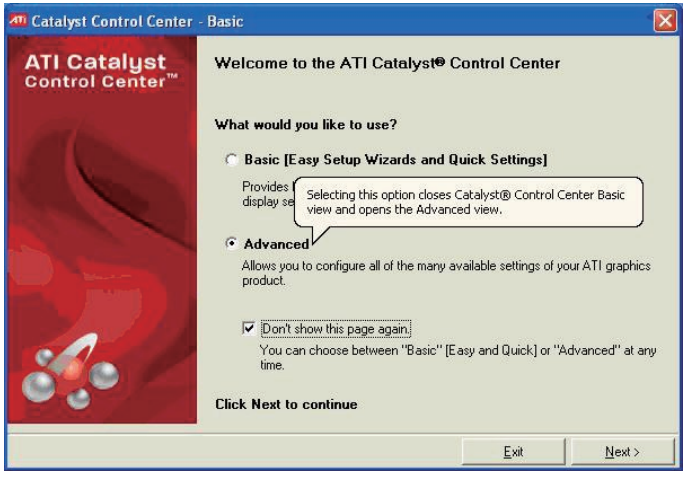


16. You will notice the ATI icon already added in the Windows notification area. Right-click this icon then select Catalyst(TM) Control Center.

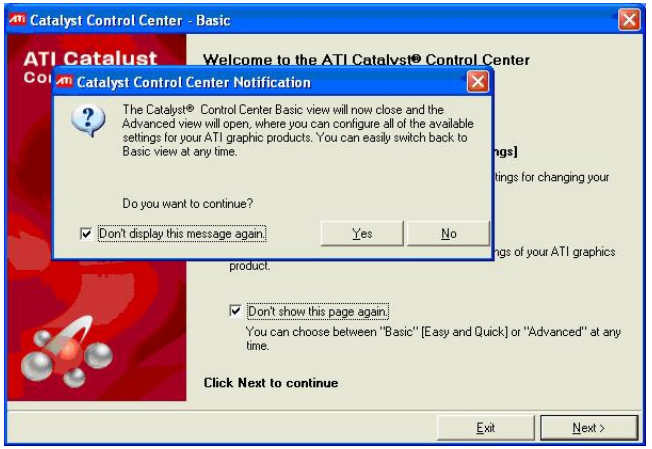
    You can also right-click anywhere on your desktop then select Catalyst(TM) Control Center.



17. Select Advanced then click Next. Selecting Advanced allows you to configure all the available settings.



18. Click Yes to switch from the Catalyst Control Center Basic view to the Advanced view.



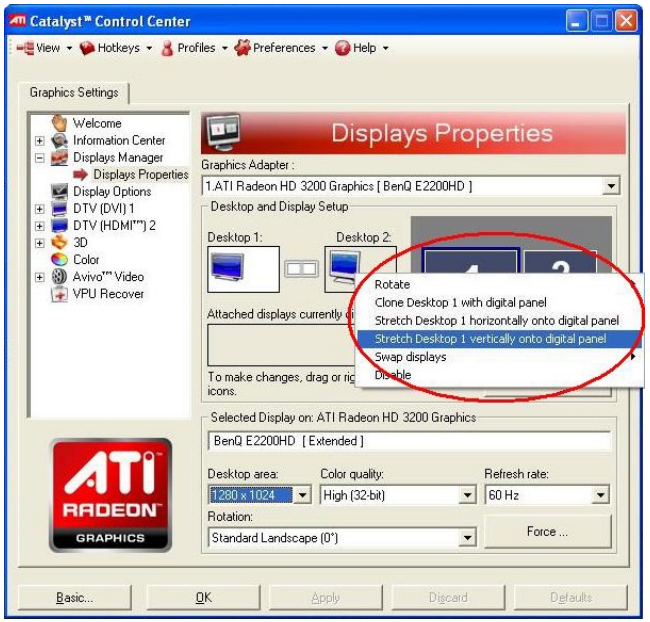
19. Select ATI Radeon HD 3200.

20. Select the display resolution.

21. Display Manager has reconfigured the settings for Display 2. Click Yes to continue.

22. Display 2 is now enabled and is identified as Display 1.

23. Select the display mode.



24. If you have selected the "Extend Main onto digital panel" mode, your display will appear as shown below.

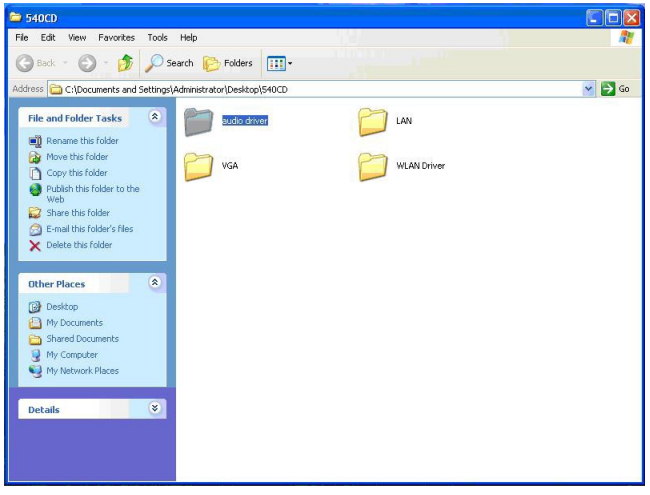
25. If you have selected the "Stretch Main horizontally onto display panel" mode, your display will appear as shown below.

26. If you selected the "Stretch Main vertically onto display panel" mode, your display will appear as shown below.

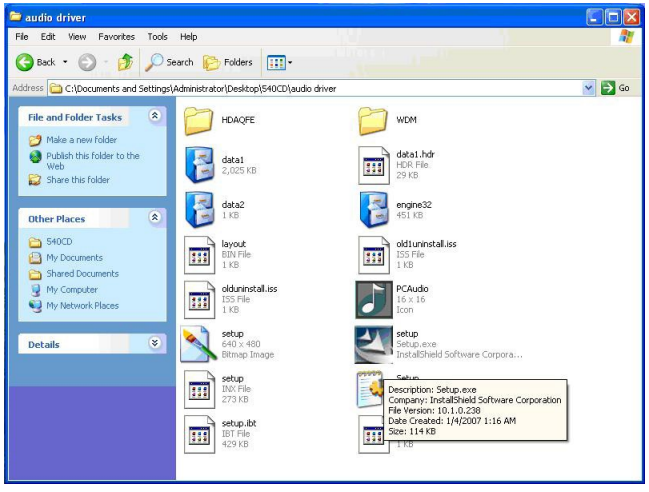
Appendix B: Audio Driver Installation and Settings

Installing the Audio Driver

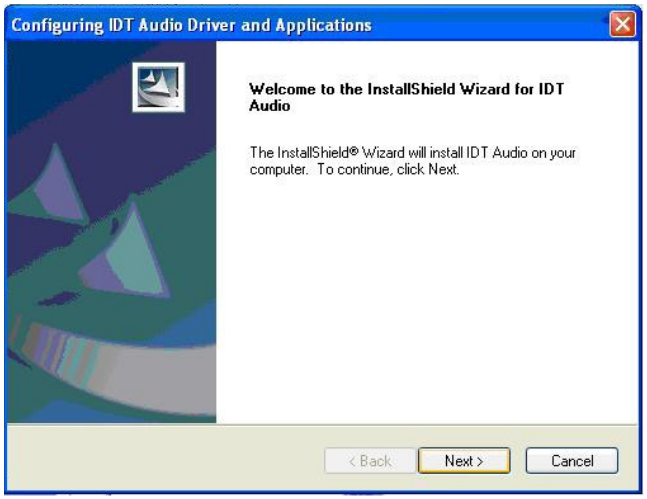
1. Insert the provided CD into a CD-ROM drive.
2. Open the Audio Driver folder.



3. In the Audio Driver folder, run Setup.



4. Click Next to begin installing the driver.



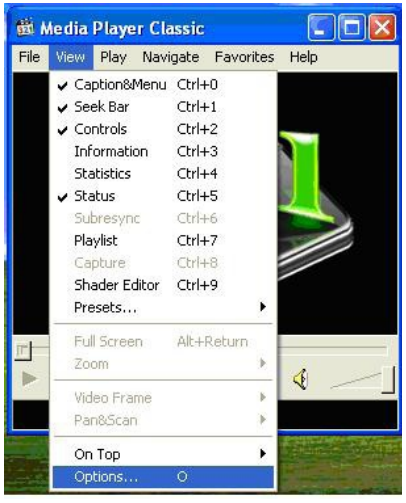
5. Select "Continue Anyway" to install the 1st audio driver.

6. Select "Continue Anyway" to install the 2nd audio driver.

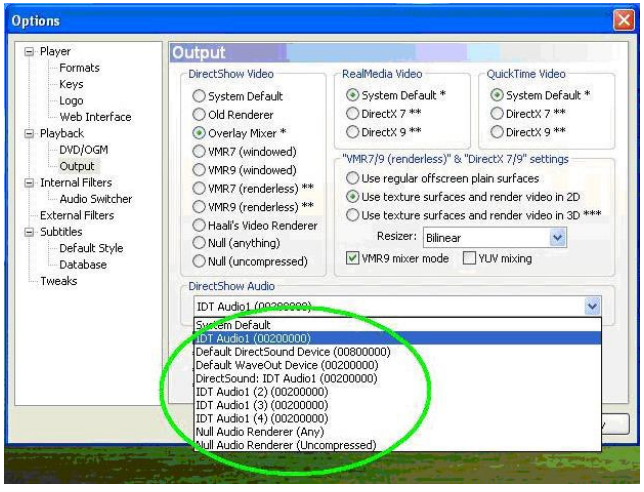
7. Click Finish.

8. The following uses the Media Player Classic as an example in showing how to set 2 audio output.

   Run Media Player Classic for 2 simultaneous times. Click the View menu then select Options.



9. Select different IDT Audio, “IDT Audio1 (00200000)”, “IDT Audio1 (2) (00200000)” for each audio output.



Appendix C: Watchdog Timer

WINBOND W83627UHG LPC I/O supports the Watchdog Timer functionality.

1. To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, 4Eh).
2. The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1).

   First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required.

   Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR (i.e. 0x08).

CR 07h. (Logical Device; Default 00h)

Bit	Read / Write	Description
7-0	R/W	Logical device number

3. The units of Watchdog Timer counter are selected at Logical Device 8, CR[F5h], bit[3]. The time-out value is set at Logical Device 8, CR[F6h]. Writing zero disables the Watchdog Timer function. Writing any non-zero value to this register causes the counter to load this value into the Watchdog Timer counter and start counting down.

Logical Device 8 (WDTO#, PLED, GPIO5, 6 & GPIO Base Address)
CR F5h. (WDTO# and KBC P20 Control Mode Register; Default 00h)

Bit	Read / Write	Description
7-5	Reserved	
4	R/W	1000 times faster in WDTO# count mode. 0: Disable 1: Enable (If bit-3 is Second Mode, the count mode is 1/1000 sec.) If bit-3 is Minute Mode, the count mode is 1/1000 min.)
3	R/W	Select WDTO# count mode. 0: Second Mode 1: Minute Mode

Bit	Read / Write	Description
2	R/W	Enable the rising edge of KBC reset (P20) to issue time-out event. 0: Disable 1: Enable
1	R/W	Disable/Enable the WDTO# output low pulse to the KBRST# pin (PIN60) 0: Disable 1: Enable
0	Reserved	

CR F6h. (WDTO# Counter Register; Default 00h)

Bit	Read / Write	Description
7-0	R/W	Watchdog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value to Watchdog Counter and start counting down. If bits 7 and 6 of CR F7h are set, any Mouse Interrupt or Keyboard Interrupt event will also cause the reload of previously-loaded non-zero value to Watchdog Counter and start counting down. Reading this register returns current value in Watchdog Counter instead of Watchdog Timer Time-out value. 00h: Time-out Disable 01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 seconds/minutes 03h: Time-out occurs after 3 seconds/minutes ..... FFh: Time-out occurs after 255 seconds/minutes

CR F7h. (WDTO# Control & Status Register; Default 00h)

Bit	Read / Write	Description
7	R/W	Mouse interrupt reset watchdog timer enable 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt.
6	R/W	Keyboard interrupt reset watchdog timer enable 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboard interrupt.
5	Write "1" Only	Trigger WDTO# event. This bit is self-clearing.
4	R/W Write "0" Clear	WDTO# status bit 0: Watchdog timer is running 1: Watchdog timer issues time-out event.
3-0	R/W	These bits select IRQ resource for WDTO#. (02h for SMI# event.)

EX.

Debug <Enter>
- O 4E, 87 <Enter>
- O 4E, 87 <Enter>
- O 4E, 07 <Enter>
- O 4F, 08 <Enter>
- O 4E, F6 <Enter>
- O 4F, 04 (Where "04" is 1 sec. and "FF" is 255 sec.)

Appendix D: Power Consumption

CPU Type: Athlon 64 X2 4200+, 2.2GHz

DC Input: 12V DC

Mode	Current	Total Watts
Full	5.55A	66.60
Idle	3.91A	46.92
Standby (S3)	1.59A	19.08

* WLAN, USB x4, 2GB x1, DVI x4, 80GB SATA HDD