MoDT

Cool Stuff is Hot Stuff, MoDT is the Right Stuff

AOpen

MoDT Flex 945

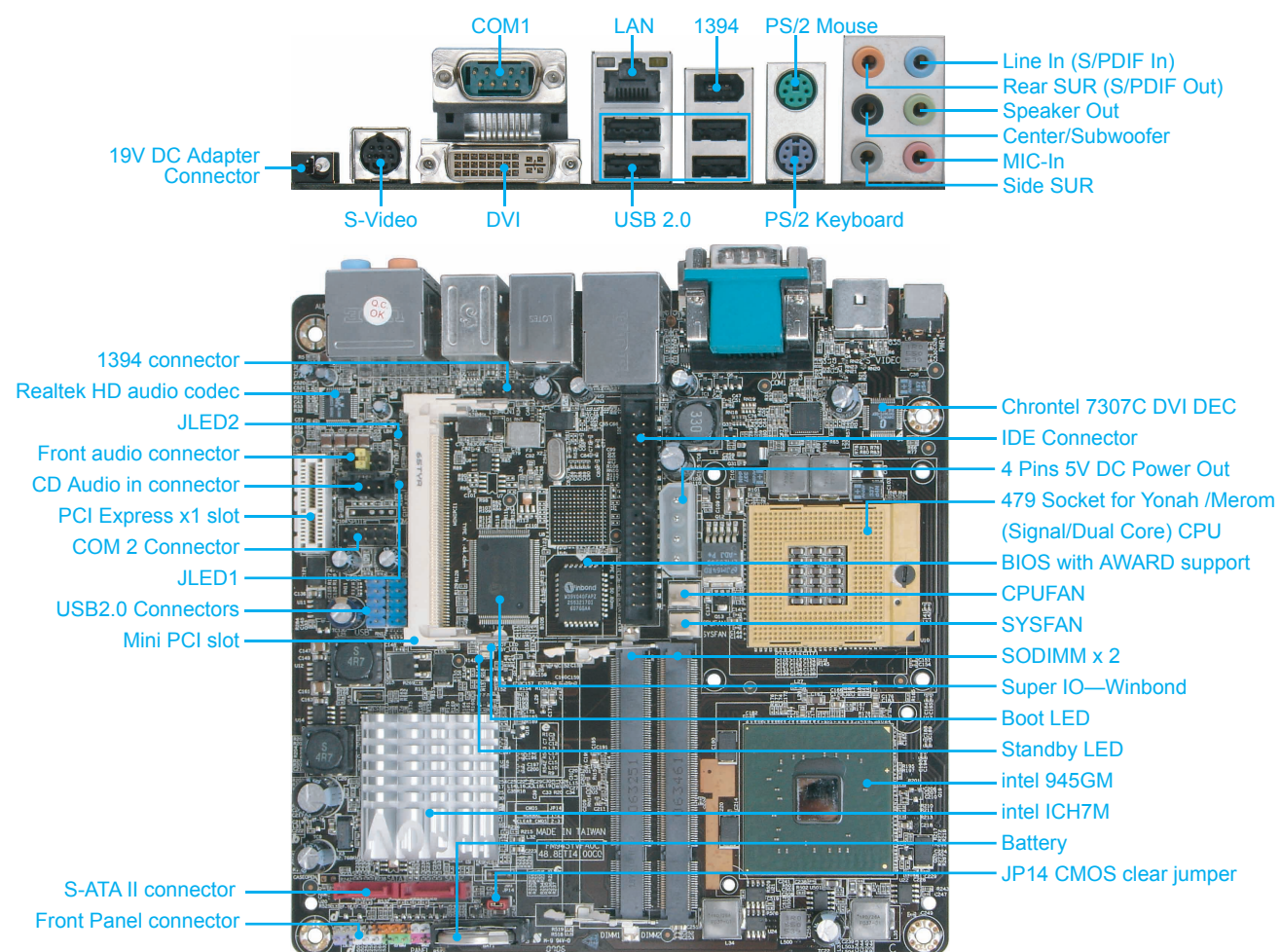### Enable the Power of Flex ATX Form Factor

i945GMt-FSA

Energy Saving | Silent | AV | Thermal

- 19V DC Adapter Connector
- COM1
- LAN
- 1394
- PS/2 Mouse
- Line In (S/PDIF In)
- Rear SUR (S/PDIF Out)
- Speaker Out
- Center/Subwoofer
- MIC-In
- Side SUR
- S-Video
- DVI
- USB 2.0
- PS/2 Keyboard

Board component callouts (left):
- 1394 connector
- Realtek HD audio codec
- JLED2
- Front audio connector
- CD Audio in connector
- PCI Express x1 slot
- COM 2 Connector
- JLED1
- USB2.0 Connectors
- Mini PCI slot
- S-ATA II connector
- Front Panel connector

Board component callouts (right):
- Chrontel 7307C DVI DEC
- IDE Connector
- 4 Pins 5V DC Power Out
- 479 Socket for Yonah /Merom (Signal/Dual Core) CPU
- BIOS with AWARD support
- CPUFAN
- SYSFAN
- SODIMM x 2
- Super IO—Winbond
- Boot LED
- Standby LED
- intel 945GM
- intel ICH7M
- Battery
- JP14 CMOS clear jumper

Accessories List in MoDT Flex 945

- 90W DC Adaptor
- CPU Fansink
- IO Bracket
- CPU Fansink Glue
- IDE Cable
- S-ATA Cable & S-ATA power Cable
- S-VIDEO to YPbPr cable
- S/PDIF Convert x2 (Optional)
- 4-pins Power Cable (1 to 2ML)
- DVI to D-Sub Converter
- AOpen Bonus CD
- Power Cord (Optional)
- MoDT Flex 945 EIG
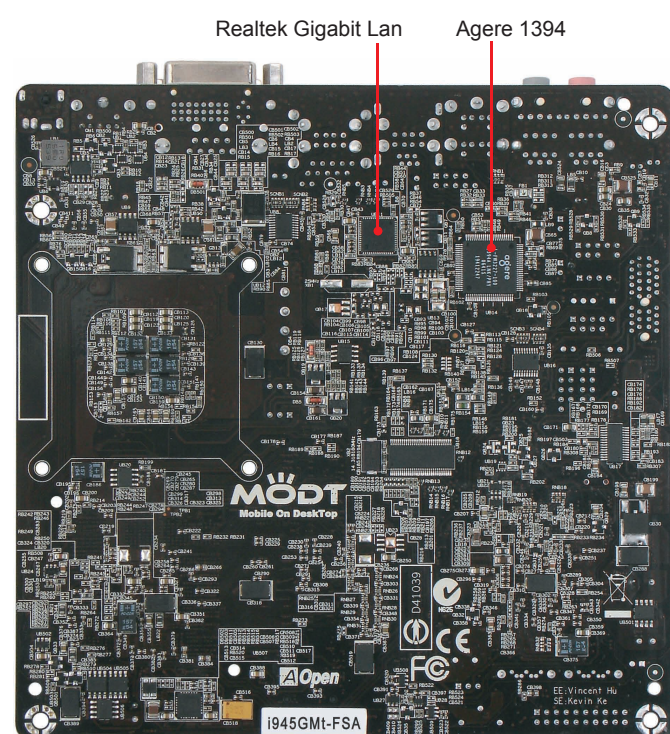
AOpen reserves the right to revise all the specifications and information contained in this document, which are subject to change without notice.

Processor Number	Clock Speed	Front Side Bus	Cache	Ratio
Core 2 Duo T7600	2.33GHz	667MHz	4M L2	14
Core 2 Duo T7400	2.16GHz	667MHz	4M L2	13
Core 2 Duo T7200	2.00GHz	667MHz	4M L2	12
Core 2 Duo T5600	1.83GHz	667MHz	2M L2	11
Core 2 Duo T5500	1.66GHz	667MHz	2M L2	10
Core Due T2700	2.33GHz	667MHz	2M L2	14
Core Due T2600	2.16GHz	667MHz	2M L2	13
Core Due T2500	2.00GHz	667MHz	2M L2	12
Core Due T2400	1.83GHz	667MHz	2M L2	11
Core Due T2300	1.66GHz	667MHz	2M L2	10
Core Due T2300E	1.66GHz	667MHz	2M L2	10

Note:
With CPU speed changing rapidly, there might be faster CPU on the market by the time you received this installation guide. This table is kindly for your references only.

Above table is Intel® Core™ 2 Duo / Core™ Duo / Core™ Solo / Celeron M CPU numbers and simple specification for your reference only.

2 CPU Cooler & System Fan Installation

Find the CPU fan power connector and system fan power connector as below pictures.

CPU Fan
System Fan

Install the SYSTEM FAN

Connect your system Fan power with above "SYSFAN" connector. Be care of the direction of fan power connector, it has anti-direction stick on it. Please make your system fan power connect correctly with it.

Install the CPU FAN

1. Please check the all parts are in the CPU cooler's box. And take them out. (If you don't have any of them, please contact with local AOpen technical support team.)

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5. Smear over the thermal compound under the center of heatsink smoothly and let it be well mixed.

Note:
The thermal compound should not paste too much on the heatsink. Please paste with left red area around (recommend). The compound thin with 1 ~ 2mm will be better.

2. Remove the four screws of the CPU heatsink and take the bracket from heatsink.

3. Tear off the label from bracket for easily pasted on the bottom of main board.

4. Place bracket properly on the back side of MoDT Flex 945 as picture. (Picture for reference only)

6. Please follow concave of direction on bottom of heatsink, Put the CPU Fan & heatsink on the processor and lock the four screws of the heatsink with bracket. (on the MB back side) Please make sure the screws are well tied between the motherboard and heatsink. (Picture for reference only)

7. Plug the CPU fan power into "CPUFAN" connector properly. (Picture for reference only)

MoDT Flex 945 Specification Table

Realtek Gigabit Lan | Agere 1394

Picture i945GMt-FSA

|	
Model Name	i945GMt-FSA
Form Factor	Flex ATX
PCB Size	170 x 170 mm
CPU type	Yonah / Merom (Signal/Dual Core)
CPU Socket	Socket 479
System Chipset	Intel 945GM + Intel ICH7M
Memory type	DDRII 400/533/667 MHz
Memory slot	SO-DIMM x 2 Support Dual Channel Mode
Memory Max. size	Maximum 4GB
DVI Chip	Chrontel 7307
Ethernet LAN Chip	Realtek PCIe G LAN
Audio Chip	Realtek ALC888
Firewire 1394	Agere 1394
Rear Connectors	DVI x1, S-VIDEO x1 Ethernet LAN x1, COM x1 Azalia Audio Rack x1 USB 2.0 x4, 1394 x1, PS2 x2 19V DC in x1
On board Slots & Internal Connectors	Socket 479, SODIMM DDRII x2 PCIe *1 x1, SATA II 2.0 x2, Firewire - 1394 x1 CD - In x1, Cooling Fan x2, Front Panel x1 IDE x1, USB 2.0 x4, COM x1,. Front Audio x1, 12V/5V DC OUT - 4 Pins Power Connector x1
O.S.	Windows XP / Vista Premium
Power	90W AC - DC Adaptor

MoDT Flex 945 is Mobile on Desktop solution. The main features it brings:

Energy saving
It consume low energy which is half power needed in Intel 775 MB. That can help you to save 90W around while you use it. And since it save energy so it can save you money.

Silent
With superior design, the noise level can be control under 28 dB which meet your silent & quiet environment. Also intel speed stepping technology can keep silent well.

AV—Multimedia
With 945GT/GM, it delivers high performance to users. HDTV and high quality of audio which MoDT Flex 945 will give you extreme AV experience.

Cool
By using Mobile on Desktop technology. One can enjoy cool & comfortable experience on Flex 945. Keep your system with stable and long life.

MoDT Flex 945 is Flex ATX form factor. It is 170mm width x 170mm height. Flex ATX comes from mATX, it has same size of rear panel specification with mATX & ATX and it's four screw holes - left picture.
The holes' position and size are also same with mATX & ATX. You can put it exactly into ATX or mATX chassis.
But we recommend that you can find a suitable chassis for Flex ATX. Since small is MoDT Flex 945 designed to be.
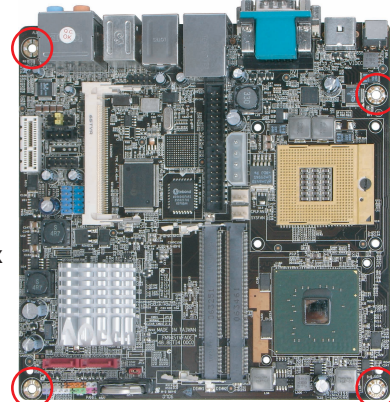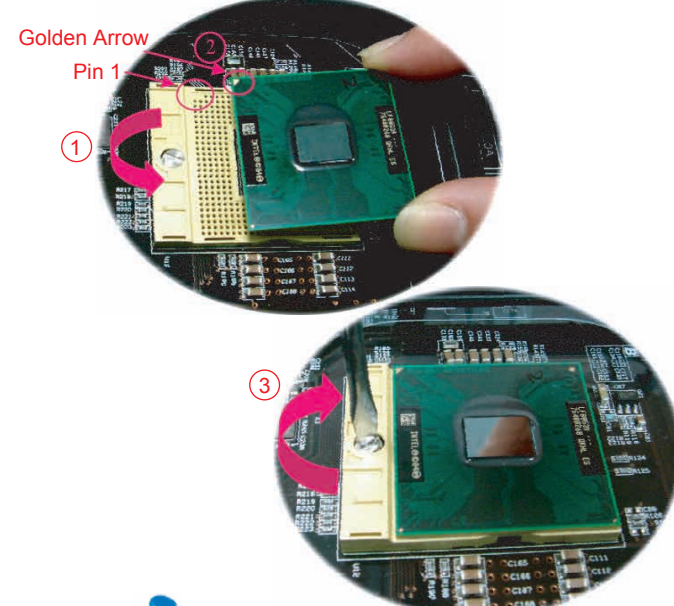

Before you start to make Hardware installation, Please make sure no power is connected.

HARDWARE INSTALLATION

1 CPU Installation

MoDT Flex 945 support Intel® Core™ 2 Dual & Core™ 2 Duo / Core™ Duo processor. The Intel® Core™ 2 Duo processor and the Intel® Core™ Duo processor are built on Intel's next generation 65 nanometer process technology with copper interconnect. The Intel Core Solo processor refers to single core processor and the Intel® Core™ 2 Duo processor refers to dual core processor. Start to install CPU. Find the position of CPU socket. This socket support uFCPGA package CPU, which is the latest Intel® Core™ Duo & Core™ Duo processor.

1. Unscrew socket screw counter-clockwise
2. Locate the Pin 1 in the socket and look for a golden arrow on the CPU upper interface. Match Pin 1 and golden arrow. Then insert the CPU into the socket.
3. Lock the socket screw clockwise to fasten CPU.

Golden Arrow
Pin 1

Note:
1. When unscrewed the socket, the socket will horizontally shift.
2. When screw the socket. You will hear a slight sound "Dock". That means you already installed CPU successfully.
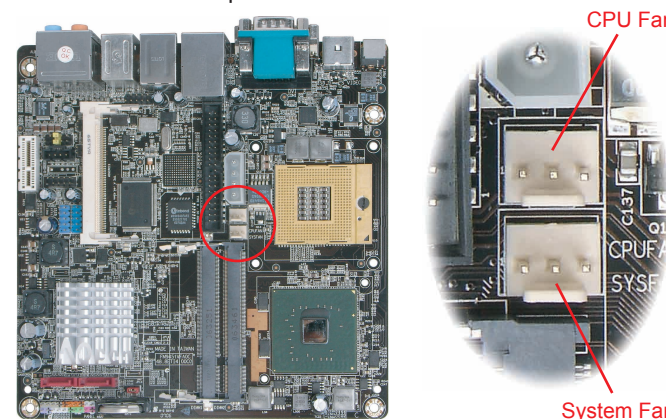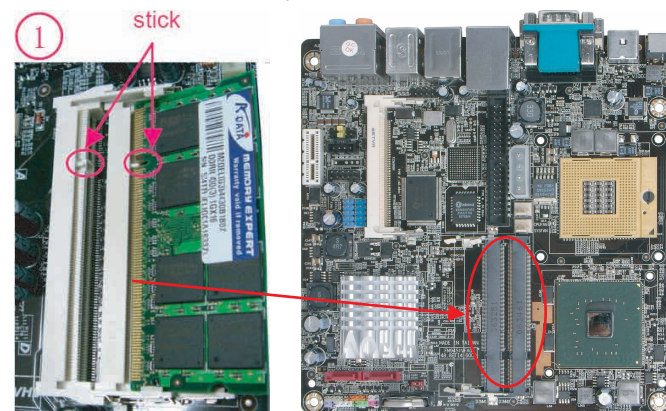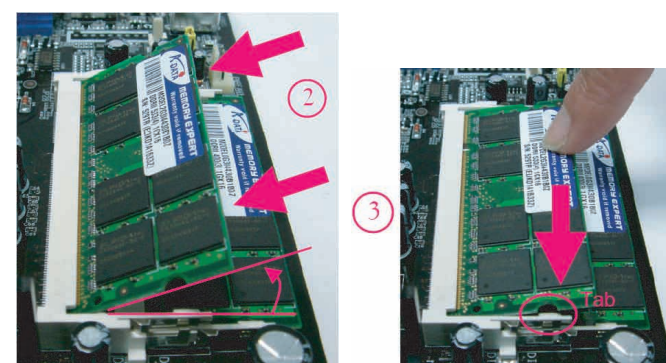
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3 Memory Installation

MoDT Flex 945 provide SODIMM type memory support. There're two SODIMM memory slots which Flex 945 provided. The installation of memory module as below.

stick

1. Put the memory module with correct direction. Notice there's one stick to make sure direction is correct.
2. Plug in memory module into SODIMM slot with angle 20~30º. Make sure memory moule plug into slot completely.

3. There're tabs which located in the side of SODIMM holder. Use finger to push memory module vertically until the tabs lock memory module tightly.
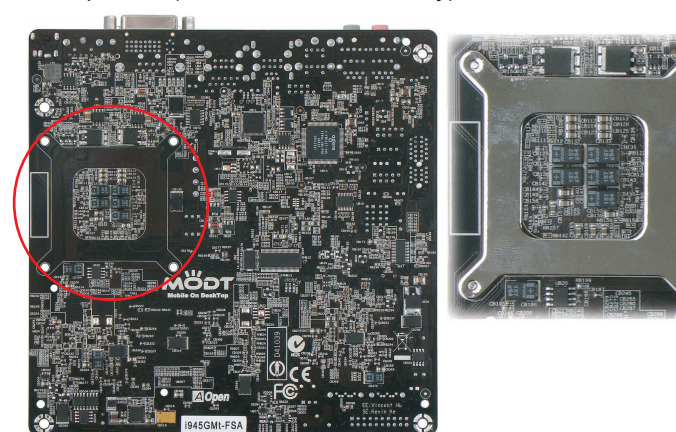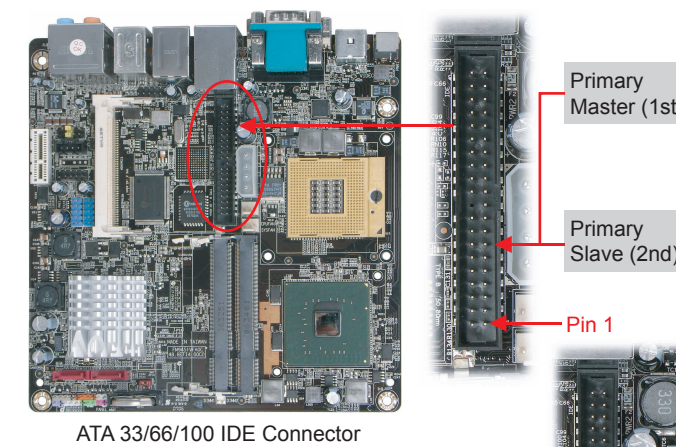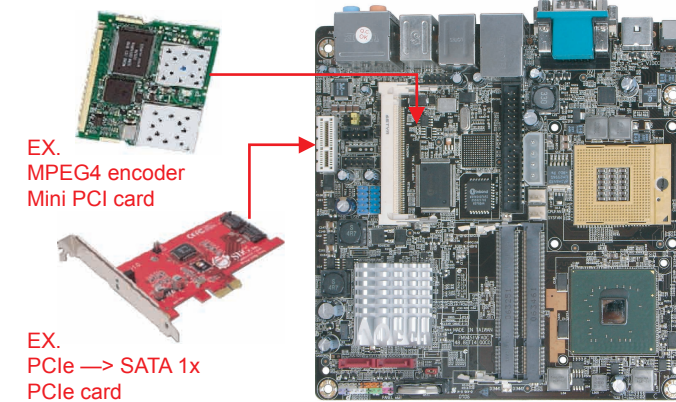4. Now, the memory modules have been plugged properly with horizontal flat.
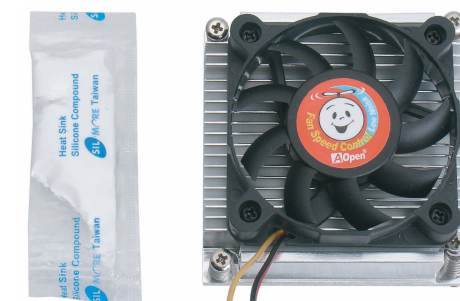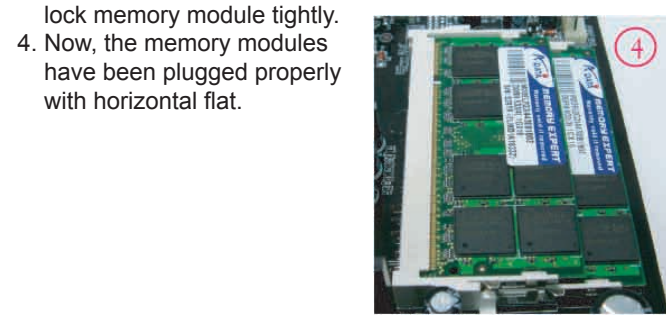
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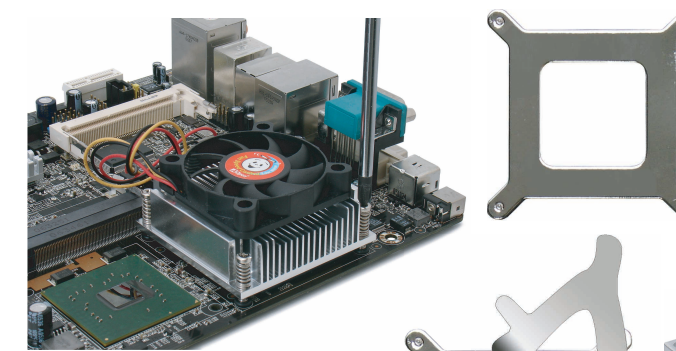
4 IDE Installation

MoDT Flex 945 provides one IDE connector which allow you to connect two ATA 33/66/100 IDE devices like HDD.

Primary Master (1st)
Primary Slave (2nd)
Pin 1

ATA 33/66/100 IDE Connector

IDE cable to connect IDE devices
DC power to connect IDE devices

5 Mini PCI and PCIe x1 Installation

MoDT Flex 945 provides one Mini PCI slot and one 1x PCIe slot for users to upgrade his PC functions. Now, the Mini PCI can have digital TV tuner and Video MPEG4 decoder card ...etc. for expansion. The 1x PCIe cards have SATA II and Firewire and USB cards … etc. for expansion.
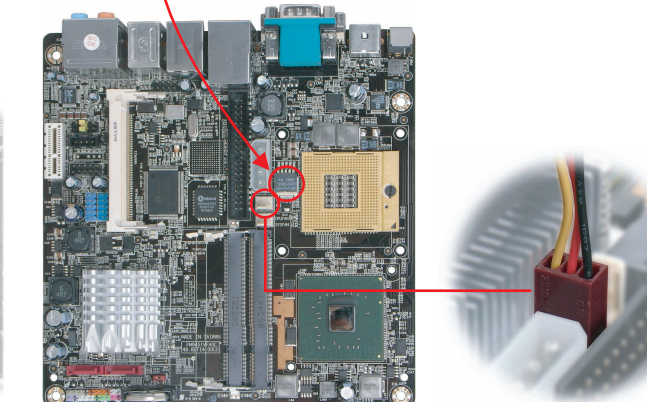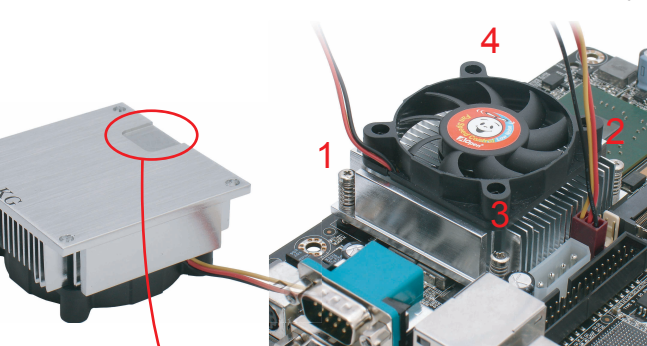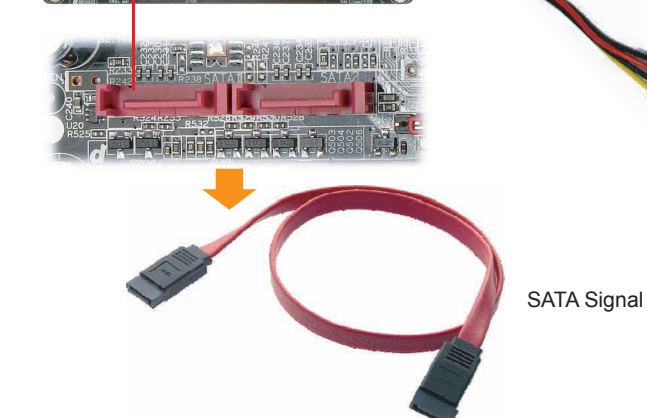
EX. MPEG4 encoder Mini PCI card

EX. PCIe —> SATA 1x PCIe card

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6 SATA Installation

SATA Power Cable
SATA Signal Cable

MoDT Flex 945 provides two SATA connectors.

Connect SATA cable to the on board SATA connector. You can find SATA cable in our package. (this is SATA signal cable) And please also connect 5V power connector with SATA power cable.

Macrovision

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AUD_FPOUT_R / FRONT_IO_SENSE / AUD_FPOUT_L / AUD_RET_L

- AUD_FPOUT_R
- FRONT_IO_SENSE
- AUD_FPOUT_L
- AUD_MIC_R
- AUD_MIC_L
- Pin 1
- AUD_RET_L
- AUD_GND
- KEY
- Front_IO_Plug
- AUD_RET_R

Front Audio Connector

1394 Connector

TPB+ / +12V(Fused) / KEY / SHIED GND
- TPB+
- +12V(Fused)
- KEY
- SHIED GND
- GND
- TPA+
- Pin 1
- TPA -
- +12V
- TPB -

- GND
- +12V
- Sensor

CPUFAN Connector

USB 2.0 Connector

1
- +5V / +5V
- SBD6 - / SBD7 -
- SBD6+ / SBD7+
- GND / GND
- KEY / NC

- GND
- +12V
- Sensor

SYSFAN2 Connector

- +5V / HDD LED
- +5V / HDD LED
- GND / +5V
- NC / NC
- SPEAKER / NC
- NC
- POWER SWITCH
- RESET
- GND
- GND / POWER LED -
- GND / GND
- NC / POWER LED+

Front Panel Connector

7.1 Power Consumption

The MoDT Flex 945 board design provides:

Parts	Voltage	Current	Power
CPU	1.3x V	43A Max.	60W Max.
Memory	1.8 V	9A Max.	16.2W Max.
North & South Bridge	1.5 V / 1.05 V	6A Max. / 8A Max.	9W Max. / 8.4W Max.
DC 5V devices	5 V	10A Max.	50W Max.
DC 12V devices	12 V	3A Max.	36W Max.

The power consumption — 60 W provides basic system configuration as below.

- i945GMt-FSA Flex ATX board
- Intel® Core™ Duo CPU T2600 x1
- 256MB SODIMM memory Module x 2
- IDE 3.5" hard disk x 1
- USB keyboard x 1
- USB Mouse x 1
- CPU Fan + Heatsink x 1

MoDT Flex 945 had bundle one 90W AC to DC power adaptor, it's specification as
- INPUT AC100-240V ~ 1.5A
- OUTPUT DC 19V ~ 4.74A

> **Note:**
> Please notice on the power, AOpen MoDT Flex 945 provided, is 90W AC-DC adaptor. And the board can offer 180W to connect different peripherals. But it needs to be careful while connecting many peripherals and cause power over 90W. It will causes the system cannot boot-up or cannot work smoothly base on the loading your system has.
> If your system over 90W please change it to bigger power supply:19V AC-DC adaptor.

SOFTWARE INSTALLATION

1 BIOS Setup when 1st Power On

Del After finish the setting of jumpers and connect correct cables. Power on and enter the BIOS Setup, then press <Del> during POST (Power On Self Test). Choose "Load Optimized Defaults" for recommended optimal performance.
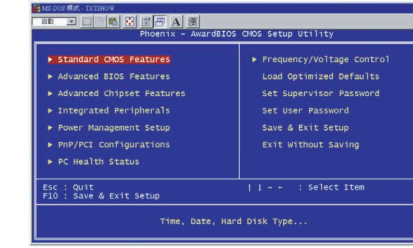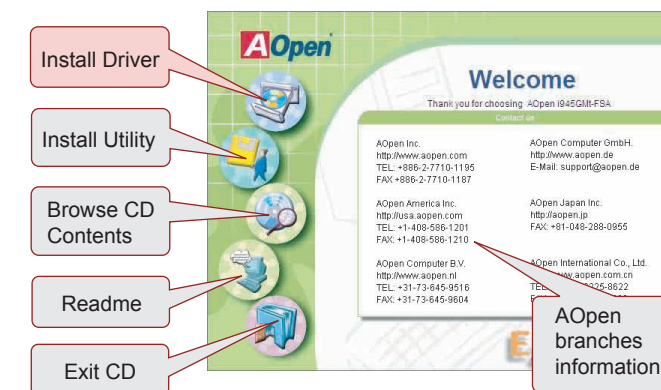
2 Driver Installation

After you install window XP(32/64 bit) or Vista (32 bit), please insert AOpen Bonus CD to start on Driver installation.

After you insert AOpen Bonus CD, it will automatically show below "Ezinstall" screen.

- Install Driver
- Install Utility
- Browse CD Contents
- Readme
- Exit CD

Welcome
Thank you for choosing AOpen i945GMt-FSA

AOpen branches information

Use "mouse pointer" to Tab "Install Driver", then click left button of mouse on it. Ezinstall will have "Install Driver" page come out as below.
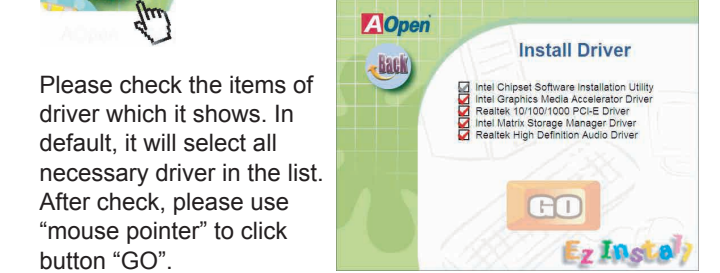
Please check the items of driver which it shows. In default, it will select all necessary driver in the list. After check, please use "mouse pointer" to click button "GO".

The "Ezinstall" will take you minutes on install driver for you. Do not click other functions during the process of driver installation. While complete driver installation. It will automatically show "Reboot".

Install Driver

Please choose button "YES". System will reboot and enter window O.S. Below is "window device Manager", you can check driver are installed properly.
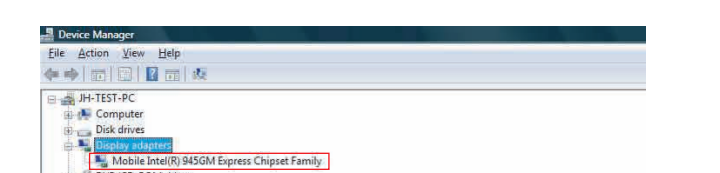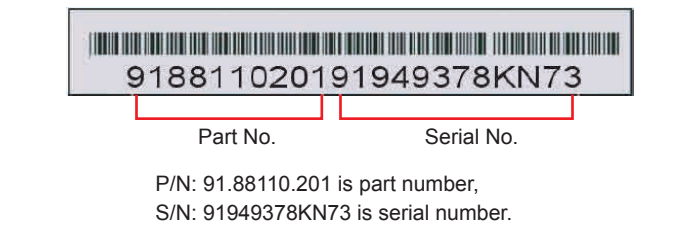

Model name and BIOS version

Model name and BIOS version can be found on upper left corner of first boot screen (POST screen). For example:

Phoenix - AwardBIOS v6.00PG, An Energy Star Ally Copyright (C) 2004, Phoenix Technologies, LTD.

i945GMt-FSA R1.00 Apr. 02. 2007 AOpen Inc.

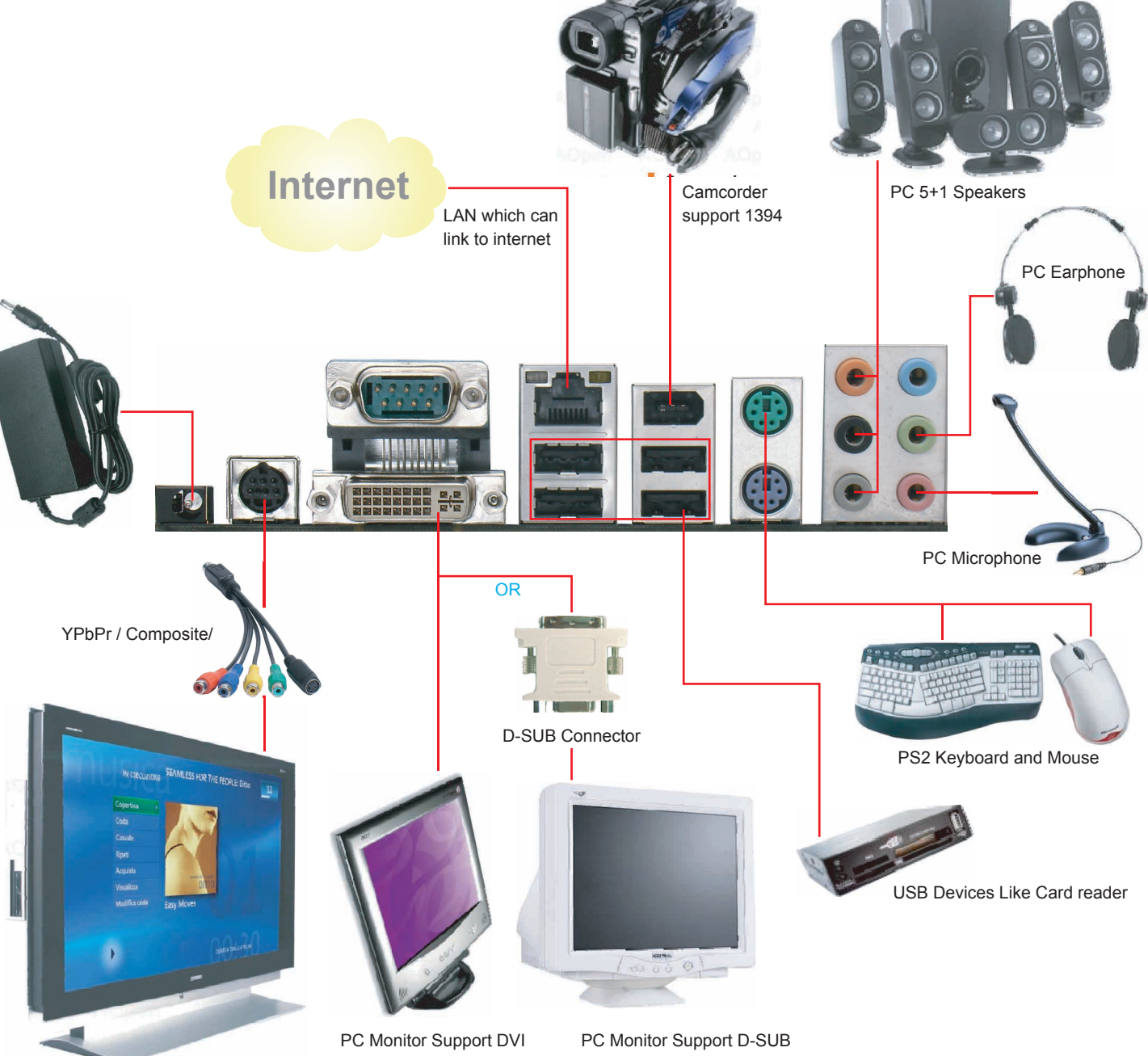i945GMt-FSA is model name of motherboard; R1.00 is BIOS version.

Register Your Motherboard

Thanks for choosing AOpen product, please take time to register the product registration, http://club.aopen.com.tw/productreg/ This will ensure that you can receive the most updated information from AOpen in the future. Please prepare the following information before you start:
Model Name, Part Number (P/N), Serial Number (S/N) and Purchase Date. The Part Number and Serial Number are printed on the bar code label. You can find this bar code label on the outside packing or on component side of PCB. For example:

918811020191949378KN73

Part No.   Serial No.

P/N: 91.88110.201 is part number,
S/N: 91949378KN73 is serial number.

Phoenix-Award BIOS Error Message	
Beep Sound	Message
1 short (Beep)	System booting is normally.
1 long - 1 short (Beep)	DRAM error
1 long - 2 short (Beep)	Display Card connected error Monitor Connected error
1 long - 3 short (Beep)	Keyboard error
Long (Beep) continuous	DRAM hasn't insert correctly.

Internet

- Camcorder support 1394
- PC 5+1 Speakers
- LAN which can link to internet
- PC Earphone
- YPbPr / Composite/
- OR
- PC Microphone
- D-SUB Connector
- PS2 Keyboard and Mouse
- USB Devices Like Card reader
- PC Monitor Support DVI
- PC Monitor Support D-SUB

TV support S-VIDEO or composite or YPbPr
HDTV support YPbPr (One time one signal only)

8.1 VGA & Video Support

MoDT Flex 945's Graphic/Video Output as left pictures. It supports DVI-I connector. But there's DVI to D-SUB connector bundle which allows you to connect D-SUB monitor. Also, it provided a S-VIDEO connector in back side which allows you to connect Video consumer electronics. MoDT Flex 945 has "S-VIDEO to YPbPr / Composite" cable which can link TV or HDTV or DVD recorder.

Notice:
YPbPr/S-VIDEO/Composite. These three video signals can act one time one signal since common source. Users cannot connect it together to show video.
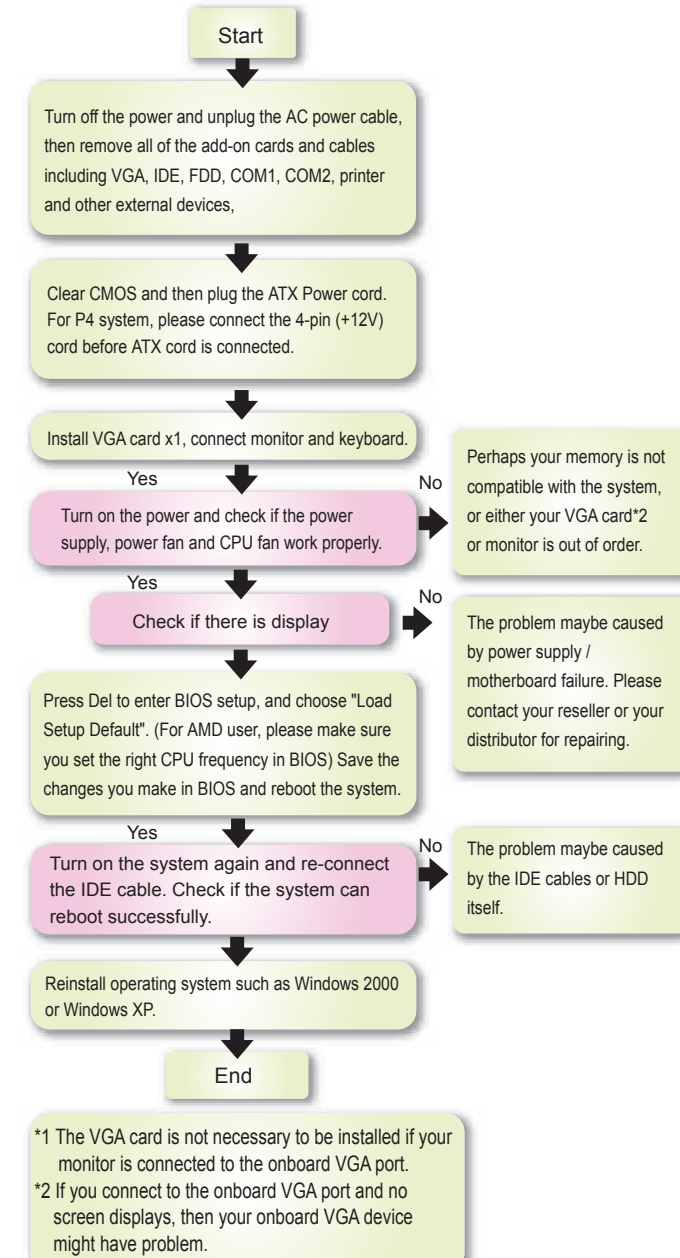
PC graphic resolution table	
Resolution	Color depth
1680 x 1050	256/ 16bit/ 32bit
1600 x 1200	256/ 16bit/ 32bit
1440 x 900	256/ 16bit/ 32bit
1280 x 1024	256/ 16bit/ 32bit
1280 x 720	256/ 16bit/ 32bit
1024 x 768	256/ 16bit/ 32bit
640 x 480	256/ 16bit/ 32bit

PC Graphic resolution support
Maximum : 1600 x 1200 x 32bit

Video resolution support
HDTV: 480p/720p/1080i/1080p
TV video resolution support

Special resolution 16:9 support
AUO 32" 16:9 Panel: 1366 x 768

(Users need to check with your TV panels vender about it)

Trouble Shooting

If you encounter any trouble to boot you system, follow the procedures accordingly to resolve the problem.

Start

Turn off the power and unplug the AC power cable, then remove all of the add-on cards and cables including VGA, IDE, FDD, COM1, COM2, printer and other external devices,

Clear CMOS and then plug the ATX Power cord. For P4 system, please connect the 4-pin (+12V) cord before ATX cord is connected.

Install VGA card x1, connect monitor and keyboard.

Yes → Turn on the power and check if the power supply, power fan and CPU fan work properly.
No → Perhaps your memory is not compatible with the system, or either your VGA card*2 or monitor is out of order.

Yes → Check if there is display
No → The problem maybe caused by power supply / motherboard failure. Please contact your reseller or your distributor for repairing.

Press Del to enter BIOS setup, and choose "Load Setup Default". (For AMD user, please make sure you set the right CPU frequency in BIOS) Save the changes you make in BIOS and reboot the system.

Yes → Turn on the system again and re-connect the IDE cable. Check if the system can reboot successfully.
No → The problem maybe caused by the IDE cables or HDD itself.

Reinstall operating system such as Windows 2000 or Windows XP.

End

*1 The VGA card is not necessary to be installed if your monitor is connected to the onboard VGA port.
*2 If you connect to the onboard VGA port and no screen displays, then your onboard VGA device might have problem.

Technical Support

Dear Customer,

Thanks for choosing AOpen products. We invite you to register at http://www.aopen.com to become a Gold Member of Club AOpen so as to ensure quality service in the future. In order to maintain the best service to every customer of us, we recommend you to follow the procedures below and seek help from our branches according to the region you buy the product. With your help, we can then continue to provide efficient and the best quality service to every customer.

Thanks very much for your understanding!

AOpen Technical Supporting Team

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China	http://www.aopen.com.cn/tech/default.htm
Germany	http://www.aopen.de/tech/default.htm
America	http://usa.aopen.com
Japan	http://aopen.jp/tech/index.html

Online Manual: To download manual, please log on and then select your preferred language. Under "Type" directory, choose "Manuals" to go to our manual database. You can also find the manual and EIG in AOpen Bonus Pack. http://download.aopen.com.tw/downloads

Test Report: We recommend you to choose board/card/ device from the compatibility test reports for assembling your PC. It may prevent incompatibility problems. http://global.aopen.com.tw/tech/report/default.htm

FAQ: Here we list problems that users often encounter and FAQ (Frequently Asked Questions). You may select your preferred language after log on, and may be able to find a solution to your problem. http://club.aopen.com.tw/faq/

Download Software: After log on and having language selected, you may get the latest updated BIOS/utility and drivers you need under "Type" directory. In most case, newer versions of drivers and BIOS have solved earlier bugs or compatibility problems http://download.aopen.com.tw/downloads

eForum: AOpen eForum is provided to discuss our products with other users, in which your problem probably had been discussed before or will be answered. After log on, you may select your preferred language under "Multi-language". http://club.aopen.com.tw/forum

Contact Us: Please prepare detail system configuration and error symptom before contacting us. The part number, serial number and BIOS version are also very helpful.

Contact Distributors/Resellers: We sell our products through resellers and integrators. They should know your system configuration very well and should be able to solve your problem efficiently and provide important reference for you.