

USER'S MANUAL
Of
AMD 780G CHIPSET
&
AMD SB700 Chipset Based
M/B for Socket AM2+ 64-bit Quad Core
AMD Processor

No.PA78GT3-F

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Trademark:

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Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



Chapter 1

Introduction of AMD 780G Motherboard Series

1-1 Features of motherboard

The AMD 780G Series motherboards are based on the latest AMD780G Chipset and SB700 chipset which supports the new generation innovative 64-bit AMD Socket AM2+ dual core multi-tasking Socket AM2+ Athlon64 X2 processors and dual core AMD Phenom™ processors. With an integrated low-latency high-bandwidth DDR2 memory controller and the highly-scalable HT 3.0, AMD 780G Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution with the advantages of new generation 64-bit AMD Socket AM2 Athlon64 X2 processors, AMD Phenom™ processors and the fully compatibility of the next generation operation system.

The AMD 780G Series motherboards support new generation Socket AM2+ processors with an integrated DDR2 memory controller which provides with 200MHz/333MHz/400MHz memory clock frequency for Dual channel DDR2 533 / DDR2 667 / DDR2 800 DDR2 Module up to 8.0GB. The whole motherboard series are embedded with SB700 chipset that provides ULTRA ATA 133 connectors and Serial ATA2 with RAID 0, 1 and RAID 10 functions which support up to two IDE devices and six Serial ATA2 devices to accelerate hard disk drives and guarantee the data security without failure in advanced computing performance.

The AMD 780G Chipset incorporates HD 3200 Graphics with a core frequency of 500MHz featured with DirectX10.0 compliant 2D/3D graphics processor, Maximum DAC frequency of 400 MHz Resolution up to 2560x1600 (Under condition), refresh rate up to 85MHz delivering incredible graphics and blistering performance. AMD™ 790G chipset provides incredible flexibility and unlimited upgrade potential as it supports all Radeon® PCI – E graphics cards on a system configured for either single GPU or next generation multimedia operation. Designed with ATI's unique architecture to optimize speed and stability, this solution is perfect for overclocking – without the need of additional cooling systems.

The 780G series motherboards provide 10/100/1000 LAN functions with Marvel M88E8056 PCI-E 10/100/1000 LAN. And the embedded Azalia 8-channel HD Audio CODEC is fully compatible with Sound Blaster Pro® standards that offer you with the home cinema quality and satisfying software compatibility.

The motherboards offer one PCI-Express 2.0 x16 graphics slot of 8Gbyte/sec data transfer rate at each relative direction which gets 2 times of bandwidth more than PCI-Express and it's up to a peak concurrent bandwidth of 8Gbyte/sec at full speed to guarantee the ultimate GPU computing performance. Two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals; the motherboards are designed of tackling the profuse multimedia requirements nowadays. Users can enjoy the high-performance of Hybrid CrossFire function by utilizing the ATI VGA Card and the IGP in North bridge by program in driver.

Embedded USB controller as well as capability of expanding to 10of USB2.0 functional ports delivering 480Mb/s bandwidth and rich connectivity, these motherboards meet the future

USB demands which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Some special features---**CPU Thermal Throttling/ CPU Vcore 7-shift / CPU Smart Fan/Debug Port** this motherboard are designed for power user to use the over-clocking function in more flexible ways. But please be caution that the over-clocking maybe cause the fails in system reliabilities. This motherboard provides the guaranteed performance and meets the demands of the next generation computing. But if you insist to gain more system performance with variety possibilities of the components you choose, please be careful and make sure to read the detailed descriptions of these value added product features, please get them in the coming section.

1-1.1 Special Features of Motherboard

CPU Smart Fan---(The Noise Management System (Only support 4-pin CPU cooler))

It's never been a good idea to gain the performance of your system by sacrificing its acoustics. CPU Smart Fan Noise Management System is the answer to control the noise level needed for now-a-day's high performance computing system. The system will automatically increase the fan speed when CPU operating loading is high, after the CPU is in normal operating condition, the system will low down the fan speed for the silent operating environment. The system can provide the much longer life cycle for both CPU and the system fans for game use and business requirements.

CPU Vcore 7-Shift--- (Shift to Higher Performance)

The CPU voltage can be adjusted up by 13 steps for the precisely over-clocking of extra demanding computing performance.

CPU Thermal Throttling Technology---(The CPU Overheat Protection Technology)

To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter partially idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 40°C to 90°C). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working.

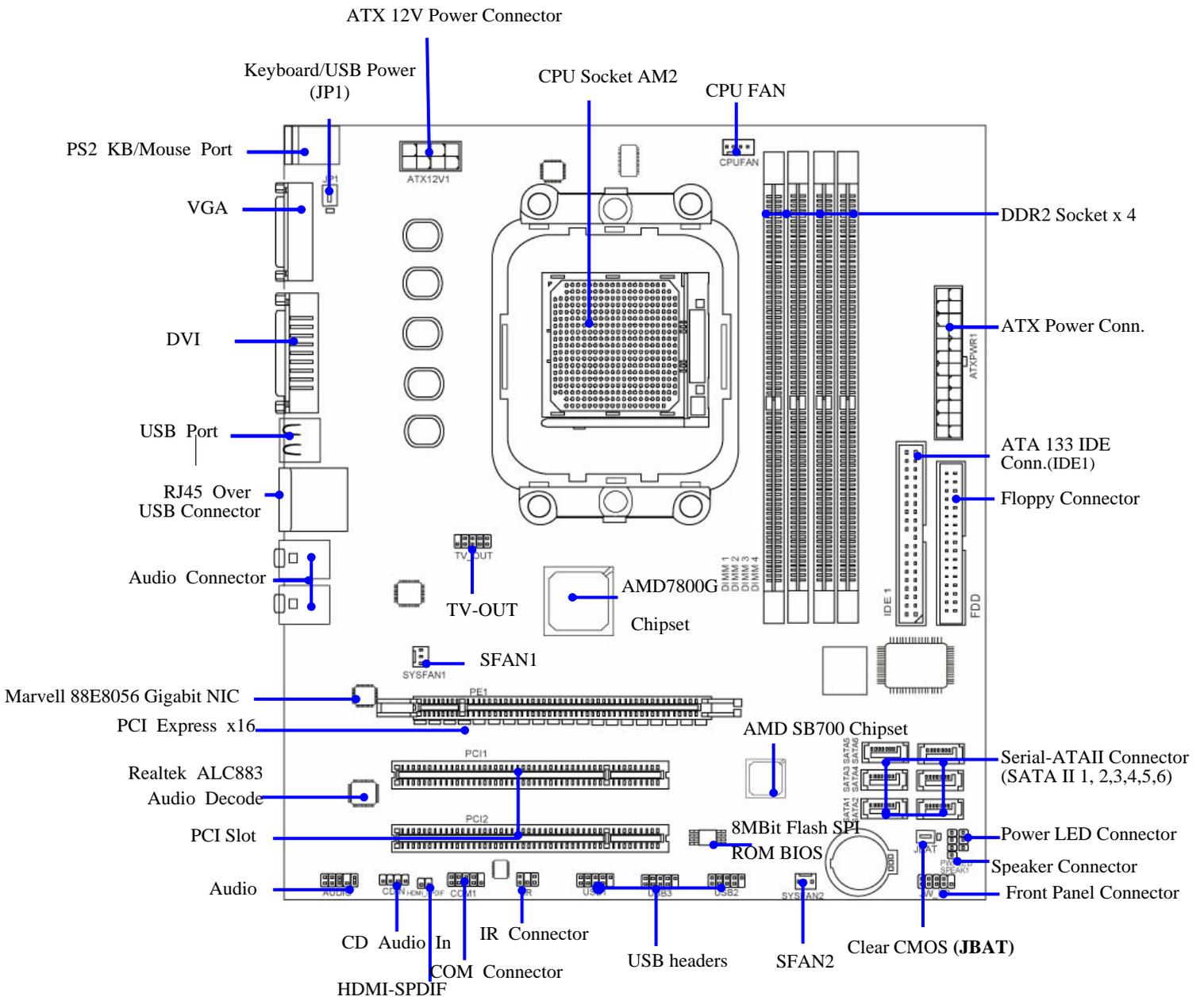
1-2 Specification

Spec	Description
Design	<ul style="list-style-type: none"> * Micro u-ATX form factor 4 layers PCB * size: 24.5 cm*22.0cm
Chipset	<ul style="list-style-type: none"> * AMD780G Chipset and AMD SB700 Chipset
CPU Socket AM2+	<ul style="list-style-type: none"> * Support 64bit AMD AM2+ 940-Pin Phenom processors * Support HT 3.0
Memory Socket	<ul style="list-style-type: none"> * 240-pin DDR2 Module socket x 4 * Support 4 pcs DDR2 533 / DDR2 667 / DDR2 800 Modules Expandable to 8.0
Expansion Slot	<ul style="list-style-type: none"> * PCI-Express2.0 x16 slot 1pcs delivers up to 16 GB/s of concurrent bandwidth. * 32-bit PCI slot x 2 pcs
Integrate IDE and Serial ATA2 RAID	<ul style="list-style-type: none"> * One IDE controllers support PCI Bus Mastering, ATA PIO / DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s. * Four Serial ATA2 ports provide 300 MB/sec data transfer rate with RAID 0, 1, 10 functions.
Integrated VGA	<ul style="list-style-type: none"> * Integrated with HD3200 graphics * a core frequency of 500MHz * DirectX10 compliant 2D graphics processor * supported ATI innovated AVIVO Technology and Multiple Display configurations
LAN (Option)	<ul style="list-style-type: none"> * Integrated Marvel M88E8056 PCI-E 10/100 /1000 LAN chip * Supports Fast Ethernet LAN function provide 10/100/1000 Mb /s data transfer rate
Optional Audio	<ul style="list-style-type: none"> * 8-channelALC883 HD Audio Codec integrated * Support 8-channel 3D surround & Positioning Audio * Audio driver and utility included
BIOS	<ul style="list-style-type: none"> * Award 8MB SPI Flash ROM
Multi I/O	<ul style="list-style-type: none"> * PS/2 keyboard and PS/2 mouse connectors * Floppy disk drive connector x1 * 1* Parallel port of 25-pin Block / 1 * Serial port of 9-pin Block * 1 * VGA port / 1 * TV-OUT header * 1 * HDMI port (optional) /1 * DVI port * USB2.0 port x 4 and headers x 6 * Audio connector (Line-in, Line-out, MIC/ 8CH Audio)

1-3 Item Checklist

- ☑ AMD780G Platform Processor Chipset based motherboard
- ☑ Cable for IDE
- ☑ CD for motherboard utilities
- ☑ Cable for Serial ATA IDE Port
- ☑ AMD780G Platform Processor Chipset motherboard User's Manual
- ☑ Dongle Connector (Optional) just for PA78GT3-HG

1-4 Layout Diagram & Jumper Setting



Chapter 2

Hardware Installation

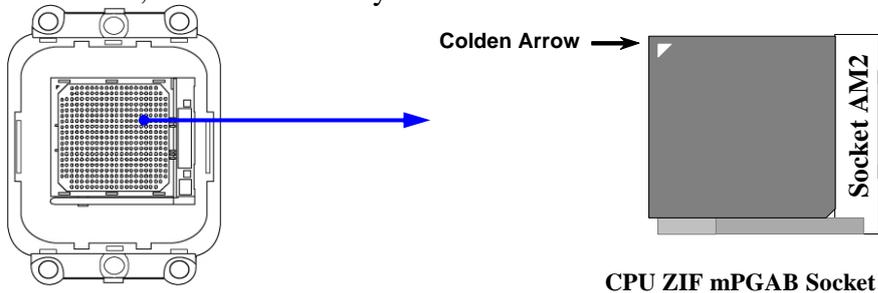
2-1 Install Socket AM2+ Supported AMD Processor

This motherboard provides a 940-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supports AMD Athlon64 processor in the 940 Pin package utilizes Flip-Chip Pin Grid Array package technology.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

WARNING! Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.



When you put the CPU into the ZIF socket, No force require to insert of the CPU, then press the level to Locate position slightly without any extra force.

2-2 Install Memory

The motherboards provide four / two 240-pin DDRII DUAL INLINE MEMORY MODULES (DIMM) sites for DDRII memory expansion available from minimum memory size of 128MB to maximum memory size of 8.0GB / 4.0GB DDRII SDRAM.

Valid Memory Configurations of 4-DIMM Design Motherboard

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 2, 3 (DIMM2)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 4, 5 (DIMM3)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 6,7 (DIMM4)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Total	System Memory (Max. 8.0GB)	4	128MB~8.0GB

Recommend DIMM Module Combination

1. **One DIMM Module ---Plug in DIMM1**
2. **Two DIMM Modules---Plug in DIMM1 and DIMM2 or DIMM3 and DIMM4 for Dual channel function of 4-DIMM Design motherboard and Plug in DIMM1 and DIMM2 for Dual channel function of 2-DIMM Design motherboard.**
3. **Four DIMM Modules---Plug in DIMM1/DIMM2/DIMM3/DIMM4.**

For Dual channel Limited!

1. Dual channel function only supports when 2 DIMM Modules plug in either both DIMM1 & DIMM2 or DIMM3 & DIMM4, or four DIMM Modules plug in DIMM1~DIMM4 of 4-DIMM motherboard and 2 DIMM Modules plug in DIMM1 & DIMM2 of 2-DIMM Motherboard.
2. DIMM1 & DIMM2, or DIMM3 & DIMM4 of 4-DIMM motherboard, and DIMM1 & DIMM2 of 2-DIMM motherboard must be the same type, the same size, and the same frequency for dual channel function.

Generally, installing DDR SDRAM modules to your motherboard is very easy, you can refer to figure 2-4 to see what a 240-Pin DDR2 400 / 533 / 667 / 800 SDRAM module looks like.

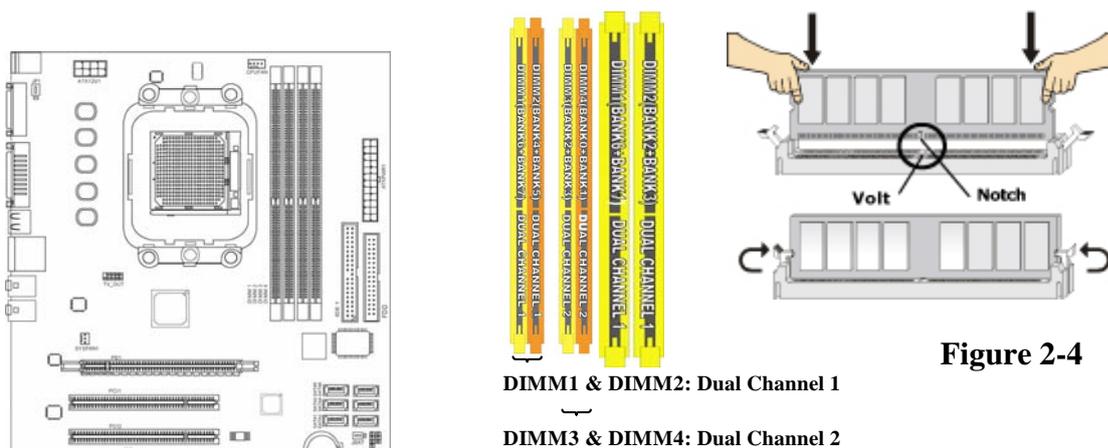


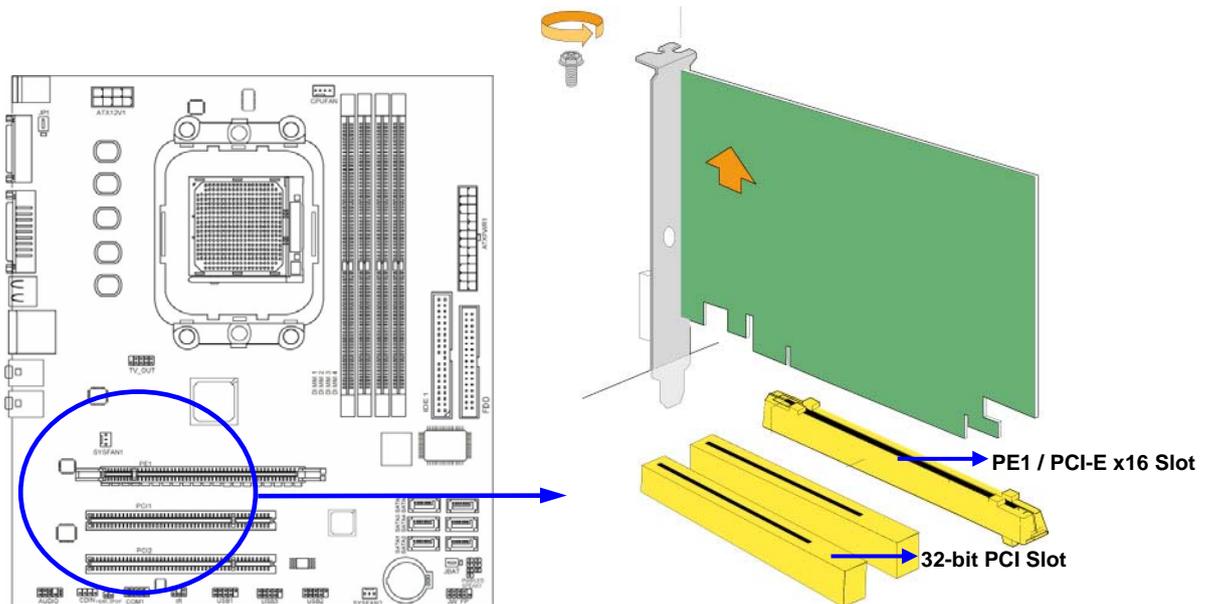
Figure 2-4

NOTE!

When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indentation on both sides

2-3 Expansion Cards

The motherboards offer one PCI-Express x16 graphics slot of 4Gbyte/sec data transfer rate at each relative direction which gets 3.5 times of bandwidth more than AGP 8X and it's up to a peak concurrent bandwidth of 8Gbyte/sec at full speed to guarantee the ultimate GPU computing performance. Two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals; the motherboards are designed of tackling the profuse multimedia requirements nowadays. Users can enjoy the high-performance of Hybrid Graphics function by utilizing the ATI VGA Card and the IGP in North bridge by program in driver.



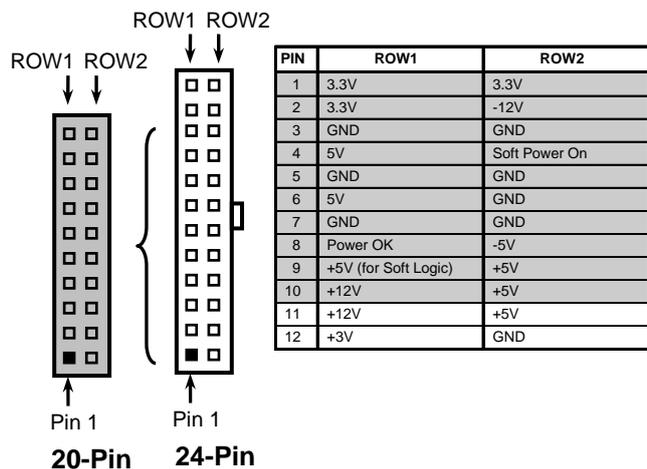
Chapter 3

Connectors, Headers & Jumpers Setting

3-1 Connectors

(1) Power Connector (24-pinblock) : ATXPWR1

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.



- ** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- ** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.

(2) ATX 12V Power Connector (8-pin block) : ATX12V1

This is a new defined 8-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports AM2 processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



(3) PS/2 Mouse & PS/2 Keyboard Connector: KB1

The connectors are for PS/2 keyboard and PS/2 Mouse

(4) USB Port connector: CN5

The connectors are 4-pin connectors that connect USB devices to the system board.

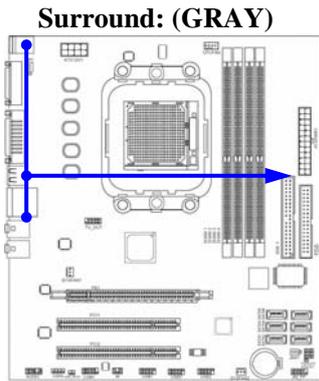
(5) LAN Port connector: UL1

This connector is standard RJ45 connector for Network The USBLAN1 support 10M/100Mb/1000Mb s data transfer rate

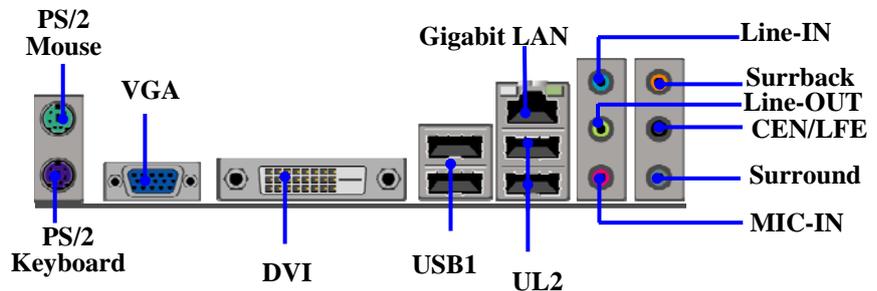
(6) Audio Line-In, Lin-Out, MIC, Surrback, Surround, CEN/LEF Connector: SURROUND1 / CN1

This Connector are 6 phone Jack for LINE-OUT, LINE-IN, MIC, Surrback, Surround, CEN/LEF

- Line-in : (BLUE)** Audio input to sound chip
- Line-out : (GREEN)** Audio output to speaker
- MIC : (PINK)** Microphone Connector
- Surrback : (ORANGE)** Audio output to speaker-Rear speaker out
- CEN/LEF : (BLACKNESS)** Audio output to speaker-Center/Subwoofer speaker out

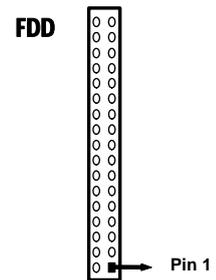


Audio output to speaker-Side speaker out



(7) Floppy drive Connector (34-pin block): FDD1

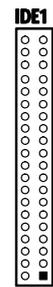
This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



(8) Primary IDE Connector (40-pin block): IDE1

This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.

Floppy Drive Connector



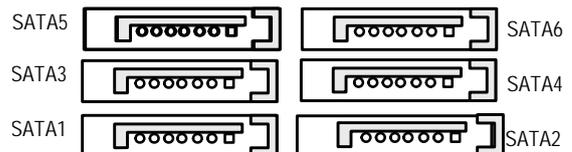
Primary IDE Connector

- Two hard disks can be connected to each connector. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For performance issues, we strongly suggest you don’t install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

(9) Serial-ATA Port connector:

SATA1 / SATA2 / SATA3/ SATA4/ SATA5/ SATA6

These connectors support the provided Serial ATA and Serial ATA2 IDE hard disk cable to connecting the motherboard and serial ATA hard disk.



Serial-ATA1 & 2 Compatible Connectors

(10) D-Sub 15-pin Connector: VGA

VGA is the 15-pin D-Subminiature female connector; it is for the display devices, such as the CRT monitor, LCD monitor and so on.

(11) DVI: Digital Visual Interface

This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

(12) HDMI: High-Definition Multimedia Interface (Optional)

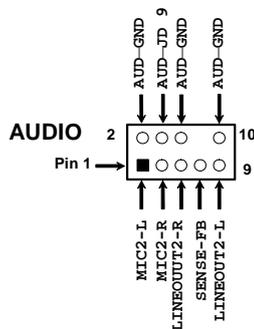
This point-to-point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipment. Inset the “Dongle Connector” on the DVI Connector, transferring the DVI Connector to HDMI Connector.



3-2 Headers

(1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO1

These headers connect to Front Panel Line-out, MIC connector with cable. Without install the cable, this header default setting is 5-6 short, 9-10 short. When you install the cable you have take off these jumpers.

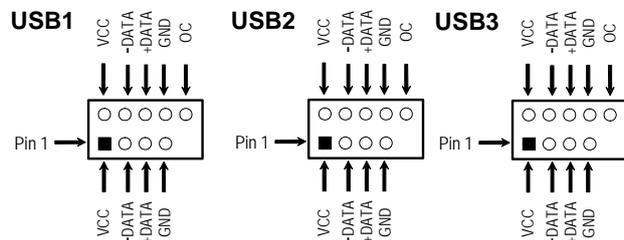


Line-Out, MIC Headers
ALC883

(2) USB Port Headers (9-pin) :

USB1 / USB2 / USB3

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.



USB Port Headers

(3) Speaker connector: SPEAK1

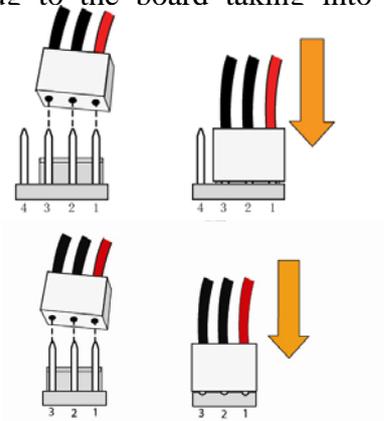
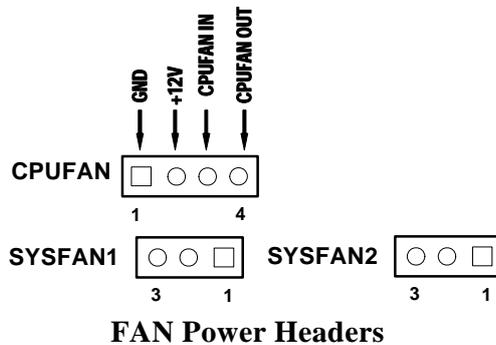
This 4-pin connector connects to the case-mounted speaker. See the figure below.

(4) Power LED: PWR LED1

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

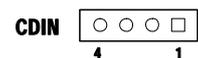
(5) FAN Power Headers: SYSFAN1, SYSFAN2 (3-pin), CPUFAN (4-pin)

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



(6) CD Audio-In Headers (4-pin) : CDIN

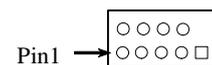
CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



CD Audio-In Headers

(7) Serial COM Port Header: COM1

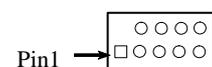
COM1 is the 9-pin block pin-header. The On-board serial port can be disabled through BIOS SETUP.



Serial COM Port 9-pin Block

(8) TV-OUT Header

TV-OUT is the 9-pin block pin-header. TV-out is commonly used to label the connector of equipment offering an analog video signal that is acceptable for a television AV input.



TV-OUT Conn. 9-pin Block

Chapter 4

USEFUL HELP

4-1 HOW TO UPDATE BIOS

Before updating the BIOS, users have to “Disable” the “Flash Part Write Protect” selection in “Miscellaneous Control” of BIOS SETUP. Otherwise the system will not allow you to upgrade BIOS by Award Flash Utility.

STEP 1. Prepare a boot disc. (you may make one by click START click RUN type SYS A:click OK)

STEP 2. Copy utility program to your boot disc. You may copy from DRIVER CD
X:\FLASH\AWDFLASH.EXE or download from our web site.

STEP 3. Download and make a copy of the latest BIOS for AMD690X PPC motherboard series from the web site to your boot disc.

STEP 4. Insert your boot disc into A:,

start the computer, type “Awdflash A:\ AMD690X.BIN /SN/PY/CC/R”

AMD690X xxx.BIN is the file name of latest BIOS it can be AMD690Xa.BIN or
AMD690Xb.BIN

SN means don't save existing BIOS data

PY means renew existing BIOS data

CC means clear existing CMOS data

R means restart computer

STEP 5. Push ENTER to update and flash the BIOS, then the system will restart automatically.

4-2 Trouble Shooting

Problem	Solution
No power to the system to the all power light don't illuminate, fan inside power supply doesn't turn on.	1. Make sure power cable is security plugged in. 2. Replace cable. 3. Contact technical support.
System inoperative. Keyboard lights are on , power indicator lights are lit, and hard drive is spinning.	Using ever pressure on both ends of the DIMM , press down firmly until the module snaps into places.
System doesn't boot from hard disk drive, can be booted from optical drive.	1. Check cable running from disk to disk controller board. .Make sure both ends are securely plugged in, check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important .All hard disks are capable of breaking down at any time.
System only boots from optical drive .Hard disk can be read and applications can be used but booting from hard disk is impossible.	1. Back up date and applications files. 2. Reformat the hard drive. Reinstall applications and date using backup disks.
Screen message says “Invalid Configuration” or “CMOS Failure”	Review system 's equipment .Make sure correct information on is in setup.
Can not boot system after installing second hard drive.	1. Set master /slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacture for compatibility with other drives.