

**IPILP-AR**

**ASUS**<sup>®</sup>

**Motherboard**

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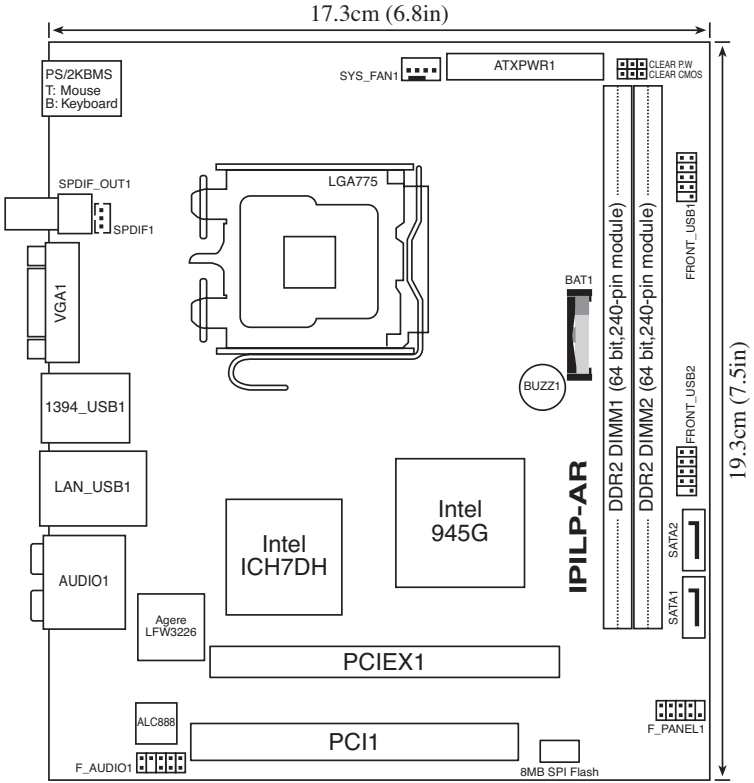
# IPILP-AR specifications summary

<b>CPU</b>	Intel® socket LGA775 Conroe/ Celeron processor 2006FMB (TDP=65W)
<b>Chipset</b>	Northbridge: Intel® 945G GMCH Southbridge: Intel® ICH7DH
<b>Front Side Bus</b>	1066/800/533 MHz
<b>Memory</b>	Dual channel memory architecture 2 x 240-pin DIMM sockets support up to 2 GB non-ECC 1.8V DDR SD RAM (Register DIMM is not supported)
<b>Expansion slot</b>	1 x PCI Express x 16 Graphics connector
<b>Rear panel</b>	1 x PS/2 mouse port 1 x PS/2 keyboard port 1 x VGA port 1 x IEEE 1394a port 1 x LAN (RJ-45) port 6 x audio ports support 8-channel High Definition Audio 8 x USB 2.0 ports support hot-plug function 1 x S/PDIF Out port
<b>Internal connectors</b>	1 x 24-pin ATX Micro-Fit power connector 2 x Serial ATA connectors 1 x IEEE 1394a connector 8 x USB 2.0 connectors 1 x System fan connector 1 x S/PDIF Out connector 1 x Front headphone connector 1 x System panel connector
<b>Storage</b>	Southbridge supports: Support Ultra DMA 300 Serial ATA Device
<b>Audio</b>	Support HD Audio codec that includes line-in, line-out (8 Channel), microphone-in, SPDIF Realtek Audio Codec ALC888
<b>LAN</b>	Intel 82562GT (Ekron-GT) 10/100Mbps Ethernet PHY (48-pin SSOP)
<b>IEEE 1394</b>	Agere LFW3226 with 1 ports PHY
<b>BIOS feature</b>	Award Code Base 8MB SPI Flash HP BIOS with Enhanced ACPI, DMI, Green, PnP Features Plus
<b>Form factor</b>	Mini-ITX Variant Form Factor: 190mm x 173mm

\*Specifications are subject to change without notice.



# 1. Motherboard layout



## 2. Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Core™2 DUO, Celeron® D and Conroe-L processors.



- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

### 2.1 Enhanced Intel SpeedStep® Technology (EIST)



- The motherboard comes with a BIOS file that supports EIST.
- Visit [www.intel.com](http://www.intel.com) for more information on the EIST feature.

#### System requirements

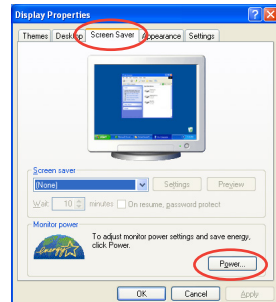
Before using EIST, check your system if it meets the following requirements:


- Intel® Yonah® Mobile processor with EIST support
- BIOS file with EIST support
- Operating system with EIST support (Windows® XP SP2/Windows® Server 2003 SP1/Linux 2.6 kernel or later versions)

#### Using the EIST

To use the EIST feature:

1. Turn on the computer, then enter the BIOS Setup.
2. Go to the Advanced Menu, highlight CPU Configuration, then press <Enter>.
3. Set the Intel(R) SpeedStep Technology item to [Automatic], then press <Enter>.
4. Press <F10> to save your changes and exit the BIOS setup.
5. After the computer restarts, right click on a blank space on the desktop, then select Properties from the pop-up menu.
6. When the Display Properties window appears, click the Screen Saver tab.
7. Click the Power button on the Monitor power section to open the Power Options Properties window.

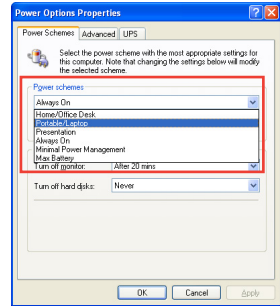


- On the Power schemes section, click , then select any option except Home/Office Desktop or Always On.
- Click Apply, then click OK.
- Close the Display Properties window.

After you adjust the power scheme, the CPU internal frequency slightly decreases when the CPU loading is low.



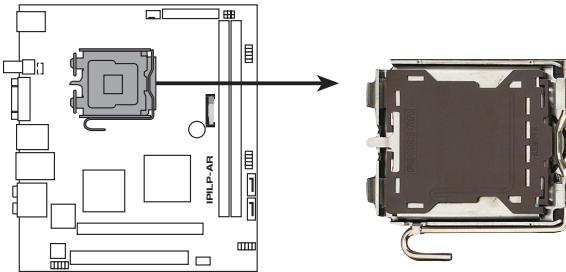
The screen displays and procedures may vary depending on the operating system.



## 2.2 Installing the CPU

To install a CPU:

- Locate the CPU socket on the motherboard.

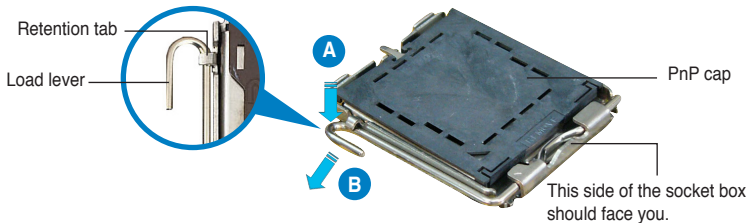


**IPILP-AR CPU Socket 775**



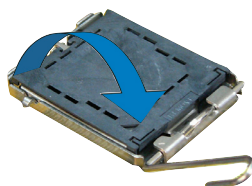
Before installing the CPU, make sure that the cam box is facing towards you and the load lever is on your left.

- Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

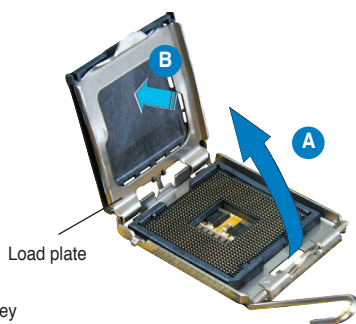


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

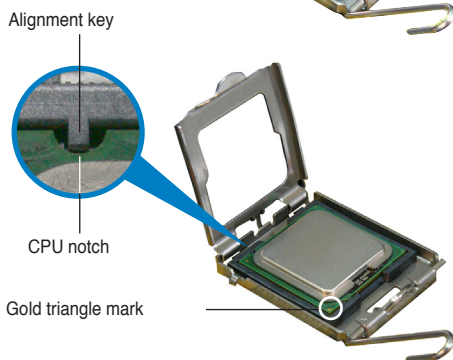
3. Lift the load lever in the direction of the arrow to a 135° angle.



4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B).

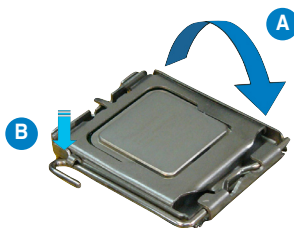


5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket then fit the socket alignment key into the CPU notch.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
7. If installing a dual-core CPU, connect the chassis fan cable to the CHA\_FAN1 connector to ensure system stability.



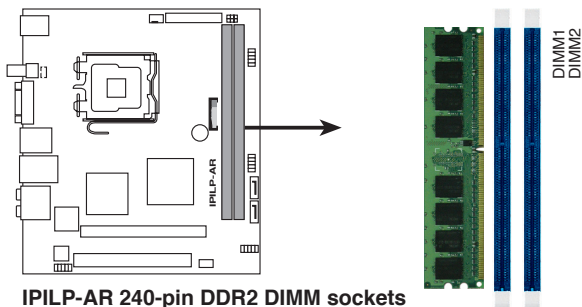
The motherboard supports Intel® LGA775 processors with the Intel® Enhanced Memory 64 Technology (EM64T), Enhanced Intel SpeedStep® Technology (EIST), and Hyper-Threading Technology. Refer to the Appendix for more information on these CPU features.



### 3. System memory

The motherboard comes with two Double Data Rate (DDR) Dual Inline Memory Modules (DIMM) sockets.

The following figure illustrates the location of the DDR DIMM sockets:



#### 3.1 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2 GB unbuffered non-ECC DDR DIMMs into the DIMM sockets.



- Installing DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations on the next page.
- In Dual-channel configurations, install only identical (the same type and size) DDR DIMM pairs for each channel.
- Always install DIMMs with the same CAS latency; otherwise, the system may run at a lower frequency. For optimum compatibility, we recommend that you obtain memory modules from the same vendor.
- When both sockets are populated with 2 GB DIMMs (total 4 GB), the system may detect only 3583 MB due to the Southbridge resource allocation.
- Make sure that the memory frequency matches the CPU FSB. Refer to the next page for configurations.

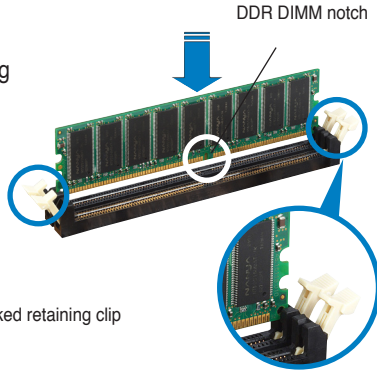
### 3.2 Installing a DIMM



Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

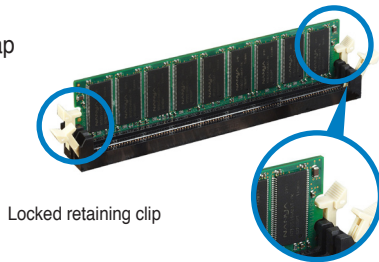
To install a DIMM:

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.



A DDR DIMM is keyed with a notch so that it fits in only one direction. **DO NOT** force a DIMM into a socket to avoid damaging the DIMM.

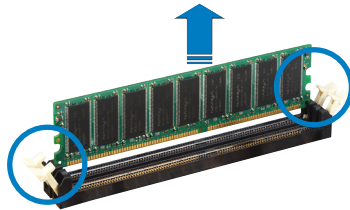
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



### 3.3 Removing a DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

## 4. Expansion slots

The motherboard has one PCI slot.

To install and configure an expansion card:

1. Turn on the system and change the necessary BIOS settings, if any.
2. Assign an IRQ to the card. Refer to the tables below.
3. Install the drivers and/or software applications for the expansion card according to the card documentation.

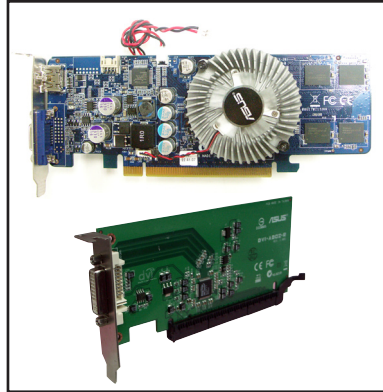
IRQ assignments for this motherboard

	A	B	C	D	E	F
PCIe slot 1	—	—	—	shared	—	—
Onboard LAN	—	—	—	—	—	—
Onboard 1394 controller	—	—	—	—	used	—

This motherboard supports PCI Express x16 graphic cards that comply with the PCI Express specifications.

The figure above shows a graphics card installed on the PCI Express x16 slot.

This motherboard supports an ASUS R-DVI-ADD2 card for DVI output. The figure below shows an R-DVI-ADD2 card installed on the PCI Express x16 slot.



# 5. Jumper

## 1. Clear RTC RAM (3-pin CLRRTC)

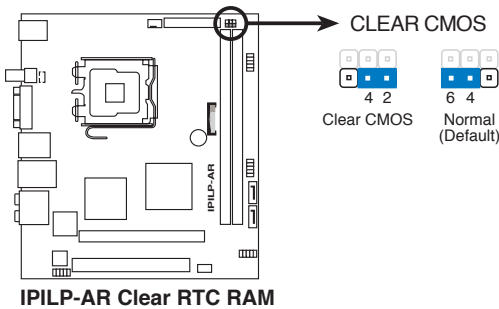
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 2-3 (Normal) to pins 1-2 (Clear CMOS). Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 2-3.
3. Plug the power cord and turn ON the computer.
4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.



Except when clearing the RTC RAM, never remove the cap from the default position. Removing the cap will cause system boot failure!

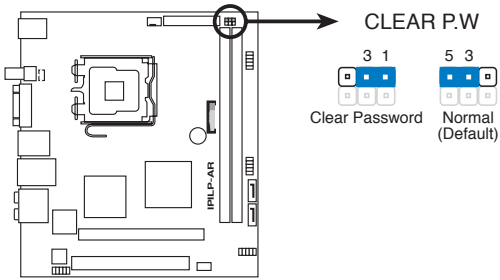


## 2. Clear password (3-pin CLPWD)

This jumper allows you to clear the password if you forgot your password.

To erase the password:

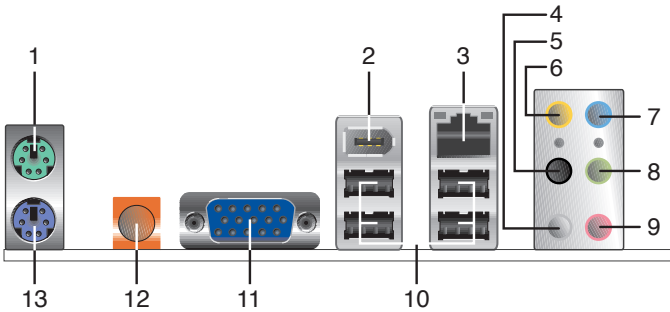
1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 2-3 (Normal) to pins 1-2 (Clear Password).
3. Plug the power cord and turn ON the computer.
4. After the computer boots up, turn OFF the computer.
5. Move the jumper cap from pins 1-2 to pins 2-3.
6. Hold down the <F1> key during the boot process and enter BIOS setup to verify that the password has been cleared.



**IPILP-AR Clear password setting**

## 6. Connectors

### 6.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
3. **LAN (RJ-45) port.** This port allows connection to a Local Area Network (LAN) through a network hub.
4. **Side Speaker Out port (gray).** This port connects to the side speakers in an 8-channel audio configuration.
5. **Rear Speaker Out port (black).** This port connects to the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.
6. **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.
7. **Line In port (light blue).** This port connects a tape, CD, DVD player or other audio sources.
8. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel mode, the function of this port becomes Front Speaker Out.
9. **Microphone port (pink).** This port connects a microphone.

## Audio 2, 4, 6, or 8-channel configuration

	Headset/ 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	-	-	Center/Subwoofer	Center/Subwoofer
Black	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Gray	-	-	-	Side Speaker Out

10. **USB 2.0 ports 1 and 2, 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
11. **VGA Graphic Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.
12. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PDIF cable.
13. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

## 6.2 Internal connectors

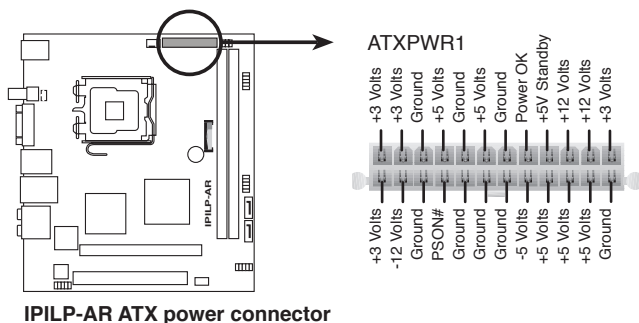
This section describes and illustrates the internal connectors on the motherboard.

### 1. ATX Micro-Fit power connectors (24-pin ATXPWR1)

These connectors are for an ATX Micro-Fit power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



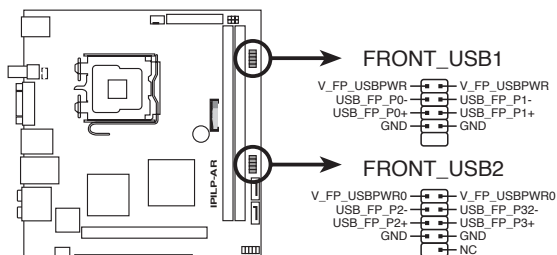
- Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 108W(only) for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.
- You must install a PSU with a higher power rating if you intend to install additional devices.



**IPILP-AR ATX power connector**

### 2. USB connectors (9-1 pin F\_USB1/2)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



**IPILP-AR USB 2.0 connectors**

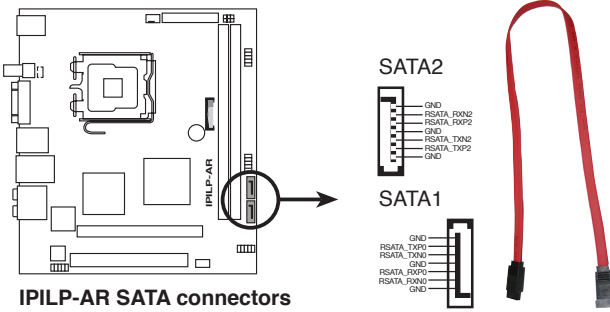


Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



### 3. Serial ATA connectors (7-pin SATA1, SATA2)

These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.



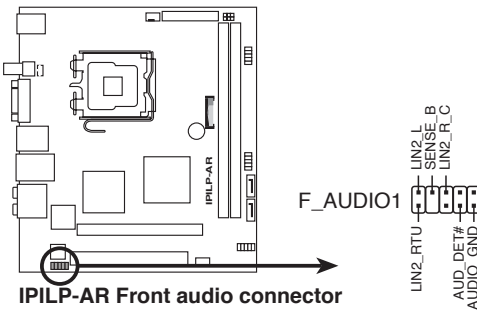
**IPILP-AR SATA connectors**



- Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA.
- When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1 connector.

### 4. Front headphone connector (10-1 pin F\_AUDIO1)

This connector is for a chassis-mounted front panel headphone port.



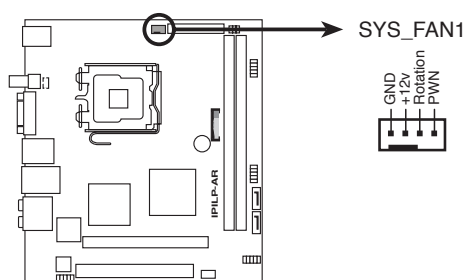
**IPILP-AR Front audio connector**

## 5. System fan connectors (3-pin SYS\_FAN1)

The fan connectors support cooling fans of 350 mA ~ 740 mA (8.88 W max.) or a total of 1 A~2.22 A (26.64 W max.) at +12 V. Connect the fan cable to the fan connector on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.



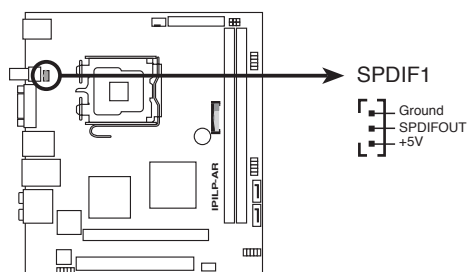
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow within the system can damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!



**IPILP-AR SYS fan connector**

## 6. Digital audio connector (4-1 pin SPDIF\_OUT2)

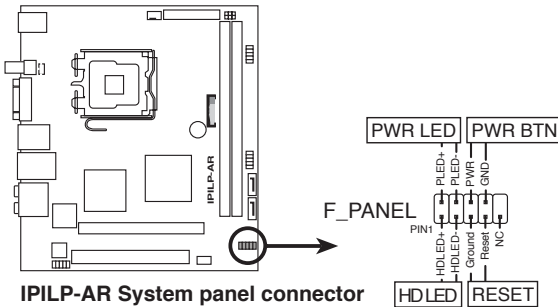
This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.



**IPILP-AR Digital audio connector**

## 7. System panel connector (10-1 pin F\_PANEL1)

This connector supports several chassis-mounted functions.



- **System power LED (2-pin PWR LED)**  
This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **Hard disk drive activity (2-pin HD LED)**  
This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.
- **Power/Soft-off button (2-pin PWR BTN)**  
This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.
- **Reset button (2-pin RESET)**  
This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

