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Table of Contents

CHAPTER 1: INTRODUCTION

1.1 BEFORE YOU START

Thank you for choosing our product. Before you start installing the mainboard, please make sure you follow the instructions below:

- Prepare a dry and stable working environment with sufficient lighting.
- Always disconnect the system from power outlet before operation.
- Before you take the mainboard out from anti-static bag, ground yourself properly by touching any safely grounded appliance, or use grounded wrist strap to remove the static charge.
- Avoid touching the components on mainboard or the rear side of the board unless necessary. Hold the board on the edge, do not try to bend or flex the board.
- Do not leave any unfastened small parts inside the case after installation. Loose parts will cause short circuits which may damage the equipment.
- Keep the system from dangerous area, such as heat source, humid air, and water.
- Please switch on/off the machine normally. That is, DO NOT pull out power cord directly from the mainboard or the system may damage.

1.2 PACKAGE CHECKLIST

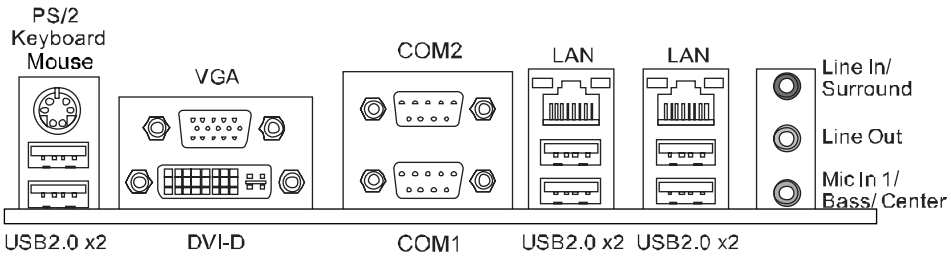
- ATX Mainboard x 1
- Fully Setup Driver CD x 1
- I/O Bracket x 1
- SATA Cable x 1

1.3 MAINBOARD SPECIFICATION

Specification			
CPU	Support Intel Ivy Bridge CPU (Co-lay support Sandy Bridge CPU/Embedded CPU SKU) Intel® Core™ i7-2600 3.4GHz up to 95W Intel® Core™ i5-2400 3.1GHz up to 95W Intel® Core™ i3-2120 3.3HHz up to 65W		
Chipset	INTEL B75 chipset (Q77 by Option)		
Graphic	Intel® Integrated Graphic Display Memory: Max. shared system memory up to 1759MB Resolution: VGA: Max. upto 2048 x 1536 at 75Hz DVI-D: Max. upto 1920 x 1200 at 60Hz		
Main Memory	4x 240pin DDR3 SDRAM max up to 32GB Each DIMM supports 512MB/ 1GB/2GB/4GB/8GB DDR3 Dual Channel Mode DDR3 memory module Supports DDR3 1066/1333, DDR3 1600 (Depending on CPU) Registered DIMM and ECC DIMM is not supported		
SATA	Chipset built-in Serial ATA controller Data transfer rates up to 3.0/6.0 Gb/s with RAID 0/1/5/10 support SATA Version 2.0/3.0 specification compliant		
LAN	1x INTEL 82574L for PCIe Gigabit LAN 1x INTEL 82579 PHY with Intel® AMT 7.0 support (by Q77 option)		
Sound Codec	Realtek ALC892 5.1 channels audio out, High-Definition Audio support		
LPC I/O	ITE IT8728 (Support PECI 3.0)		
Expansion Slots	PCI	x4	
	PCIe x1	x1	
	PCIe x4	x1	
	PCIe x16	x1	
On Board Connectors & Headers	SATA3 Connector	x1	
	SATA2 Connector	x5	
	System Fan Header	x2	
	CPU Fan Header	x1	
	Clear CMOS Header	x1	
	USB 2.0 Connector	x3	(Each connector supports x2 USB2.0 ports)
	Front Panel Header	x1	
	Front Audio Connector	x1	
	Parallel Connector	x1	
	Digital I/O Connector	x1	(4 input, 4 output)
	Serial Connectors (RS-232)	x4	(Max: 500mA output for each port)
	Power Connector (24pin)	x1	
	Power Connector (4pin)	x1	
	TPM Header	x1	
Back Panel I/O	PS/2 KB/MS	x1	(for PS/2 keyboard & mouse)
	VGA	x1	
	DVI-D	x1	

Specification			
	COM Port	x2	(Max : 500mA output for each port)
	USB2.0 Port	x6	
	RJ-45 (Gigabit LAN) Port	x2	
	Audio Jack	x3	
Board Size	220 mm (W) x 305 mm (L)		ATX
Operation Temperature	-10 ~ 60°C		
Storage Temperature	-20°C ~ 80°C		
Relative Humidity	10% ~ 90% (non-condensing)		
OS Support	Win7, WinXP Linux Intel® Embedded Graphics Drivers Version 10 (Support by Intel EIA IEGD tools) Grantech reserves right to add or remove support for any OS with or without notice.		

1.4 Rear Panel Connectors

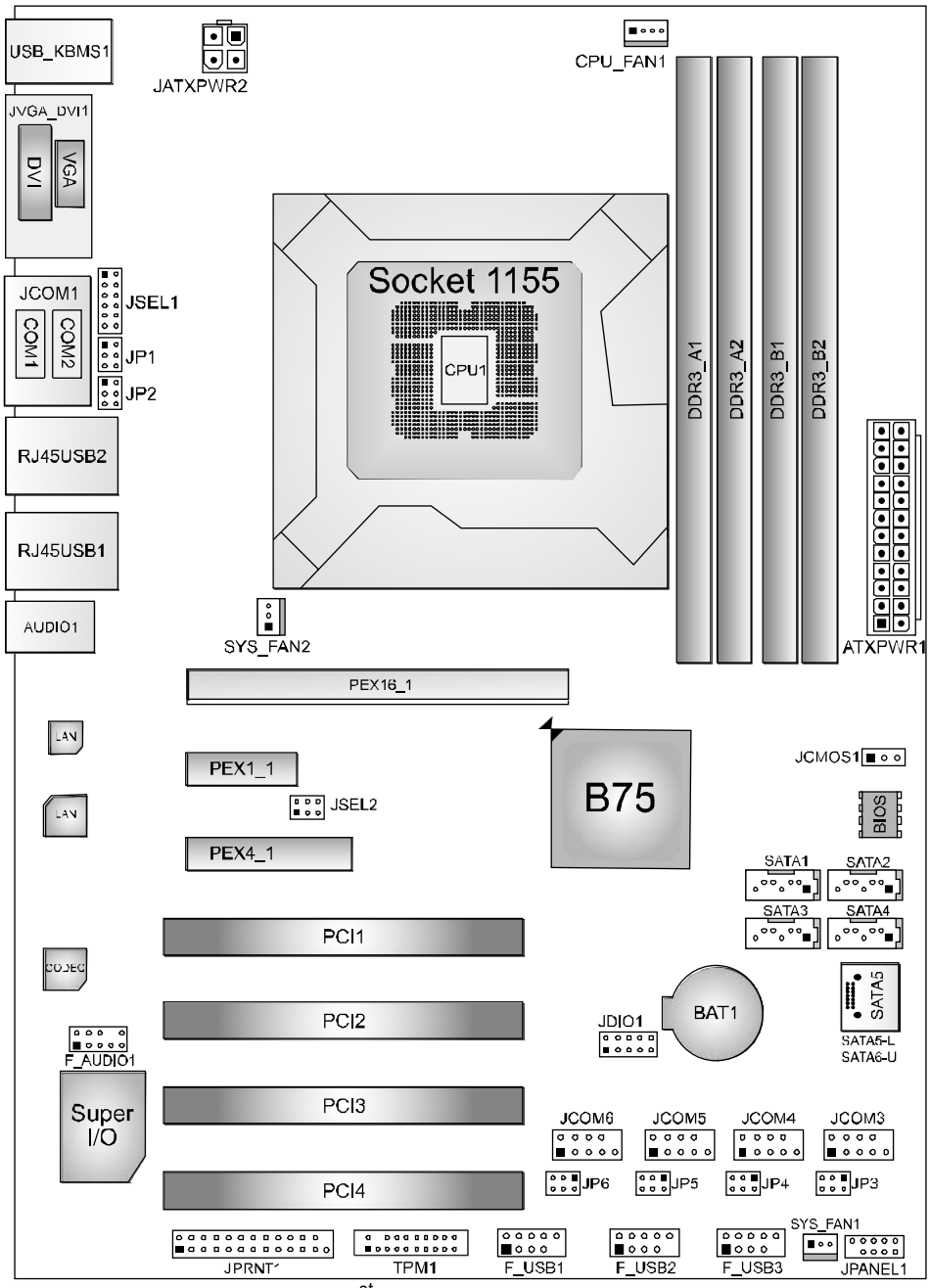


Note1: DVI-D / VGA Output require an Intel Core family processor with Intel Graphics Technology.

Note2: Since the audio chip supports High Definition Audio Specification, the function of each audio jack can be defined by software. The input / output function of each audio jack listed above represents the default setting. However, when connecting external microphone to the audio port, please use the Line In (Blue) and Mic In (Pink) audio jack.

Note3: **Maximum resolution:**
DVI: 1920 x 1200 @60Hz

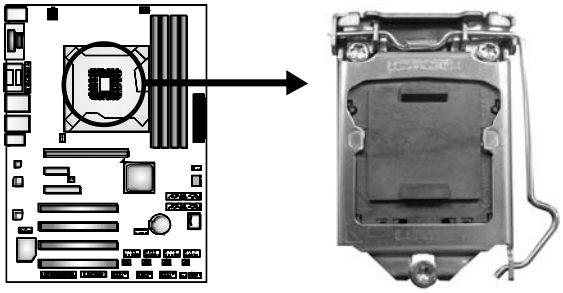
1.5 MOTHERBOARD LAYOUT



Note: ■ represents the 1st pin.

CHAPTER 2: HARDWARE INSTALLATION

2.1 INSTALLING CENTRAL PROCESSING UNIT (CPU)

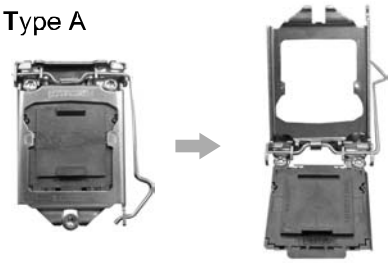


Notice:

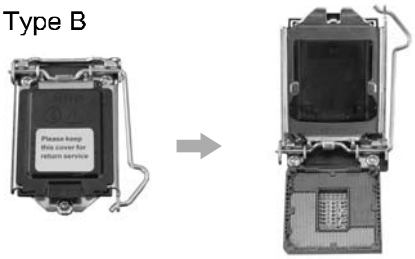
1. Remove Pin Cap before installation, and make good preservation for future use. When the CPU is removed, cover the Pin Cap on the empty socket to ensure pin legs won't be damaged.
2. The motherboard might equip with two different types of pin cap. Please refer below instruction to remove the pin cap.

Step 1: Pull the socket locking lever out from the socket then raise the lever and load plate to the fully open position.

Type A

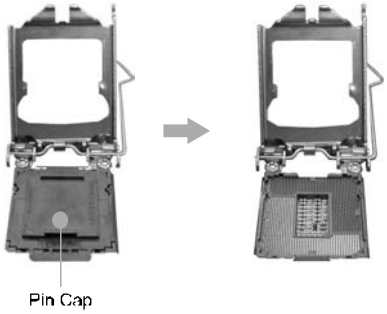


Type B

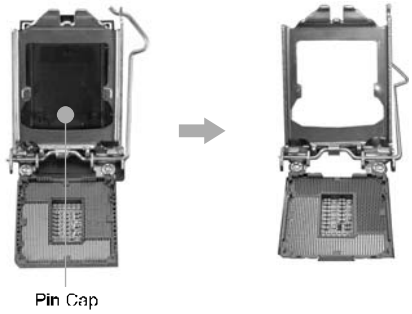


Step 2: Remove the Pin Cap.

Type A



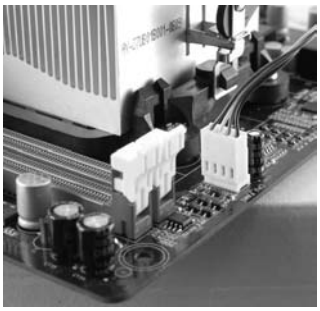
Type B



Step 3: Hold processor with your thumb and index fingers, oriented as shown. Align the notches with the socket. Lower the processor straight down without tilting or sliding the processor in the socket.

Step 4: Close the load plate. Pressing down on the load plate, close and engage the socket lever.

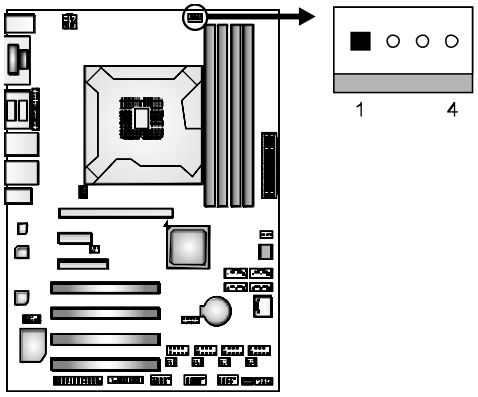
Step 5: Put the CPU Fan and heatsink assembly on the CPU and buckle it on the retention frame. Connect the CPU FAN power cable into the CPU_FAN1 to complete the installation.



2.2 FAN HEADERS

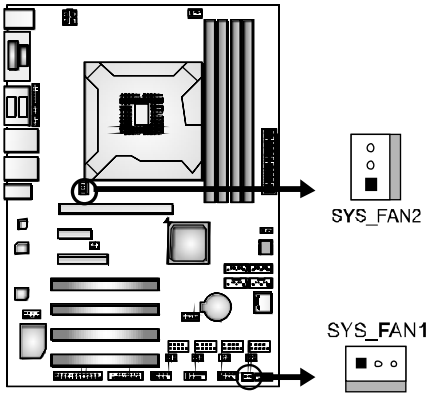
These fan headers support cooling-fans built in the computer. The fan cable and connector may be different according to the fan manufacturer. Connect the fan cable to the connector while matching the black wire to pin#1.

CPU_FAN1: CPU Fan Header



Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense
4	Smart Fan Control

SYS_FAN1/2: System Fan Header



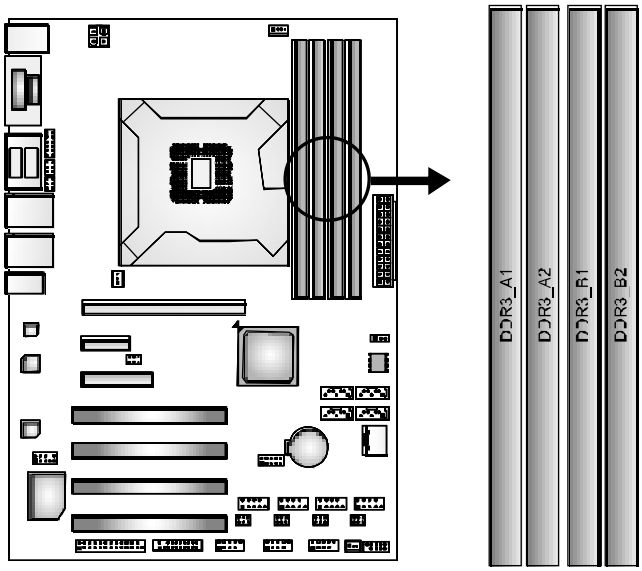
Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense

Note:

The SYS_FAN1/2 support 3-pin head connectors; the CPU_FAN1 supports 4-pin head connector. When connecting with wires onto connectors, please note that the red wire is the positive and should be connected to pin#2, and the black wire is Ground and should be connected to GND.

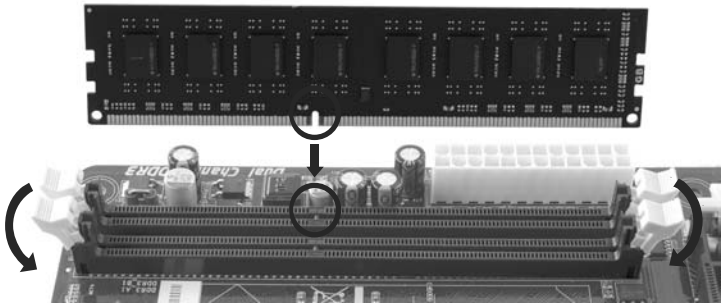
2.3 INSTALLING SYSTEM MEMORY

A. Memory Modules



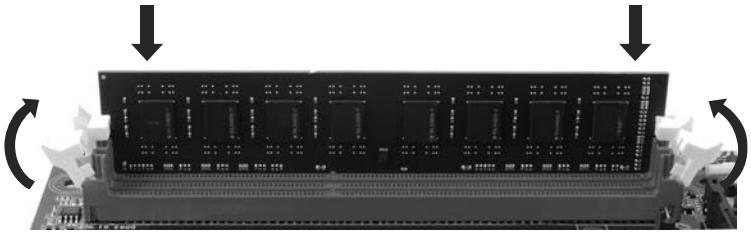
Step1:

Unlock a DIMM slot by pressing the retaining clips outward. Align a DIMM on the slot such that the notch on the DIMM matches the break on the Slot.



Step2:

Insert the DIMM vertically and firmly into the slot until the retaining chip snap back in place and the DIMM is properly seated.



Note:
If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.

B. Memory Capacity

DIMM Socket Location	DDR3 Module	Total Memory Size
DDR3_A1	512MB/1GB/2GB/4GB/8GB	Max is 32GB.
DDR3_A2	512MB/1GB/2GB/4GB/8GB	
DDR3_B1	512MB/1GB/2GB/4GB/8GB	
DDR3_B2	512MB/1GB/2GB/4GB/8GB	

C. Dual Channel Memory Installation

Please refer to the following requirements to activate Dual Channel function:

Install memory module of the same density in pairs, shown in the table.

Dual Channel Status	DDR3_A1	DDR3_A2	DDR3_B1	DDR3_B2
Enabled	O	X	O	X
Enabled	X	O	X	O
Enabled	O	O	O	O

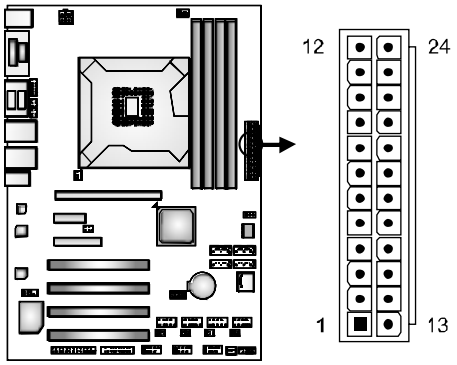
(O means memory installed, X means memory not installed.)

Note:
The DRAM bus width of the memory module must be the same(x8 or x16)

2.4 Power Supply

ATXPWR1: ATX Power Source Connector (24-pin)

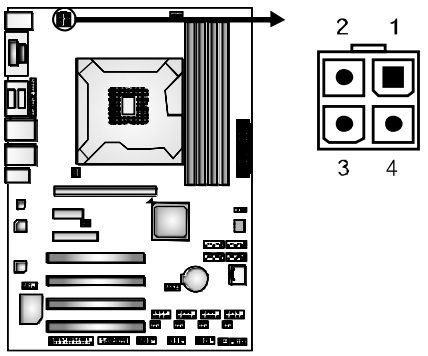
This connector allows user to connect 24-pin power connector.



Pin	Assignment	Pin	Assignment
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PW_OK	20	NC
9	Standby Voltage +5V	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

JATXPWR2: ATX Power Source Connector (4-pin)

This connector provides +12V to system power circuit.



Pin	Assignment
1	+12V
2	+12V
3	Ground
4	Ground

2.5 Onboard Slot/Connector/Header/Jumper

PEX16_1: PCI-Express x16 Slot

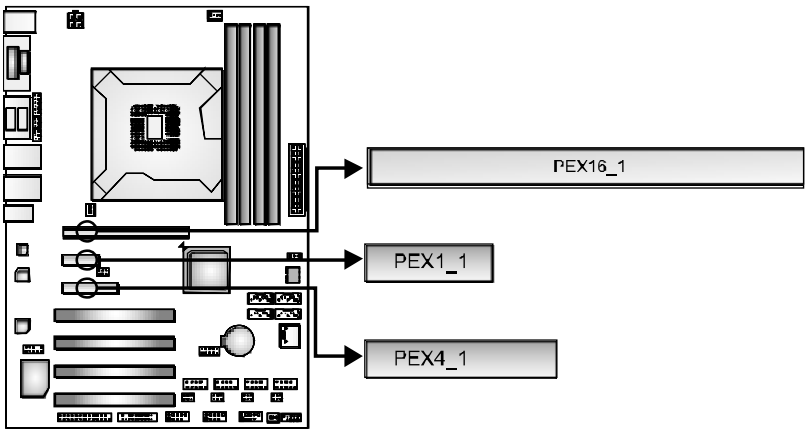
- PCI-Express 3.0 compliant.
- Maximum theoretical realized bandwidth of 16GB/s simultaneously per direction, for an aggregate of 32GB/s totally.
- PCI-Express Gen3 is supported by Core i7-3xxx / i5-3xxx CPUs.

PEX1_1: PCI-Express x1 Slot

- PCI-Express 2.0 compliant.
- Data transfer bandwidth up to 500MB/s per direction; 1GB/s in total.

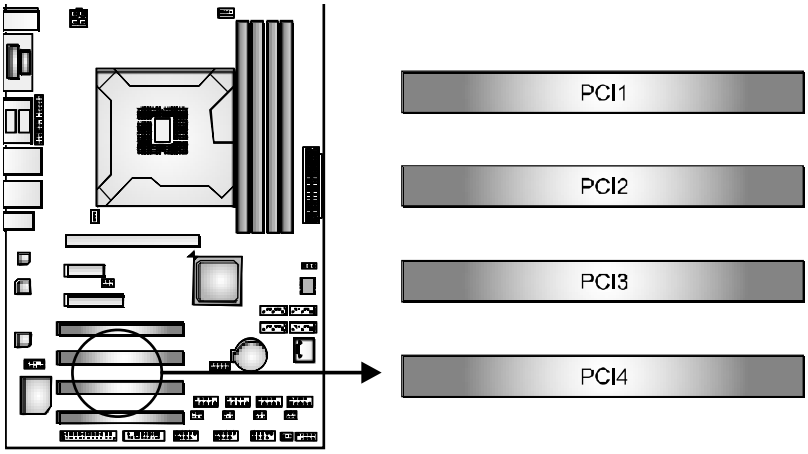
PEX4_1: PCI-Express x4 Slot

- PCI-Express 2.0 compliant.
- Data transfer bandwidth up to 2GB/s per direction; 4GB/s in total.



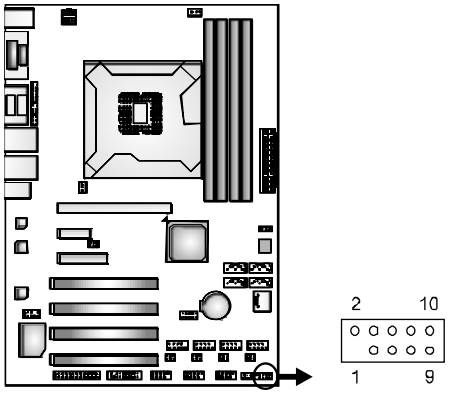
PCI1 ~ PCI4: Peripheral Component Interconnect Slots

This motherboard is equipped with 4 standard PCI slots. PCI stands for Peripheral Component Interconnect, and it is a bus standard for expansion cards. This PCI slot is designated as 32 bits.



JPANEL1: Front Panel Header

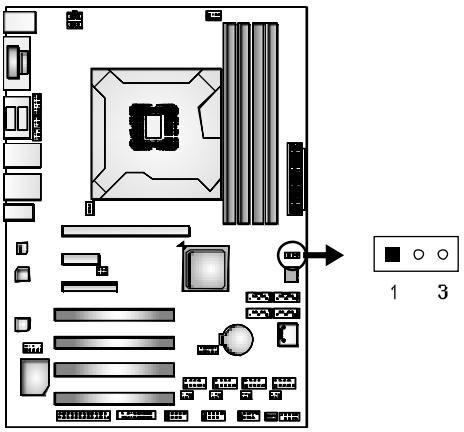
This 10-pin header includes Power-on, Reset, HDD LED, and Power LED connection. It allows user to connect the system case's front panel switch functions.



Pin	Assignment	Function	Pin	Assignment	Function
1	Key	N/A	2	Power LED+(5V)	Power LED
3	HD LED+	HDD LED	4	Power LED+(5V)	
5	HD LED-		6	Power LED-	
7	Reset	Reset Button	8	Power	Power Button
9	GND		10	Power GND	

JCMOS1: Clear CMOS Header

Placing the jumper on pin2-3 allows user to restore the BIOS safe setting and the CMOS data. Please carefully follow the procedures to avoid damaging the mainboard.



Pin 1-2 Close: (Default)
Normal Operation.

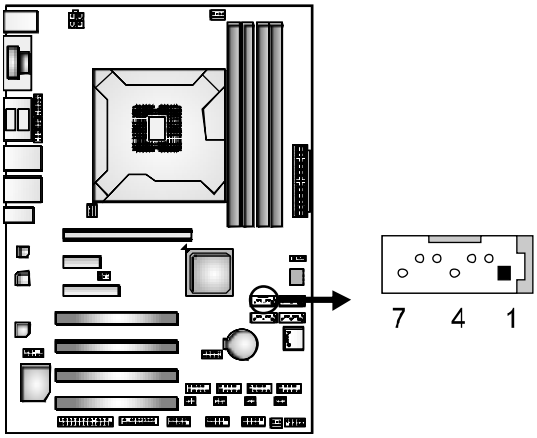
Pin 2-3 Close:
Clear CMOS data.

※ Clear CMOS Procedures:

1. Remove AC power line.
2. Set the jumper to "Pin 2-3 close".
3. Wait for five seconds.
4. Set the jumper to "Pin 1-2 close".
5. Power on the AC.
6. Reset your desired password or clear the CMOS data.

SATA1: Serial ATA3 Connector

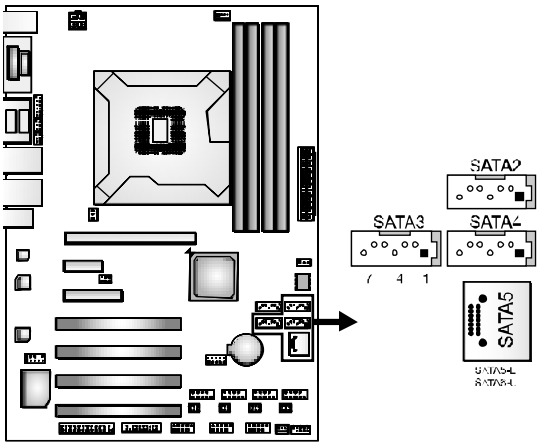
The connector connects to Serial ATA 6.0Gb/s hard disk drive and optical disc drive.



Pin	Assignment
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA2/3/4/5: Serial ATA2 Connectors

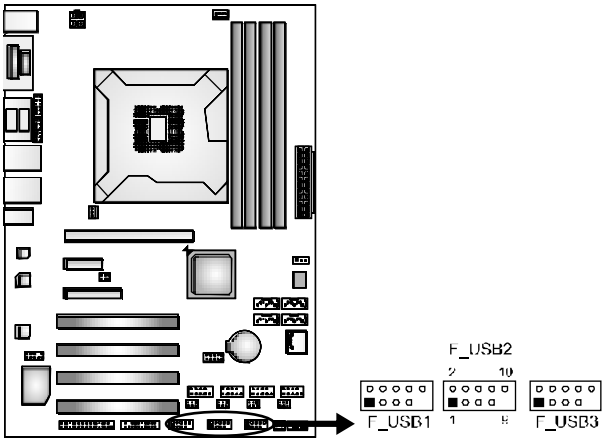
The connectors connect to Serial ATA 3.0Gb/s hard disk drive and optical disc drive.



Pin	Assignment
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

F_USB1/2/3: USB 2.0 Connectors

The mainboard provides 3 front USB pin connector, allowing up to 6 additional USB 2.0 ports up to maximum throughput of 480 Mbps. Connect the USB cable into the pin header for using high-speed USB interface peripherals.

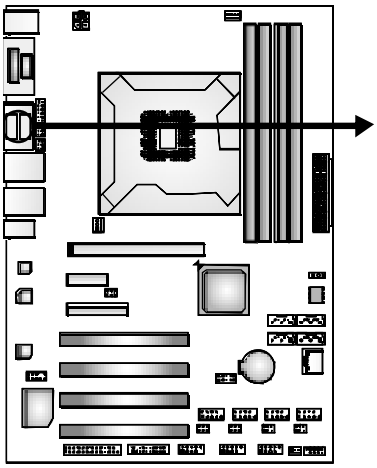


Pin	Assignment	Pin	Assignment
1	+5V (fused)	2	+5V (fused)
3	USB-	4	USB-
5	USB+	6	USB+
7	Ground	8	Ground
9	Key	10	NC

Serial Port Connectors:

The motherboard has 6 Serial Port Connectors for connecting RS-232 Port.

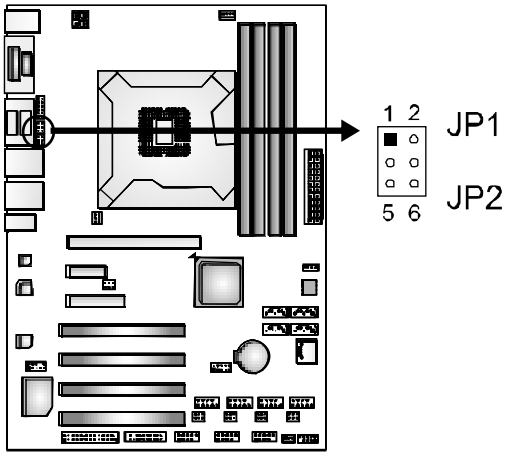
JCOM1/2: Serial Port Connectors



Pin	Assignment
1	Carrier detect (DCD)
2	Received data (RXD)
3	Transmitted data (TXD)
4	Data terminal ready (DTR)
5	Signal ground (GND)
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to send (CTS)
9	Ring / 5V / 12V

JP1/2: Voltage Switch jumpers for JCOM1/2 ports

The headers are for controlling the Pin9 of JCOM1/2 ports to switch Ring/5V/12V.



Pin 1-2 Close:
Pin9=5V

Pin 3-4 Close:
Pin9=Ring
(Default)

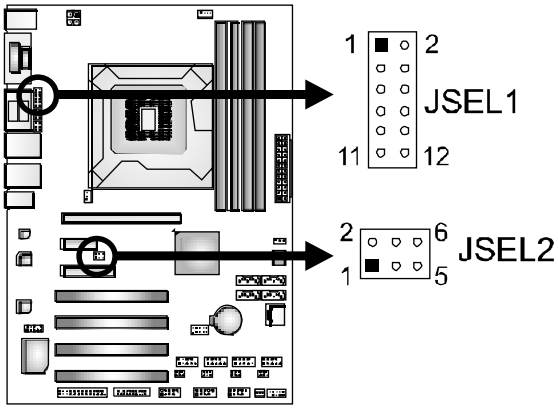
Pin 5-6 Close:
Pin9=12V

mark:

Max output: 12V@500mA for each COM port

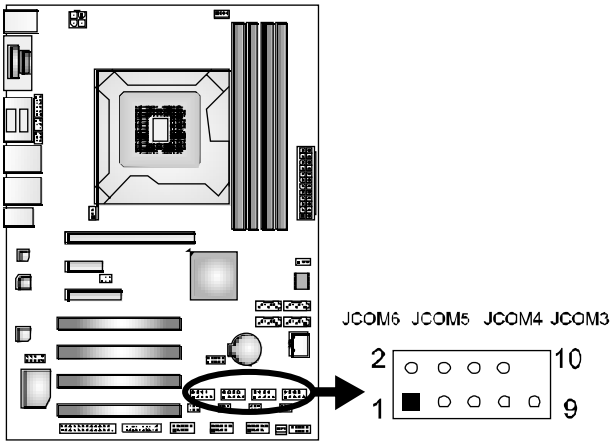
JSEL1/JSEL2: RS-232/422/485 Switch Headers for JCOM1

The headers determine that JCOM1 belongs to RS-232 (Default), 422, or 485.



JSEL1		
RS-232	**RS-422**	**RS-485**
1-3	3-5	3-5
2-4	4-6	4-6
7-9	9-11	9-11
8-10	10-12	10-12
JSEL2		
1-2	RS-232	
3-4	RS-422	
5-6	RS-485	

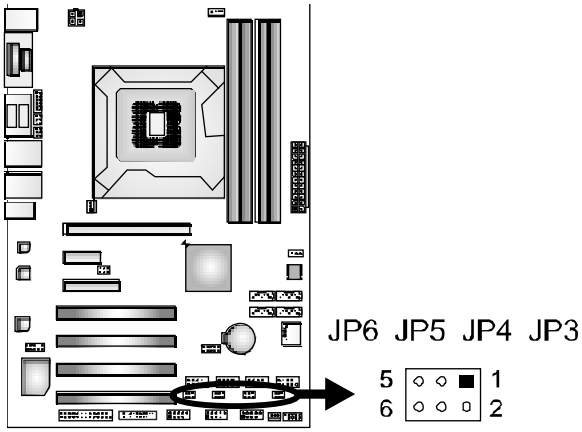
JCOM3/4/5/6: Serial Port Connectors



Pin	Assignment	Pin	Assignment
1	-PDCD	2	PSIN
3	PSOUT data	4	-PDTR
5	GND	6	-PDSR
7	-PRTS	8	-PCTS
9	Ring/5V/12V	10	NC

JP3/4/5/6: Voltage Switch jumpers for JCOM3/4/5/6 ports

The headers are for controlling the Pin9 of JCOM3/4/5/6 ports to switch Ring/5V/12V.



Pin 1-2 Close:
Pin9=5V

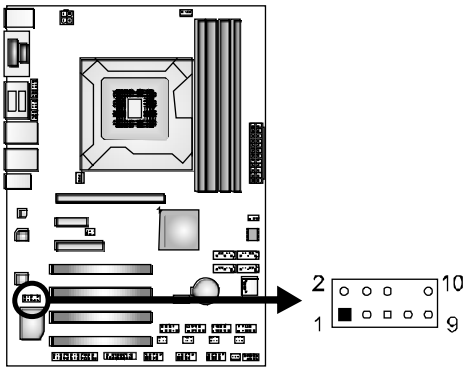
Pin 3-4 Close:
Pin9=Ring
(Default)

Pin 5-6 Close:
Pin9=12V

Remark:
Max output: 12V@500mA for each COM port

F_AUDIO1: Front Panel Audio Header

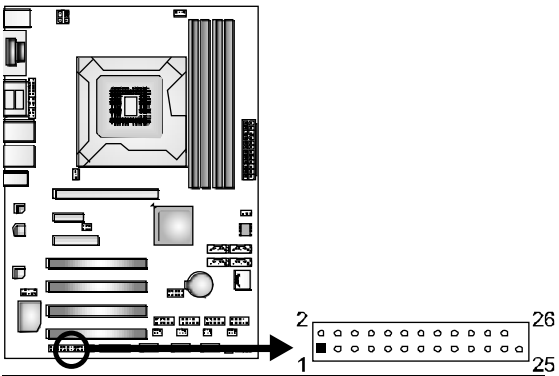
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices. This header allows only HD audio front panel connector; AC'97 connector is not acceptable..



Pin	Assignment	Pin	Assignment
1	Mic Left in	2	Ground
3	Mic Right in	4	Present Sense
5	Right line out	6	GND_AUD
7	Front Sense	8	Key
9	Left line out	10	GND_AUD

JPRNT1: Printer Port Connector

This header allows you to connect printer port on the PC.

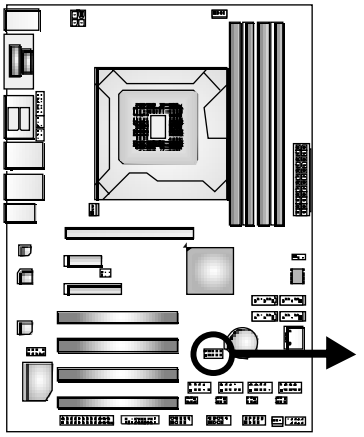


Pin	Assignment	Pin	Assignment
1	-Strobe	2	-ALF
3	Data 0	4	-Error
5	Data 1	6	-Init
7	Data 2	8	-Scltin
9	Data 3	10	Ground
11	Data 4	12	Ground
13	Data 5	14	Ground
15	Data 6	16	Ground
17	Data 7	18	Ground
19	-ACK	20	Ground
21	Busy	22	Ground
23	PE	24	Ground
25	SCLT	26	Key

JDIO1: Digital I/O Connector

This connector offers 4-pair of digital I/O functions and address is set in BIOS. The default address is:

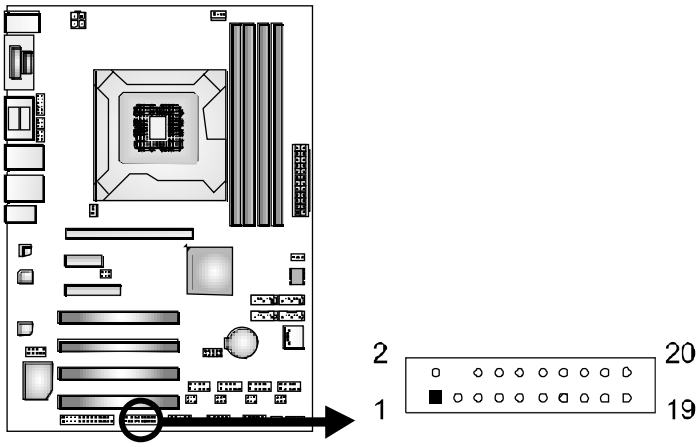
- DI01 -> A22H BIT5-> GPIO35
- DI02 -> A22H BIT4> GPIO34
- DI03 -> A20H BIT4-> GPIO14
- DI04 -> A24H BIT0-> GPIO50
- DO01 -> A25H BIT4-> GPIO64
- DO02 -> A25H BIT5-> GPIO65
- DO03 -> A25H BIT6-> GPIO66
- DO04 -> A25H BIT7-> GPIO67



Pin	Assignment	Pin	Assignment
1	5V	2	Digital-In-01
3	Digital-Out-01	4	Digital-In-02
5	Digital-Out-02	6	Digital-In-03
7	Digital-Out-03	8	Digital-In-04
9	Digital-Out-04	10	GND

TPM1: Trusted Platform Module Header

This header allows you to store cryptographic keys that protect information



Pin	Assignment	Pin	Assignment
1	CLK_PCI_TPM	2	Ground
3	LFRAME#	4	Key
5	PL_RST2#	6	VCC5
7	FWH3	8	FWH2
9	VCC3_3	10	FWH1
11	FWH0	12	Ground
13	SMBCLK	14	SMBDATA
15	AUX33	16	SERIRQ
17	Ground	18	CLK_RUN#
19	SUS_STAT#	20	LDRQJ1

*How to Setup Jumpers

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is “close”, if not, that means the jumper is “open”.

Pin opened

Pin closed

Pin1-2 closed