integration with integrity

3308360 User's Manual

Full-Size PICMG 1.3 SHB

Version 1.0

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Introduction

Product Description

The PICMG1.3 SHB board incorporates the Intel® Q35 Express Chipset, consisting of the Intel® Q35 Graphic Memory Controller Hub (GMCH) and Intel® I/O Controller Hub 9 (ICH9), is an optimized integrated graphics solution with a 800/1066/1333 MHz front-side bus.

The integrated graphics engine, based on Intel® Graphics Media Accelerator 3100 (Intel® GMA 3100) architecture, supports Dual Independent Display and delivers richer visual color and picture clarity without the need for additional discrete graphics cards, and the integrated audio support enables premium digital sound and delivers advanced features such as multiple audio.

The CPU card also supports Dual-Channel DDR2 Memory in two DIMM sockets with up to 12.8 GB/s of bandwidth and 4 GB memory addressability for faster system responsiveness and support of 64-bit computing.

The main features of the SBC are:

- Supports Intel Core 2 Duo, Core 2 Quad, and Celeron 400 (Conroe-L) sequence processor
- Two DDR2 667/800 SDRAM DIMM, Max. 4GB
- Onboard Gigabit Ethernet
- Intel® Q35 Express VGA for CRT
- 4x USB 2.0, 2x COM, Watchdog timer, Digital I/O
- 5.1 Ch. Audio
- Optional backplane with 2x PCI-E(x4), 1x PCI-E (x16), 8x PCI slots, 2x ISA slots, 4x USB connectors

Dimensions of the board are 338mm x 126mm.

Checklist

Your Pentium ® 4 CPU card package should include the items listed below:

- The CPU card
- This User's manual
- 1 Floppy cable
- 1 IDE cable
- 1 USB cable with bracket (USB2K-4)
- 1 Y-Cable supporting a PS/2 Keyboard and a PS/2 Mouse
- 1 SATA cable
- 2 Serial Port Ribbon Cable and 1 Parallel Port Attached to a Mounting Bracket
- 1 Audio cable with bracket (Audio-18K)
- Optional backplane (IP314)
- 1 CD containing the following:
  - Chipset Drivers
  - Flash Memory Utility

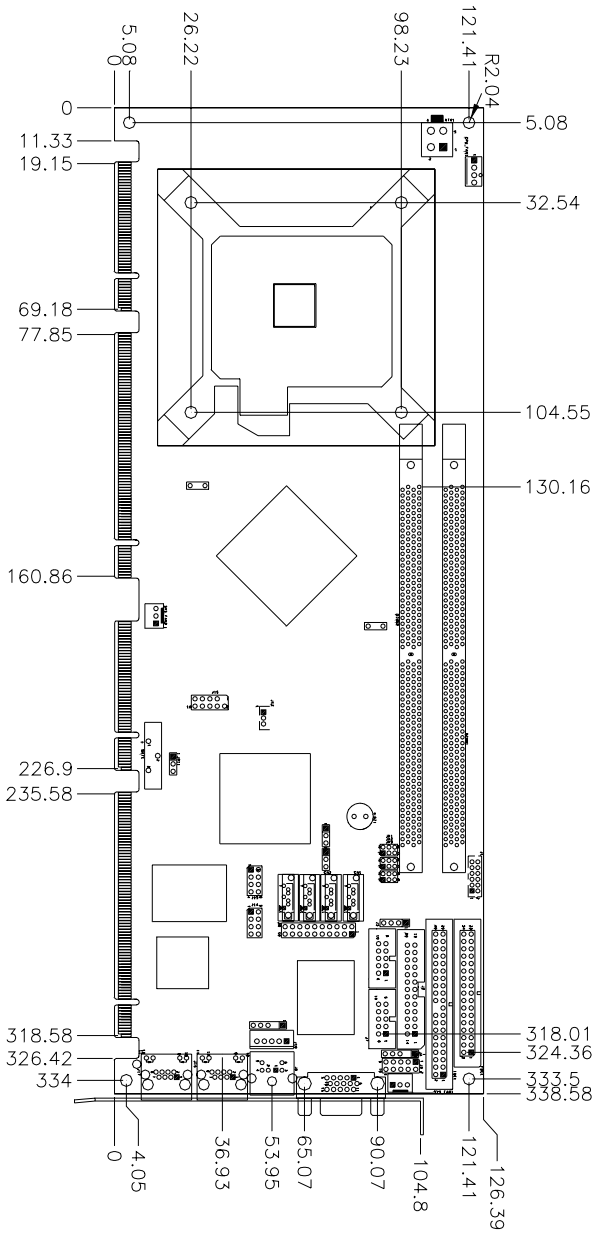
Reminder:
SATA:
When using the legacy operating system, only one controller is available and the ports supported are SATA port 0, 1 (CN1, CN2).

It is suggested that the operating system is installed using these SATA ports.

Specifications

Form Factor	PICMG 1.3 SHB Express ful size CPU card
CPU Support	Socket LGA775, Supports th Intel Core 2 Duo and Intel Core2 Quad processors, anc Intel Celeron 400 (Conroe-L) Sequence processor.
CPU Voltage	0.5V~1.6V (VRD 11.0)
System Speed	Up to 3.8GHz+
CPU FSB	800MHz/1066MHz/1333MHz
Green /APM	APM1.2
CPU Socket	LGA 775
Chipset	Intel® Bearlake Chipset Q35 + ICH9 Q35 + ICH9R
BIOS	Award BIOS; supports ACPI
VGA	Q35 built-in, supports CRT
LAN1	Intel 82566DM PCI Express igabit PHY
LAN2	Intel 82574L PCI Express Gi abit controller
Memory type	Support Dual Channel DDR2 DIMM Module x 2, 66 '800MHz (Without ECC function), Max 4GB
LPC I/O	W83627EHG: IrDA x1, Paral l x1, COM1 (RS232), COM2 (RS232/422/485), FDCx1, H rdware monitoring
RTC/CMOS	Built in ICH9/ICH9R
Battery	Lithium battery
Keyboard/Mouse	Supports PS/2 Keyboard/Mo se connector
IDE	ITE IT8211 PCI to PATA cor roller for one PATA channel support
SATA II	Intel ICH9 built-in SATA II cc troller (3.0Gb/sec) w/ 4 ports
Edge Connector	DB15 x1 for VGA PS/2 Connector x1 for keybc rd/mouse RJ-45 x2 for Gigabit LAN
Onboard Header/Connector	40 pins box-header x1 for ID 1 34 pins box-header x1 for Fl opy 26 pins box-header x1 for LF 10 pins box-header x2 for C(M1/2 8 (4x2) pins header x 2 for U B1~4 5 pins header x 1 for IrDA(cu pin2) 12 pins header x1 for audio ne-Out, Line-In & Microphone 4 pins header x1 for built-in s eaker SATA connector x4 for 4 SA A ports
Watchdog Timer	Yes (256 segments, 0, 1, 2.. 255 sec/min)
Digital I/O	4 In / 4 Out
System Voltage	+5V, +3.3V, +12V, 5VSB (2A
Other	Modem Wakeup, LAN Wake p
Board Size	338mm x 126mm
Golden Finger I/F (Also Backplane Spec.)	PCI w/ 4x PCI master (Supp ts 4 PCI Slots) 4x (x1 PCIe slots) 1x (x16 PCIe slot) 4x USB2.0 ports

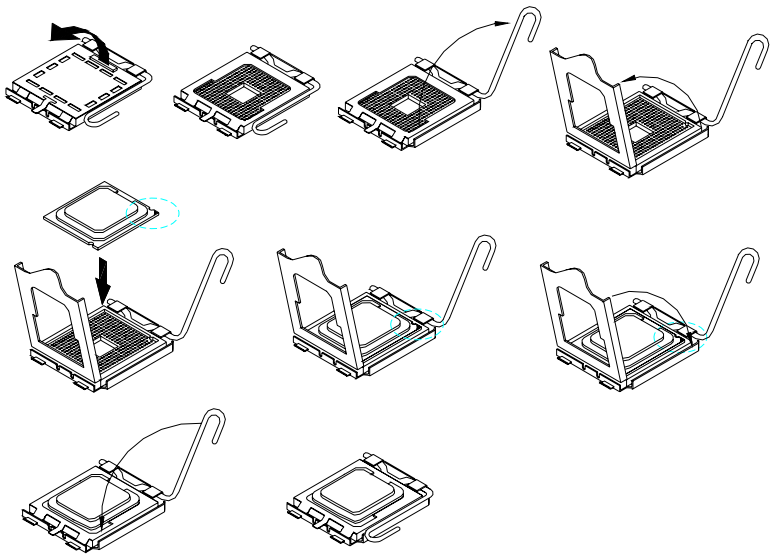
Board Dimensions



Installing the CPU

This board supports an LGA 775 processor socket for Intel Core 2 Duo and Intel Core2 Quad processors, and Intel Celeron 400(Conroe-L) Sequence processor.

The LGA 775 processor socket comes with a lever to secure the processor. Refer to the pictures below, from left to right, on how to place the processor into the CPU socket. ***Please note that the cover of the LGA775 socket must always be installed during transport to avoid damage to the socket.***



Installing the Memory

This board supports two DDR2 memory sockets for a maximum total memory of 4GB in DDR2 memory type. It supports DDR2 667/800.

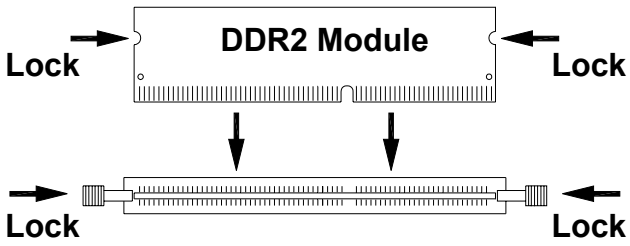
Basically, the system memory interface has the following features:

- Supports two 64-bit wide DDR data channels
- Available bandwidth up to 6.4GB/s (DDR2 800) for single-channel mode and 12.8GB/s (DDR2 800) in dual-channel mode.
- Supports 256Mb, 512Mb, 1Gb DDR2 technologies.
- Supports only x8, x16, DDR2 devices with four banks
- Supports only unbuffered DIMMs
- Supports opportunistic refresh
- Up to 32 simultaneously open pages (four per row, four rows maximum)

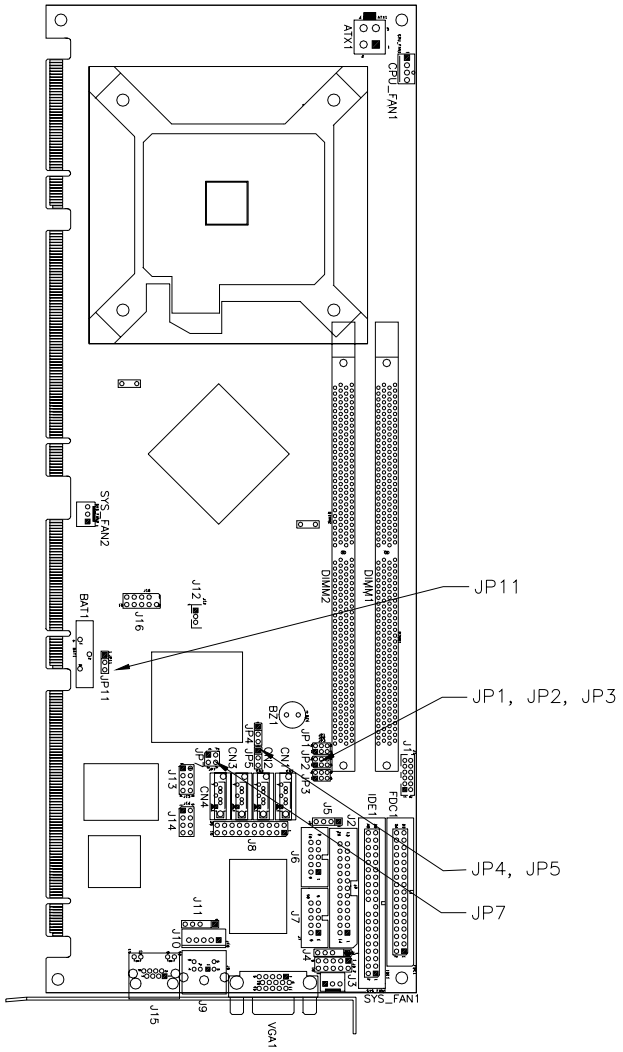
Installing and Removing Memory Modules

To install the DDR2 modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR2 module so that the key of the DDR2 module align with those on the memory slot.
2. Gently push the DDR2 module in an upright position until the clips of the slot close to hold the DDR2 module in place when the DDR module touches the bottom of the slot.
3. To remove the DDR2 module, press the clips with both hands.



Jumper Locations on 3308360



Jumpers on 3308360.....Page
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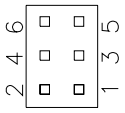
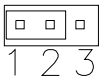
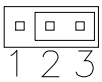
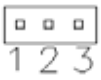
JP1, JP2, JP3: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM2 selection.

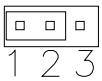
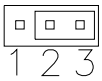


COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP1: 1-2 JP2: 3-5 & 4-6 JP3: 3-5 & 4-6	JP1: 3-4 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4	JP1: 5-6 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4

JP4: Configure and Recovery (Factory use only)

JP9	Setting	Function
	Pin 1-2 Short/Closed	Normal (default)
	Pin 2-3 Short/Closed	Configure
	Open	Recovery

JP5: Power ON Setting

JP17	Setting	Function
	Pin 1-2 Short/Closed	Power on by system button
	Pin 2-3 Short/Closed	Power on by power supply AC on

JP7: ICH9 PCI-E port 1-4 Configuration Settings

JP7 Setting	Function
Pin 1-2 & 3-4 Short	ICH9 PCI-E port 1-4 setting as 1x PCI-E x4
Pin 1/2/3/4 Open	ICH9 PCI-E port 1-4 setting as 4x PCI-E x1

JP11: Clear CMOS Contents

Use JP11 to clear the CMOS contents. *Note that the ATX-power connector should be disconnected from the board before clearing CMOS.*

JP11	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

Connectors on 3308360

The connectors allow you to connect external devices such as keyboard, mouse, hard disk drives, printers… etc. The following table lists the connectors on

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SYS_FAN1, SYS_FAN2: SYSTEM Fan Power Connector 14
CN1, CN2, CN3, CN4: SATA HDD Connector 14
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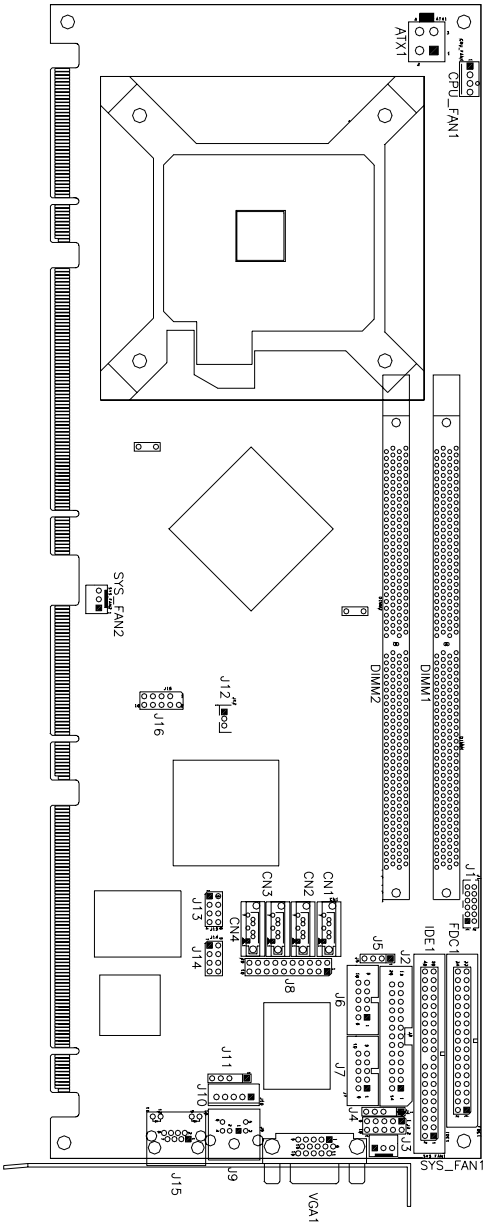
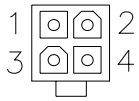
J15, J17: Gigabit LAN RJ45 Connector 21
J16: SPI Debug Tools Port (Factory use only) 21

Connector Locations on 3308360



ATX1: ATX 12V Power Connector
DIMM1: Channel A DDR2 Socket
DIMM2: Channel B DDR2 Socket
CPU_FAN1: CPU Fan Power Connector
SYS_FAN1, SYS_FAN2: System Fan Power
CN1, CN2, CN3, CN4: SATA HDD Connector
IDE1: Primary IDE Connectors
FDC1: Floppy Drive Connector
VGA1: VGA CRT Connector
J1: External Audio Connector
J2: Parallel Port Connector
J3: Digital I/O Connector (4 in, 4 out)
J4: IrDA Connector
J5: CD-In Audio Connector
J6: COM2 Serial Port
J7: COM1 Serial Ports Connector
J8: System Function Connector
J9: PS/2 Keyboard and Mouse Connector
J10, J11: External PS/2 MS/KB Connector
J12: Wake On LAN Connector
J13: USB Connector
J14: USB Connector
J15, J17: Gigabit LAN RJ45 Connector
J16: SPI Debug Tools Port (Factory use only)

ATX1: ATX 12V Power Connector



Pin #	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

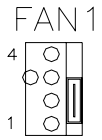
DIMM1: Channel A DDR2 Socket

DIMM1is the first-channel DDR2 sockets.

DIMM2: Channel B DDR2 Socket

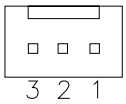
DIMM2 is the second-channel DDR2 sockets.

CPU_FAN1: CPU Fan Power Connector



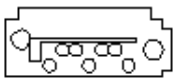
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

SYS_FAN1, SYS_FAN2: SYSTEM Fan Power Connector



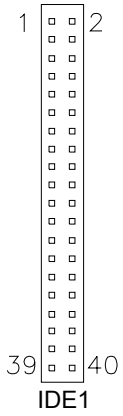
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

CN1, CN2, CN3, CN4: SATA HDD Connector



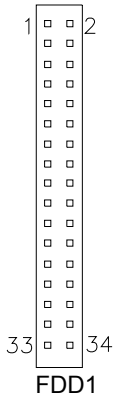
Pin #	Signal Name
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

IDE1: Primary IDE Connector



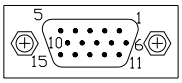
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

FDC1: Floppy Drive Connector



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

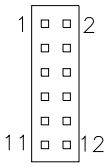
VGA1: VGA CRT Connector



Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
N.C.	11	12	DDCDATA
HSYNC	13	14	VSYNC
DDCCLK	15		

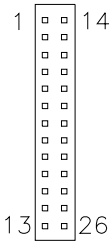
J1: External Audio Connector

J1 is a 12-pin header that is used to connect to the optional audio cable that integrates jacks for Line In, Line Out and Mic.



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	1	2	LINEOUT_L
Ground	3	4	Ground
LINEIN_R	5	6	LINEIN L
Ground	7	8	Ground
Mic-In	9	10	VREF-Mic
Ground	11	12	Protect pin

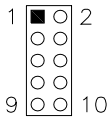
J2: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

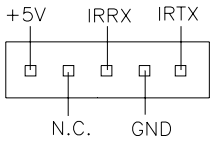
J3: Digital I/O Connector (4 in, 4 out)

This 10-pin digital I/O connector supports TTL levels and is used to control external devices requiring ON/OFF circuitry.



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	+5V
Out3	3	4	Out1
Out2	5	6	Out0
IN3	7	8	IN1
IN2	9	10	IN0

J4: IrDA Connector



Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

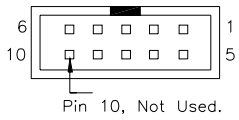
J5: CD-In Audio Connector

Pin #	Signal Name
1	CD Audio R
2	Ground
3	Ground
4	CD Audio L

J6: COM2 Serial Port

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

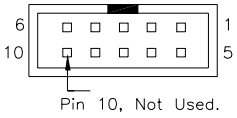
Please refer to JP1, JP2, JP3: RS232/422/485 (COM2) Selection



Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

J7: COM1 Serial Ports Connector

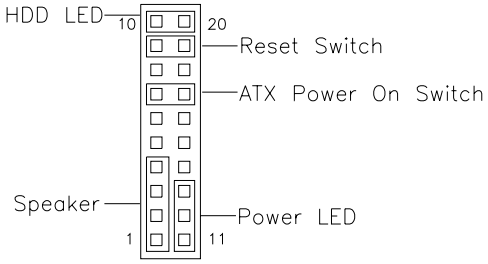
J7 is a 10-pin header support RS232 COM ports.



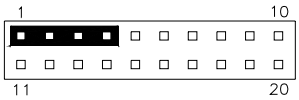
Signal Name	Pin	Pin	Signal Name
DCD	1	6	DSR
RX	2	7	RTS
TX	3	8	CTS
DTR	4	9	RI
GND	5	10	NC

J8: System Function Connector

J8 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status.

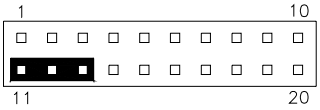


Speaker: Pins 1 - 4
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



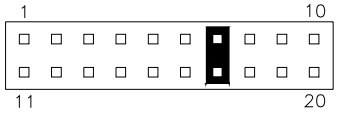
Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 13
The power LED indicates the status of the main power switch.

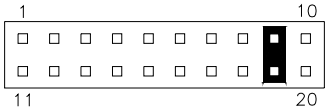


Pin #	Signal Name
11	Power LED
12	No connect
13	Ground

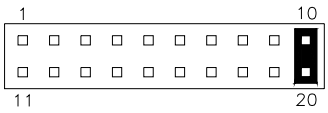
ATX Power ON Switch: Pins 7 and 17
This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



Reset Switch: Pins 9 and 19
The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.



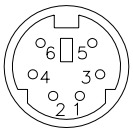
Hard Disk Drive LED Connector: Pins 10 and 20
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD Active
20	5V

J9: PS/2 Keyboard and Mouse Connector

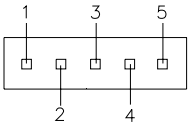
J9 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



J9

Pin #	Signal Name
1	Keyboard data
2	Mouse data
3	Ground
4	Vcc
5	Keyboard Clock
6	Mouse Clock

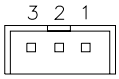
J10, J11: External PS/2 Mouse and Keyboard Connector



Pin #	J10	J11
1	KB clock	Mouse data
2	KB data	N.C.
3	N.C.	Ground
4	Ground	Vcc
5	Vcc	Mouse clock

J12: Wake On LAN Connector

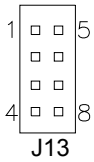
J12 is a 3-pin header for the Wake On LAN function on the motherboard. The following table shows the pin out assignments of this connector. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 1A.



Pin #	Signal Name
1	+5VSB
2	Ground
3	LAN Wakeup

J13: USB Connector

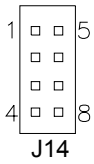
The following table shows the pin outs of the USB pin header.



Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
USB0-	2	6	USB1+
USB0+	3	7	USB1-
Ground	4	8	Vcc

J14: USB Connector

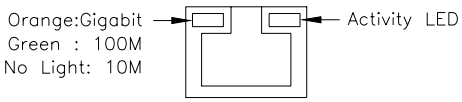
The following table shows the pin outs of the USB pin header.



Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
USB2-	2	6	USB3+
USB2+	3	7	USB3-
Ground	4	8	Vcc

J15, J17: Gigabit LAN RJ45 Connector

J15, J17 are Gigabit LAN RJ45 connectors.



J16: SPI Debug Tools Port (Factory use only)

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support your products, projects and business.

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