



integration with integrity

User's Manual

Single Board Computer 3308320

Version 1.0

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Chapter 1

Introduction

1.2 About this User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

1.3 Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

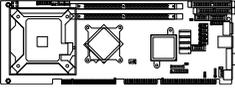
1. Disconnect your Single Board Computer from the power source when you want to work on the inside
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system

1.4 Replacing the lithium battery

Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.

1.7 Packing List



1 x CD-ROM



1 x Quick Installation Guide

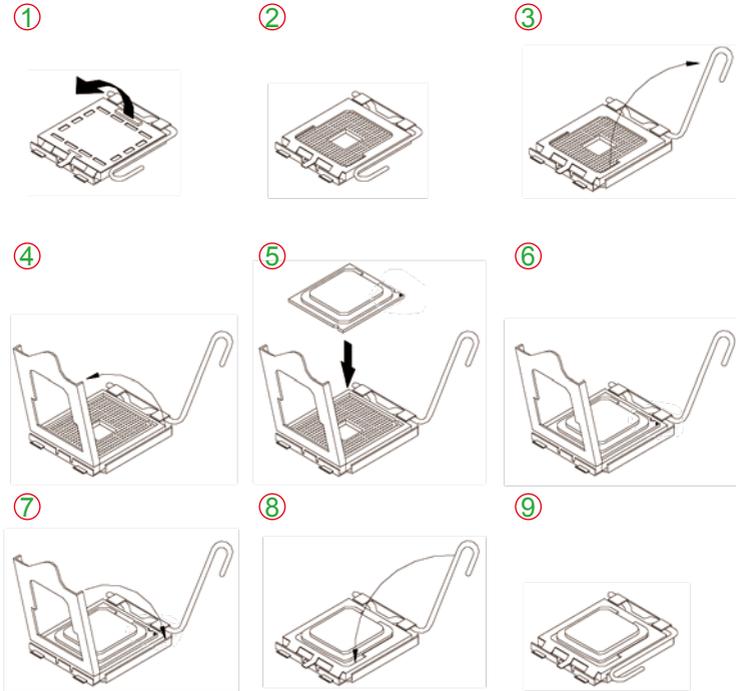
1 x COM port flat cable
1 x FDD flat cable
1 x IDE flat cable
1 x SATA cable
1 x USB cable
1 x Keyboard & Mouse cable
4 x Mini Jumper 2.54mm

1.9 Specifications

Form Factor	PICMG 1.0 Full size SBC
Processor	Supports socket LGA775 for Intel® Core™ 2 Quad/ Core™ 2 Duo / Conroe-L/ Conroe/ Wolfdale LGA775 Processor, FSB 800/1066/1333MHz
Chipset	Intel Q35 + ICH9
System Memory	Two 240-pin DDRII DIMM Sockets up to 4GB SDRAM, 667/800MHz
VGA Controller	Integrated with Intel® Graphics Media Accelerator (GMA3100)
Ethernet	One Realtek 8111B 10/100/1000 base-T PCIe Gb LAN
BIOS	AMI PnP Flash BIOS
I/O Controller	ITE-IT8718F
Audio	Supports Audio Daughter Board via connector
IDE Interface	1 x IDE port connector supports 1 device
Serial Port	2 COM ports (COM1: RS-232, COM2: RS-232/422/485 selectable)
Floppy	1 x Floppy Drive Disk
Keyboard / Mouse	1 x Mini-DIN Keyboard and Mouse connector
Universal Serial Bus	12 x USB port 2.0 compliant
Watchdog Timer	255-Level Reset
DIO	4-bit Digital Input / 4-bit Digital Output
IrDA	1 x IrDA connector
Security	Support TPM Daughter Board via connector
Operation Temp.	0°C - 60°C (32°F ~ 140°F)
Power Connector	4-pin ATX12V type and ATX Feature
Dimension (L x W)	338 x 122 mm (13.3" x 4.8")

1.11 Installing the CPU

The LGA775 processor socket comes with a lever to secure the processor. Please refer to the pictures step by step as below. Please note that the cover of the LGA775 socket must always be installed during transport to avoid damage to the socket.

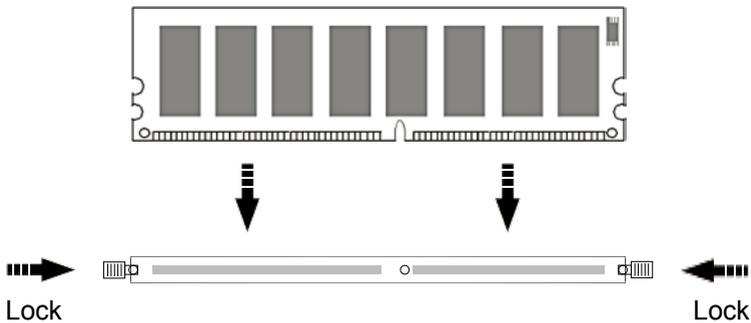


Make sure that heat sink of the CPU top surface is in complete contact to avoid the CPU overheating problem. If not, it would cause your system or CPU to be hanged, unstable, damaged.

1.12 Installing the Memory

To install the Memory module, locate the Memory DIMM slot on the board and perform as below:

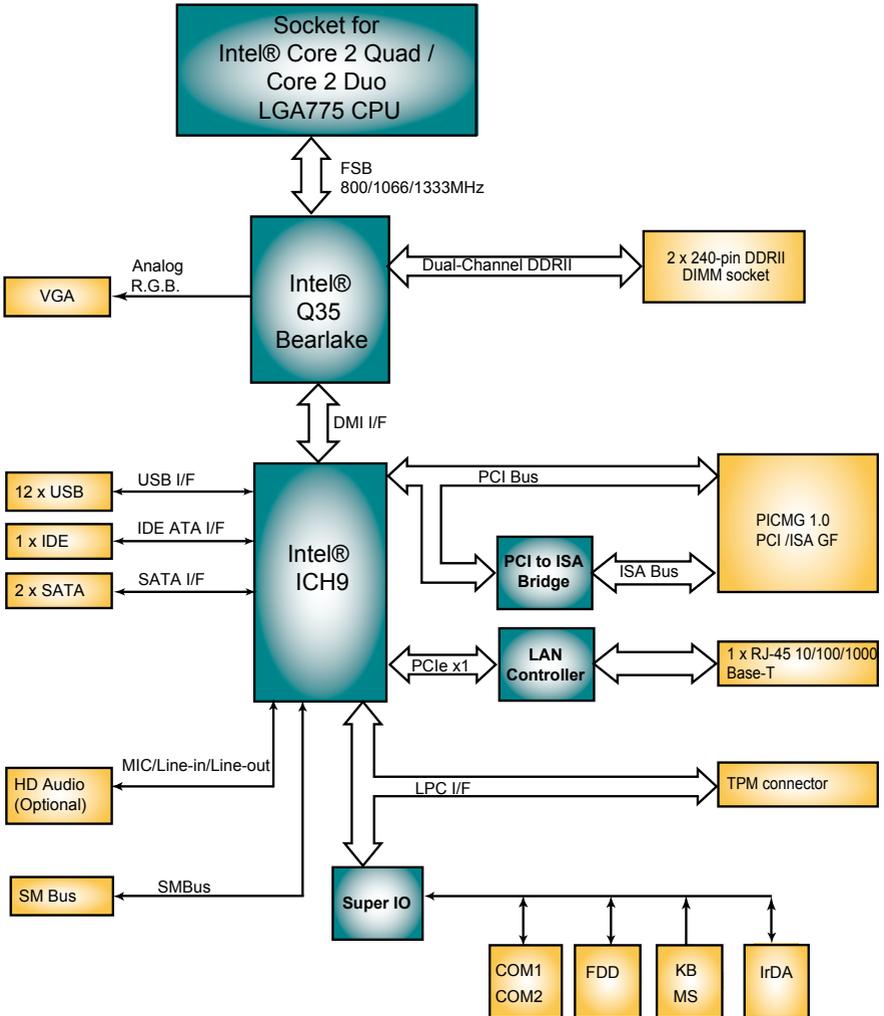
1. Hold the Memory module so that the key of the Memory module align with those on the Memory DIMM slot.
2. Gently push the Memory module in an upright position and a right way until the clips of the DIMM slot close to lock the Memory module in place, when the Memory module touches the bottom of the DIMM slot.
3. To remove the Memory module, just pressing the clips of DIMM slot with both hands.



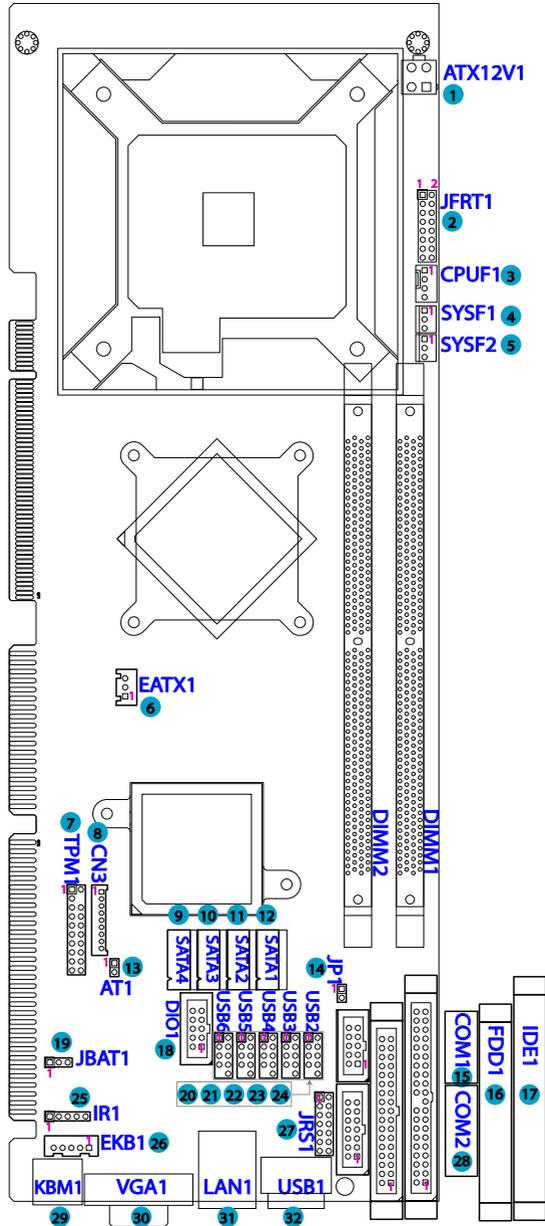
Chapter 2

Installation

2.1 Block Diagram



2.2 Jumpers and Connectors



Jumpers

AT1: AT/ATX Power Mode (13)

The power mode jumper selects the power mode for the system.
Connector type: 2.54mm pitch 1x2 pin header.

Pin 1-2	Mode	
---------	------	--

Short	AT Mode	
-------	---------	---



Open	ATX Mode (Default)	
------	--------------------	---



JP1: PATA IDE Enable/ Disable Select (14)

Connector type: 2.54mm pitch 1x2 pin header.

Pin 1-2	Function Select	
---------	-----------------	--

Short	Disable	
-------	---------	---



Open	Enable (Default)	
------	------------------	---



JBAT1: Clear CMOS Setup (19)

If the board refuses to boot due to inappropriate CMOS settings here is how to proceed to clear (reset) the CMOS to its default values.

Connector type: 2.54 mm pitch 1x3 pin header

Pin **Mode**

1-2 Keep CMOS (Default)



2-3 Clear CMOS



You may need to clear the CMOS if your system cannot boot up because you forgot your password, the CPU clock setup is incorrect, or the CMOS settings need to be reset to default values after the system BIOS has been updated.

Refer to the following solutions to reset your CMOS setting:

Solution A:

1. Power off the system and disconnect the power cable.
2. Place a shunt to short pin 1 and pin 2 of JBAT1 for five seconds.
3. Place the shunt back to pin 2 and pin 3 of JBAT1.
4. Power on the system.

Solution B:

If the CPU Clock setup is incorrect, you may not be able to boot up. In this case, follow these instructions:

1. Turn the system off, then on again. The CPU will automatically boot up using standard parameters.
2. As the system boots, enter BIOS and set up the CPU clock.

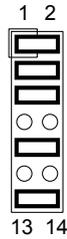
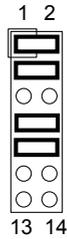
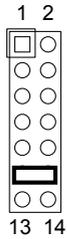
Note:

If you are unable to enter BIOS setup, turn the system on and off a few times.

JRS1: COM2 RS-232/422/485 Mode Select (13)

Connector type: 2.54 mm pitch 2x7 pin header

Mode	RS-232 (Default)	RS-422	RS-485
1-2	Off	On	On
3-4	Off	On	On
5-6	Off	Off	On
7-8	Off	On	Off
9-10	Off	On	On
11-12	On	Off	Off
13-14	Off	Off	On

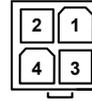


Connectors

ATX12V1: ATX 12V Connector (1)

ATX12V1 supplies the CPU operation ATX +12V (Vcore).

Pin	Description	Pin	Description
2	GND	1	GND
4	+12V	3	+12V



JFRT1: Switches and Indicators (2)

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

Connector type: 2.54 mm pitch 2x8 pin header

Pin	Description	Pin	Description
1	Power LED+	2	PWRBTN+
3	GND	4	PWRBTN-
5	GND	6	RESET+
7	HDD LED+	8	RESET-
9	HDD LED-	10	SPEAKER+
11	SMBCLK	12	SPEAKER+
13	SMBDATA	14	GND
15	GND	16	+5V



PLED: Power LED Connector, pin 1, 3.

This 2-pin connector connects to the case-mounted power LED. Power LED can be indicated when the CPU card is on or off. And keyboard lock can be used to disable the keyboard function so the PC will not respond by any input.

HLED: HDD LED Connector, pin 7, 9.

This 2-pin connector connects to the case-mounted HDD LED to indicate hard disk activity.

SM Bus: SM Bus connector, pin 11, 13, 15.

PWRBTN: ATX soft power switch, pin 2, 4.

This 2-pin connector connects to the case-mounted Power button.

RES: Reset Button, pin 6, 8.

This 2-pin connector connects to the case-mounted reset switch and is used to reboot the system.

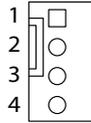
SPK: External Speaker, pin 10, 12, 14, 16.

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

CPUF1: CPU Fan Power Connector (3)

Connector type: 2.54 mm pitch 1x4 wafer one wall connector

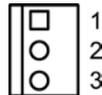
Pin	Description
1	GND
2	+12V
3	Fan_Detect
4	Fan Speed Control



SYSF1/SYSF2: System Fan Power Connectors (4), (5)

SYSF1 and SYSF2 are 3-pin header for the system fan. The fan must be a +12V fan.

Pin	Description
1	GND
2	+12V
3	FAN_Detect



EATX1: ATX Feature Connector (6)

Connector type: 2.54mm pitch 1x3-pin box wafer connector

Pin	Description
1	PS-ON
2	GND
3	5V_SB

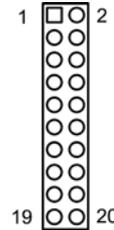


TPM1: Trusted Platform Module Connector (7)

The TPM connector on the 3308320 is interfaced to the Intel ICH9 south bridge through the LPC bus. This board supports TPM version 1.2 devices for enhanced security.

Connector type: 2.54mm pitch 2x10 pin header

Pin	Description	Pin	Description
1	CLK	2	GND
3	LFRAME	4	N/C
5	LRESET	6	N/C
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	N/C	14	N/C
15	+3.3V_SB	16	SERIRQ
17	GND	18	CLKRUN
19	PD	20	N/C

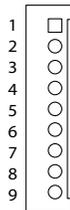


CN3: HD AUDIO Daughter Board connector (8)

The 3308320 onboard audio connector can connect to an optional audio kit through an onboard audio connector. The codec on the optional audio kit is connected to the ICH9 south bridge audio controller through the High Definition audio interface.

Connector type: 2.00mm pitch 1x9 box wafer connector.

Pin	Description
1	+12V
2	+3.3V
3	AC_SYNC
4	AC_SD-OUT
5	GND
6	AC-BCLK
7	GND
8	AC_RST#
9	AC_SDIN0



SATA1~2: Serial ATA Connectors (9) ~ (10)

CPU board on board supports two SATA II connectors, second generation SATA drives transfer data at speeds as high as 300MB/s, twice the transfer speed of first generation SATA drives.

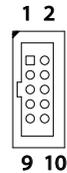
Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



COM1: RS-232 Serial Port Connector (15)

Connector type: 2.54mm pitch 2x5 pin header.

Pin	Description	Pin	Description
1	DCD1#	2	DSR1#
3	RXD1	4	RTS1#
5	TXD1	6	CTS1#
7	DTR1#	8	RI1#
9	GND	10	GND

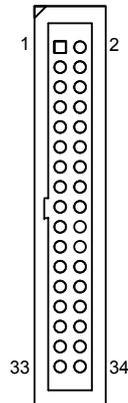


FDD1: FDD Connector (16)

A floppy disk drive ribbon cable has two connectors to support two floppy disk drives. The connector with twisted wires always connects to drive A; the connector with untwisted wires connects to drive B. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds with pin 1 of the FDD port connector.

Connector type: 2.54 mm pitch 2x17 box header

Pin	Description	Pin	Description
1	GND	2	DRV DEN0
3	GND	4	N/C
5	GND	6	DRV DEN1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRACK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD#
33	GND	34	DSKCHG#



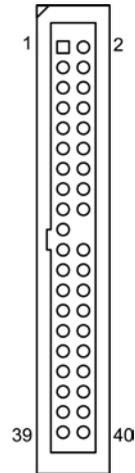
IDE1: Primary IDE Connector (17)

An IDE drive ribbon cable has two connectors to support two IDE devices. If a ribbon cable connects to two IDE drives at the same time, one of them has to be configured as Master and the other has to be configured as Slave by setting the drive select jumpers on the drive.

Consult the documentation that came with your IDE drive for details on jumper locations and settings. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to pin 1 of the IDE connector.

Connector type: 2.54mm pitch 2x20 box header

Pin	Description	Pin	Description
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N/C (Key)
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	IDESEL
29	DACK	30	GND
31	IRQ14	32	N/C
33	ADDR1	34	ATA66 DETECT
35	ADDR0	36	ADDR2
37	CS0#	38	CS1# (HDSELET1)
39	IDEACTP	40	GND

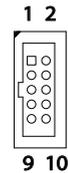


DIO1: Digital I/O Connector (18)

DIO1 is a 8-bit DIO connector that supports 4-bit In/ 4-bit Out.

Connector type: 2.54 mm pitch 2x5 box header

Pin	Description	Pin	Description
1	DO0	2	DI0
3	DO1	4	DI1
5	DO2	6	DI2
7	DO3	8	DI3
9	+5V	10	GND



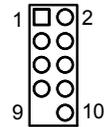
USB2~6: USB Connectors (20) ~ (24)

CPU board on board supports five headers USB2,

USB3, USB4, USB5 and USB6 that can connect up to 10 high-speed (Data transfers at 480MB/s), full-speed (Data transfers at 12MB/s) or low-speed (Data transfers at 1.5MB/s) USB devices.

Connector type: 2.54mm 2x5 pin header

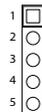
Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD-	4	USBD-
5	USBD+	6	USBD+
7	GND	8	GND
9	N/C (Key)	10	N/C



IR1: Infrared Connector (25)

Connector type: 2.54mm pitch 1x5 pin header

Pin	Voltage
1	+5V
2	N/C
3	IRRX
4	GND
5	IRTX



The IR connector can be configured to support wireless infrared module, user can transfer files to or from notebooks, PDA and printers.

Install infrared module onto IrDA connector and enable infrared function from BIOS setup and make sure to have correct orientation when you plug onto IrDA connector.

EKB1: External keyboard Connector (26)

Connector type: 2.54mm pitch 1x5-pin box wafer connector

Pin	Description
-----	-------------

- | | |
|---|---------|
| 1 | KB_CLK |
| 2 | KB_DATA |
| 3 | N/C |
| 4 | GND |
| 5 | +5V |

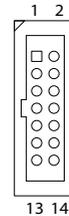


COM2: RS-232/422/485 Serial Port Connector (28)

The onboard COM2 port can be configured to operate in RS-422 or RS-485 modes. RS-422 modes differ in the way RX/TX is being handled. Jumper JRS1 switches between RS-232 or RS-422/485 mode. All of the RS-422/485 are available on COM2.

Connector type: 2.54mm pitch 2x7 pin header.

Pin	Description	Pin	Description
1	DCD2#	2	DSR2#
3	RXD2	4	RTS2#
5	TXD2	6	CTS2#
7	DTR2#	8	RI2#
9	GND	10	GND
11	TX+	12	TX-
13	RX+	14	RX-



Note:

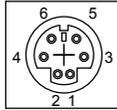
If you configured the port to RS-485 mode, the signals TX and RX should be already connected.

KBM1: Keyboard & Mouse connector (29)

Mini-Din Keyboard & Mouse connector

Pin Description

1	KB Data
2	MS Data
3	GND
4	+5V
5	KB Clock
6	MS Clock

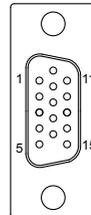


Note: KBM1 supports PS/2 keyboard directly, and PS/2 mouse supported with the additional PS/2 1-to-2 cable in standard packing.

VGA1: CRT Connector (30)

Connector type: D-Sub 15-pin female.

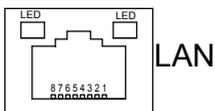
Pin	Description	Pin	Description
1	RED	9	+5V
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	VDDAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	VDCLK
8	GND		



LAN1: RJ-45 connector (31)

LAN1 supports one Ethernet connector on bracket.

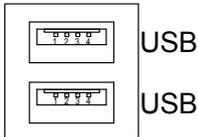
Connector type: RJ-45.



USB1: Double Stack USB type A connector (32)

CPU board on bracket supports two type A USB connectors that can connect up to two high-speed (Data transfers at 480MB/s), full-speed (Data transfers at 12MB/s) or low-speed (Data transfers at 1.5MB/s) USB devices.

Connector type: double stack USB type A.



2.3 The Installation Paths of CD Driver

Driver	Path
CHIPSET	\Chipset\Intel\INF 8.4
LAN	\Ethernet\Realtek\8111B_WIN5646 \Ethernet\Realtek\8111B_VISTA_6203_0225
VGA	\Graphics\Intel_2K_XP_32\1432 \Graphics\Intel_VISTA_32\1561 \Graphics\Intel_VISTA_64\156

Chapter 4

Appendix

4.1 I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device.

The following table lists the I/O port addresses used.

Address	Device Description
00000000 - 0000000F	DMA Controller
00000080 - 0000009F	DMA Controller
000000C0 - 000000DF	DMA Controller
00000020 - 00000021	Programmable Interrupt Controller
000000A0 - 000000A1	Programmable Interrupt Controller
00000040 - 00000043	System Timer
00000044 - 00000047	System Timer
00000060 - 00000064	Keyboard Controller
00000070 - 00000073	System CMOS/Real Time Clock
000000F0 - 000000FF	Math Co-processor
00000170 - 00000177	Secondary IDE
000001F0 - 000001F7	Primary IDE
00000274 - 00000277	ISAPNP Read Data Port
00000279, 00000A79	ISAPNP Configuration
000002F8 - 000002FF	Communications Port (COM2, If use)
00000376 - 00000376	Secondary IDE
000003B0 - 000003BF	MDA/MGA
000003C0 - 000003CF	EGA/VGA
000003D4 - 000003D9	CGA CRT register
000003F0 - 000003F7	Floppy Diskette
000003F6 - 000003F6	Primary IDE
000003F8 - 000003FF	Communications Port (COM1, If use)
00000400 - 0000041F	South Bridge SMB
00000480 - 000004BF	South Bridge GPIO
00000800 - 0000087F	ACPI

00000A00 - 00000A07	PME
00000A10 - 00000A17	Hardware Monitor
0000CF8	PCI Configuration address
00000CFC	PCI Configuration Data

4.2 Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 0	System Timer
IRQ 1	Keyboard Controller
IRQ 2	VGA and Link to Secondary PIC
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 5	PCI Device
IRQ 6	Standard Floppy Disk Controller
IRQ 7	Parallel Port
IRQ 8	System CMOS/real time clock
IRQ 9	Microsoft ACPI-Compliant System
IRQ 10	PCI Device
IRQ 11	PCI Device
IRQ 12	PS/2 Compatible Mouse
IRQ 13	FPU Exception
IRQ 14	IDE Controller
IRQ 15	IDE Controller

4.3 BIOS memory mapping

Address	Device Description
00000h - 9FFFFh	DOS Kernel Area
A0000h, BFFFFh	EGA and VGA Video Buffer (128KB)
C00000h - CFFFFh	EGA/VGA ROM
D0000h - DFFFFh	Adaptor ROM
E00000h - FFFFFh	System BIOS

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



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