

CPC-3813-MIL

3U CompactPCI 传导加固主板

3U Rugged Conduction-cooled
CompactPCI Motherboard

Version: C00

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安全使用小常识

1. 产品使用前，务必仔细阅读产品说明书；
2. 对未准备安装的板卡，应将其保存在防静电保护袋中；
3. 在从防静电保护袋中拿出板卡前，应将手先置于接地金属物体上一会儿（比如 10 秒钟），以释放身体及手中的静电；
4. 在拿板卡时，需佩戴静电保护手套，并且应该养成只触及边缘部分的习惯；
5. 为避免人体被电击或产品被损坏，在每次对主板、板卡进行拔插或重新配置时，须先关闭交流电源或将交流电源线从电源插座中拔掉；
6. 在需对板卡或整机进行搬动前，务必先将交流电源线从电源插座中拔掉；
7. 对整机产品，需增加 / 减少板卡时，务必先拔掉交流电源；
8. 当您需连接或拔除任何设备前，须确定所有的电源线事先已被拔掉；
9. 为避免频繁开关机对产品造成不必要的损伤，关机后，应至少等待 30 秒后再开机。

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第一章 产品介绍

简介

本板采用Intel® Calpella + ECC平台i7-620UE 1.06GHz高性能低功耗处理器，QM57 Express Chipset芯片。Core™ i7-620UE处理器采用32nm工艺，双核四线程处理机制，可通过Intel® Turbo Boost技术提升处理性能。i7处理器集成DDR3 800/1066MHz内存控制器，集成显卡控制器。

本板是传导加固版单板计算机，采用传导加固散热方式，板载CPU。在存储方面，板载2GB DDR3 ECC SDRAM 800/1066MHz 内存，支持SATA存储，两路SATA信号到J2连接器，板载8GB SSD存储盘，当SATA/SSD有数据传输时，硬盘指示灯闪亮。两路USB2.0信号到J2连接器。

在图形处理方面，采用Core™i7-620UE 处理器集成的Intel™HD Graphics，支持VGA显示最大分辨率为1920×1200（60Hz 刷新频率）。

网络配置方面：2路独立的10/100/1000Mbps以太网信号到J2连接器，不带传输指示灯信号。

串口功能：串口最高速率不低于115200bps。

总线扩展功能：3U 32bit、33MHz CompactPCI总线标准，兼容PICMG2.0，PICMG2.1。

本板是一款高端3U Compact PCI加固主板，可以满足用户对接口的不同需求，主要应用于信息通信，网络存储，网络音频处理，网络图像处理，工业控制，军事，航天等高端应用领域的CPCI产品。

机械尺寸、重量与环境

➤ 外形尺寸：169.3mm（长）×100mm（宽）×15.5mm（高）

➤ 净重：0.41Kg；

工作环境：

➤ 工作环境：

温度：-40℃～80℃；

湿度：10%~95%（非凝结状态）；

➤ 贮存环境：

温度：-40℃~85℃；

湿度：10%~95%（非凝结状态）；

典型功耗

典型功耗是基于以下配置闲置状态的数值。

CPU：Intel® Core i7-620UE 1.06GHz 内存：DDR3 800 ECC K4B2G0846D-HCH9 2GB

操作系统：中文 Windows XP/SP3

硬盘：板载 Samsung K9NCG0805M 8GB(SSD)

➤ +5V@1.52A；+5%/-3%；

➤ +3.3V@1.64A；+5%/-3%；

微处理器

板载Intel® Core™ i7-620UE CPU，DMI:2.5GT/S，采用32nm 工艺，双核四线程处理机制，主频1.06GHZ，额定功耗为18W。

芯片组

Mobile Intel® QM57 Express Chipset

系统内存

板载 DDR3 ECC SDRAM 800/1066MHz 内存颗粒，支持 Un-buffered ECC，支持单通道功能。单条内存通道可支持最大内存容量 2GB。

显示功能

➤ 采用Core™i7-620UE 处理器集成的Intel® HD Graphics显示芯片；

- 支持独立VGA输出，VGA支持的最大分辨率及刷新率为1920×1200@60Hz，VGA信号引出到J2连接器。

网络功能

提供2路独立的10/100/1000Mbps以太网信号到J2连接器，不带传输指示灯信号。

电源特性

采用CPCI电源，支持S0，S5。

扩展总线

提供7个32位CPCI插槽，兼容Compact PCI标准。

Watchdog功能

- 支持 255 级，可编程按分或秒；
- 支持看门狗超时中断或复位系统。

操作系统

- 支持操作系统：Windows XP、Vxworks、linux。

注意：在外接硬盘上安装 Windows XP 操作系统时，如果安装不上，把板载的 SSD 卡分区并格式化后，然后在外接的硬盘上正常安装操作系统。

I/O接口

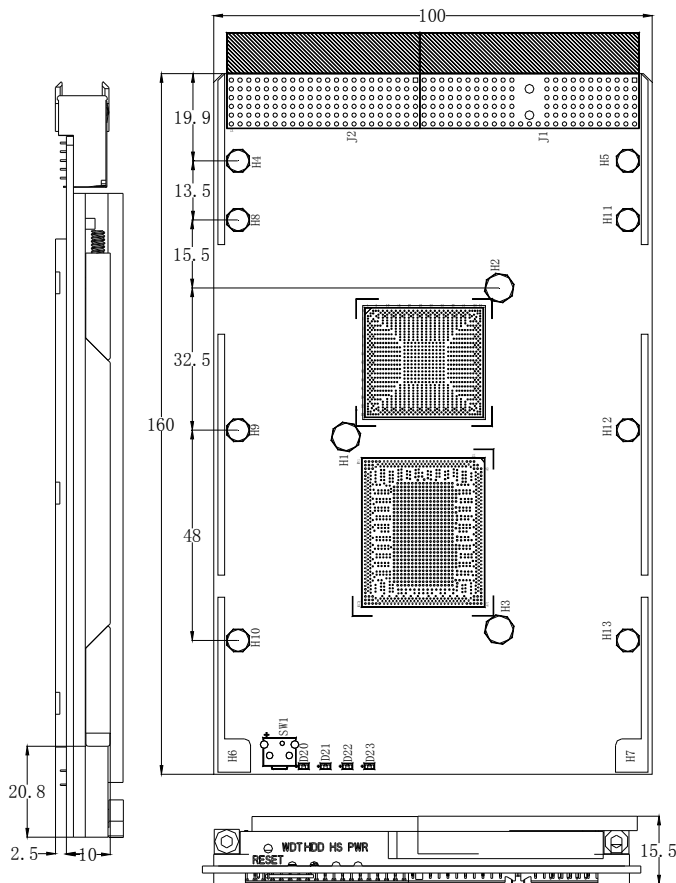
- 提供 2 个串口，两路串口信号引出到 J2 连接器，支持 RS-232。
- 提供 2 个 SATA 接口，两路 SATA 信号引出到 J2 连接器。
- 提供 2 个 USB2.0 接口，两路 USB2.0 信号引出到 J2 连接器。

提示：如何识别报警声

- 1、长鸣声为系统内存出错。
- 2、短“嘀”一声为开机声。

第二章 安装说明

产品外形尺寸图

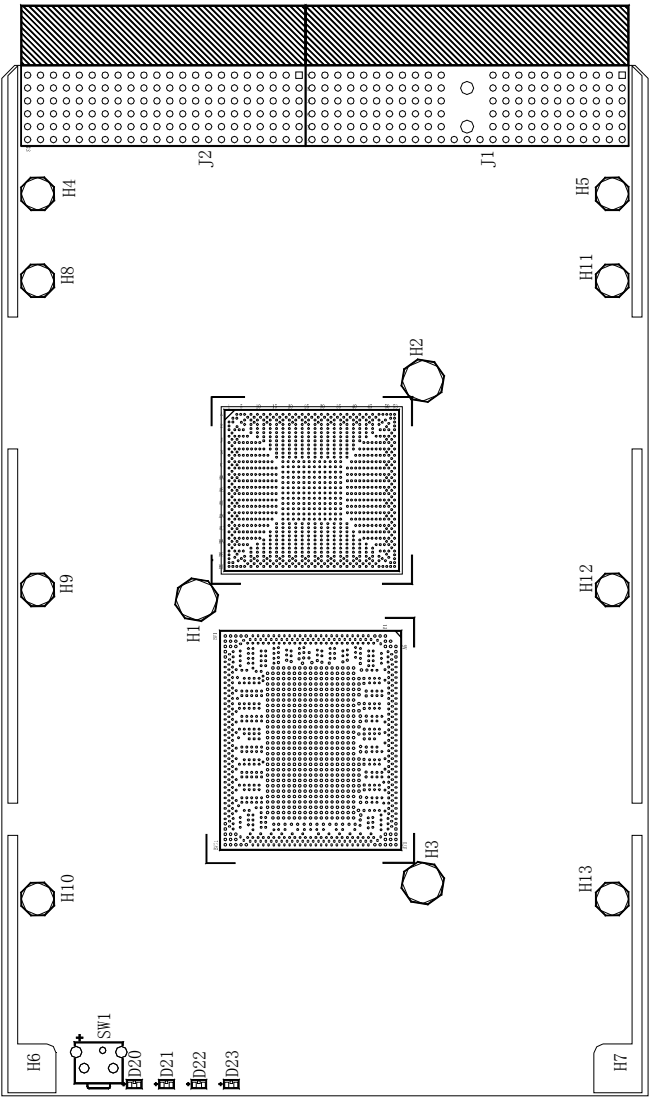


单位: mm

警告!

请务必选择合适的螺钉和使用正确的安装方法（包括板卡定位、CPU、散热器等安装），否则可能损坏板。此板推荐 H1~H3 使用 M3×6 GB9074. 4-88 螺钉，H4~H7 使用 M2.5×4 GB/T 818-2000 螺钉；H8~H13 使用 M2.5×5 GB/T 820-2000 螺钉。

接口位置示意图



复位按钮

本板提供1个触发式复位按键SW1，实现Reset功能。

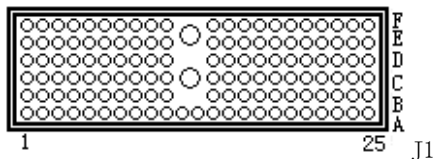
指示灯



灯	状态	描述
看门狗	OFF	看门狗未操作
	ON	看门狗正在操作当中
热交换	OFF	正常工作状态
	ON	正处于热交换状态中
硬盘	OFF	硬盘闲置
	ON	硬盘运转
电源	OFF	电源失败
	ON	电源正常

Compact PCI接口

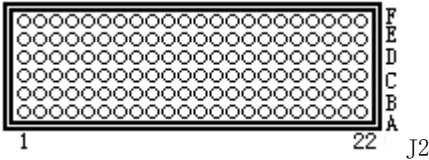
J1接头引脚信号定义



管脚	信号名称					
	A	B	C	D	E	F
1	+5V	-12V	TRST#	+12V	+5V	GND
2	TCK	+5V	TMS#	TDO	TDI	GND
3	INTA#	IRQB#	INTC#	+5V	INTD#	GND
4	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
5	NC	NC	PCI_RST#	GND	GNT0#	GND
6	REQ0#	PCI_PRESENT#	+3.3V	CLK0	AD31	GND
7	AD30	AD29	AD28	GND	AD27	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
9	C/BE3#	GND	AD23	GND	AD22	GND
10	AD21	GND	+3.3V	AD20	AD19	GND
11	AD18	AD17	AD16	GND	C/BE2#	GND
12	KEY AREA					
13						
14						
15	+3.3V	FRAME#	IRDY#	BD_SEL#	TRDY#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
17	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
18	SERR#	GND	+3.3V	PAR	C/BE1#	GND
19	+3.3V	AD15	AD14	GND	AD13	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
21	+3.3V	AD9	AD8	M66EN	C/BE0#	GND
22	AD7	GND	+3.3V	AD6	AD5	GND
23	+3.3V	AD4	AD3	+5V	AD2	GND
24	AD1	+5V	V(I/O)	AD0	ACK64#	GND
25	+5V	REQ64#	ENUM#	+3.3V	+5V	GND



J2接头引脚信号定义



管脚	信号名称					
	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	USB1P/bi	USB2P/bi	PWR_USB1	GND
20	CLK5	GND	USB1N/bi	USB2N/bi	PWR_USB2	GND
19	GND	GND	PWR_BTN#/in	PWR_SLPS3#/out	RIO_3.3V/out	GND
18	1RXD/in	1DCD#/in	1DTR#/out	2CTS#/in	1CTS#/in	GND
17	1TXD/out	2RXD/in	PRST#	REQ6#	GNT6#	GND
16	1DSR#/in	1RTS#/out	DEG#	GND	1RI#/in	GND
15	PWR_5VSTDBY/in	FAN_SENSE/in	FAL#	REQ5#	GNT5#	GND
14	IPA_DA+/bi	IPA_DA-/bi	2RTS#/out	IPA_DC+/bi	IPA_DC-/bi	GND
13	IPA_DB+/bi	IPA_DB-/bi	2RI#/in	IPA_DD+/bi	IPA_DD-/bi	GND
12	IPB_DA+/bi	IPB_DA-/bi	RIO_1V9/out	IPB_DC+/bi	IPB_DC-/bi	GND
11	IPB_DB+/bi	IPB_DB-/bi	2DCD#/in	IPB_DD+/bi	IPB_DD-/bi	GND
10	NC	2TXD/out	VGA_RED/out	2DTR#/out	NC	GND
9	SATA1TXP/OUT	GND	VGA_HSYNC/out	NC	SATA2TXP/OUT	GND
8	SATA1TXN/OUT	NC	VGA_BLUE/out	GND	SATA2TXN/OUT	GND
7	HDD_LED_J2	2DSR#/in	VGA_12C_DAT/bi	PWM_OUT/out	NC	GND
6	SATA1RXP/IN	NC	VGA_GREEN/out	GND	SATA2RXP/IN	GND
5	SATA1RXN/IN	GND	VGA_VSYNC/out	NC	SATA2RXN/IN	GND
4	VI/O	RIO_5V/out	VGA_12C_CLK/out	NC	PM_SYSRST-_J2	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

第三章 BIOS功能介绍

UEFI简介

UEFI (Unified Extensible Firmware Interface: 标准的可扩展固件接口), 是新一代的计算机固件, 用于取代传统的BIOS。UEFI固件存储在主板的闪存存储器中, 主要功能包括: 初始化系统硬件, 设置各系统部件的工作状态, 调整各系统部件的工作参数, 诊断系统各部件的功能并报告故障, 给上层软件系统提供硬件操作控制接口, 引导操作系统等。UEFI提供用户一个菜单式的人机接口, 方便用户配置各系统参数设置, 控制电源管理模式, 调整系统设备的资源分配等。

正确设置UEFI的各项参数, 可使系统稳定可靠地工作, 同时也能提升系统的整体性能。不适当的甚至错误的UEFI参数设置, 则会使系统工作性能大为降低, 使系统工作不稳定, 甚至无法正常工作。

UEFI参数设置

每当系统接通电源, 正常开机后, 便可看见进入UEFI设置程序提示的信息。此时(其它时间无效), 按下提示信息所指定的按键(通常为键或<F2>键)即可进入UEFI设置程序。

通过UEFI设置程序修改的所有设置值(除了日期、时间)都保存在系统的闪存存储器中, 即使掉电或拔掉主板电池, 其内容也不会丢失; 而日期、时间则保存在系统的CMOS存储器中, 该CMOS存储器由电池供电, 即使切断外部电源, 其内容也不会丢失, 除非执行清除CMOS内容的操作。

注意! UEFI的设置直接影响到电脑的性能, 设置错误的参数将造成电脑的损坏, 甚至不能开机, 请使用UEFI内置缺省值来恢复系统正常运行。

由于本公司不断研发更新UEFI, 其设置界面也会略有不同, 以下的画面供您参考, 有可能跟您目前所使用的UEFI设置程序不完全相同。



UEFI基本功能设置

当SETUP程序启动之后, 您可以看到Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc. 主画面如下:

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Save & Exit		
CPC-3813-MIL		Set the Date. Use 'Tab' to switch between Date elements. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
BIOS Name	Y9051000	
BIOS Version	A00	
Build Date	11/01/2010 10:10:10	
Memory Information		
Total Memory	1024 MB (DDR3 800)	
System Date	[Mon 11/01/2009]	
System Time	[00:47:55]	
Access Level	Administrator	
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

◆ Main

➤ System Time

选择此选项, 用< + > / < - >来设置目前的日期。以月/日/年的格式来表示。各项目合理的范围是: Month/月(1-12), Date/日(01-31), Year/年(最大至2099), Week/星期(Mon. ~ Sun.)。

➤ System Time

选择此选项, 用< + > / < - >来设置目前的时间。以时/分/秒的格式来表示。各项目合理的范围是: Hour/时(00-23), Minute/分(00-59), Second/秒(00-59)。

◆ Advanced

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! <ul style="list-style-type: none"> ▶ CPU Configuration ▶ SATA Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor 	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

Launch PXE OpROM

此项为网络启动功能的开关。

➤ CPU Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
CPU Configuration Intel(R) Core(TM) i7 CPU U 620 @ 1.07GHz EMT64 Supported Processor Speed 1064MHz Processor Stepping 20652 Microcode Revision 9 Processor Cores 2 Intel HT Technology Supported Hyper-threading [Enabled] Active Processor Cores [All] Hardware Prefetcher [Enabled] Adjacent Cache Line Prefetch [Enabled] Intel Virtualization Technology [Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	



显示CPU的相关信息。注意，CPU的Type， Speed， Core， HT等跟平台所安装的CPU有关，不同系列的CPU所显示的信息不同。

● **Hyper-Threading**

Hyper Threading Technology功能的控制开关。

● **Active Processor Cores**

使能CPU的核的个数，只对多核CPU有效。

● **Hardware Prefetcher**

打开或者关闭MLC Streamer Prefetcher。

● **Adjacent Cache Line Prefetch**

打开或者关闭Prefetching of adjacent cache lines。

● **Intel Virtualization Technology**

Intel虚拟技术的开关。

➤ **SATA Configuration**

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
SATA Configuration		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save
		ESC: Exit
SATA Port0		EVOC (7.8GB)
SATA Port1		Not Present
SATA Port2		Not Present
SATA Port3		Not Present
SATA Port4		Not Present
SATA Port5		Not Present
Serial-ATA Controller 0 [Compatible]		
Serial-ATA Controller 1 [Enhanced]		
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.		

SATA Port0~5动态侦测主板上有没有接SATA设备，如果对应的Port上有接设备，则显示该SATA设备的型号。否则，显示Not Present。

● **Serial-ATA Controller 0**

Serial-ATA Controller 0的开关，设置Serial-ATA Controller 0模式。

● **Serial-ATA Controller 1**

Serial-ATA Controller 1的开关，设置Serial-ATA Controller 1的模式。

➤ **USB Configuration**

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
USB Configuration USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs Legacy USB Support [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

● **Legacy USB Support**

此选项用于支持传统的USB设备（键盘，鼠标，存储设备等），当该项设为Enabled时，即使不支持USB的操作系统如DOS下也能使用USB设备。当设置成Disabled时，传统设备在不支持USB的操作系统中将不可用。

注意，EFI application下USB仍然可用，如Shell下。



➤ Super IO Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Super IO Configuration ▶Floppy Disk Controller Configuration ▶Serial Port 0 Configuration ▶Serial Port 1 Configuration	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

● Floppy Disk Controller Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Floppy Disk Controller Configuration Floppy Disk Controller [Enabled] Device Settings Reset Required Change Settings [Auto] Device Mode [Read Write]	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

* Floppy Disk Controller

此项用于打开或关闭软盘控制器。

* Device Settings

此项用于显示软盘控制器配置。

* Change Settings

此项用于配置软盘控制器所用的资源（IO和IRQ）。

*** Device Mode**

此项用于配置软盘控制器工作模式。

● Serial Port 1~2 Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Serial Port 1~2 Configuration		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Serial Port	[Enabled]	
Device Settings	IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
Device Mode	[Normal]	
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.		

*** Serial Port1~2**

此项用于打开或关闭当前串口。

*** Device Settings**

此项用于显示串口当前的资源配置。

*** Change Settings**

此项用于配置串口所用的资源（IO和IRQ）。

*** Device Mode**

此项用于配置串口工作的速度。

➤ H/W Monitor

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
PC Health Status	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
CPU Temperature : +38°C	
System Temperature : +36°C	
Vcore : +0.95 V	
V3.3 : +3.296 V	
V5.0 : +5.007 V	
V12.0 : +12.091 V	
Vbat : +3.21 V	
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

显示当前所侦测到得硬件的电压，温度，风扇转速等监控信息。

● **System Temperature**

当前系统温度，一般主板上热敏电阻监测。

● **CPU Temperature**

当前CPU温度。CPU的温度由板上的温度传感器监测。

● **Vcore**

CPU核心电压。

● **V3.3/ V5.0/V12.0**

开关电源输出电压。

● **Vbat**

CMOS电池电压。

◆ Chipset

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ► South Bridge	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

➤ South Bridge Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
SB Chipset Configuration ► USB Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	



● USB Configuration

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.		
Chipset		
USB Configuration		→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
USB Port 1	[Enabled]	
USB Port 2	[Enabled]	
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

* USB Port 0~3

USB Port 0~3 的开关。

◆ Boot

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Boot Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Quiet Boot [Disabled]	
Boot Numlock State [On]	
Boot Option Priorities	
Boot Option #1 [Built-in EFI Shell]	
Hard Drive BBS Priorities	
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➤ Quiet Boot

Boot模式选择开关，用于打开或关闭Quiet Boot功能。

➤ **Bootup Numlock State**

小键盘数字键的开关。

➤ **Boot Option Priorities**

此项用于配置系统引导的优先次序。其中，#1优先级最高，#n优先级最低。

➤ **Hard Drive BBS Priorities**

此项用于配置传统设备在BBS中的优先次序。#1优先级最高，#n最低。

◆ **Security**

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. Administrator Password User Password	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

➤ **Administrator Password**

此项用于设置管理员密码。

➤ **User Password**

此项用于设置用户密码。

注：如果只设置管理员密码，则只当进入Setup设置程序时需要输入管理员密码；

如果只设置了用户密码，则开机启动时必须输入用户密码，如果进入Setup设置程序，则具有管理员权限；

如果同时设置了管理员密码和用户密码，则开机启动时必须输入管理员密码或者用户密码。如果使用管理员密码时，则在Setup设置程序中具有管理员权限；如果使用用户密码，则在Setup设置程序中只具有用户权限。

◆ Save & Exit

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults Save as User Defaults Restore User Defaults Boot Override Built-in UEFI Shell	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009, American Megatrends, Inc.	

➤ **Save Changes and Exit**

此项用于保存修改并退出Setup设置程序。如果所作修改需要重启才能生效，则会自动进行重启。

➤ **Discard Changes and Exit**

此项用于放弃所作修改并退出Setup设置程序。

➤ **Save Changes and Reset**

此项用于保存修改并重启。

➤ **Discard Changes and Reset**

此项用于放弃所作修改并重启。

➤ **Save Changes**

保存修改。

➤ **Discard Changes**

放弃修改。

➤ **Restore Defaults**

恢复默认值。

➤ **Save as User Defaults**

保存用户默认值。

➤ **Restore User Defaults**

恢复用户默认值。

➤ **Boot Override**

此项中列出了所有的启动选项，用户可选择其中一项，并按下<Enter>，即可按该选项进行引导。

x86 平台下UEFI所要管理的系统资源

这里的系统资源我们定义三种：I/O端口地址，IRQ中断号和DMA号。

◆ DMA

级别	功能
DMA0	未分配
DMA1	未分配
DMA2	未分配
DMA3	未分配
DMA4	用于 DMAC 的级联
DMA5	未分配
DMA6	未分配
DMA7	未分配

◆ APIC

高级可编程中断控制器。在现代P4以上级别的主板中，大都支持APIC，可以提供多于16个中断源，如IRQ16—IRQ23，部分主板如支持PCI-X的主板可以有 多达28个中断源。但要启用该功能必须相应的操作系统支持。

◆ I/O端口地址

X86的I/O地址线只设计16条，从0~0FFFFh，I/O地址空间总共有64K，在传统的ISA接口，只使用到前面的1024个（0000~03FFh），0400h以上的端口为PCI接口与EISA接口所使用。每一外围设备都会占用一段I/O地址空间。下表给出了 X86平台大致上所要用到的I/O接口列表。

地 址	设备描述
000h - 000Fh	DMA 控制器#1
020h - 021h	可编程中断控制器#1
040h - 043h	系统计时器#1
061h - 061h	系统 Speaker
070h - 071h	系统 CMOS/实时时钟
081h - 083h	DMA 控制器#2
087h - 087h	DMA 控制器#3
089h - 08Bh	DMA 控制器#4
08Fh - 08Fh	DMA 控制器#5
0A0h - 0A1h	可编程中断控制器#2
0C0h - 0DFh	DMA 控制器#6
0F0h - 0FFh	数据数值处理器
170h - 177h	次要 IDE 通道
1F0h - 1F7h	主要 IDE 通道
274h - 277h	ISAPNP Read Data Port
279h - 279h	ISAPNP Read Data Port
2F8h - 2FFh	通讯端口 (COM2)
3B0h - 3BBh	Intel(R) Graphic Media Accelerator HD
3C0h - 3DFh	Intel(R) Graphic Media Accelerator
376h - 376h	次要 IDE 通道
3F6h - 3F6h	主要 IDE 通道
3F8h - 3FFh	通讯端口 (COM1)
A79h - A79h	ISAPNP Read Data Port

◆ IRQ中断分配表

系统共有15个中断源，有些已被系统设备独占。只有未被独占的中断才可分配给其它设备使用。ISA设备要求独占使用中断；只有即插即用ISA设备才可由UEFI或操作系统分配中断。而多个PCI设备可共享同一中断，并由UEFI或操作系统分配。下表给出了X86平台部分设备的中断分配情况，但没有给出PCI设备所占用的中断资源。

级别	功能
IRQ0	系统计时器
IRQ1	保留
IRQ2	保留
IRQ3	串口#2
IRQ4	串口#1
IRQ5	保留
IRQ6	Standard floppy disk controller
IRQ7	保留
IRQ8	系统 CMOS/实时时钟
IRQ9	ACPI 兼容系统
IRQ10	保留
IRQ11	保留
IRQ12	保留
IRQ13	数据数值处理器
IRQ14	保留
IRQ15	保留

第四章 驱动程序安装说明

本产品的驱动程序可依据配套光盘内容安装，在此不做介绍。

附录

Watchdog编程指引

本主板提供一个可按分或按秒计时的，最长达255级的可编程看门狗定时器（以下简称WDT）。通过编程，WDT超时事件可用来将系统复位或者产生一个可屏蔽中断。

本主板可使用的中断号为：3，4，5，7，9，10，11。以下用C语言形式提供了WDT的编程范例，对WDT的编程需遵循以下步骤：

- 进入WDT编程模式
- 设置WDT工作方式，启动或关闭WDT。

(1) 进入WDT编程模式。

/*

描述：函数PreInitWDT用于初始化WDT相关的寄存器，请在设置并使用WDT之前调用一次此函数。

输入：无

输出：无

注意：此函数会修改变量pm_base的值，并且pm_base会被设置WDT的函数SetWDT引用。

*/

```
#define INDEX_PORT    0x4E
#define DATA_PORT    0x4F
unsigned int tmp_reg;
unsigned int pm_base;
```

```
VOID PreInitWDT()
{
    outportb(INDEX_PORT, 0x55);
    outportb(INDEX_PORT, 0x07);
    outportb(DATA_PORT, 0x0A);
```

```

        outportb(INDEX_PORT, 0x30);
        outportb(DATA_PORT, 0x01);
        outportb(INDEX_PORT, 0x60);
        tmp_reg = inportb(DATA_PORT);
        pm_base = tmp_reg;
        outportb(INDEX_PORT, 0x61);
        tmp_reg = inportb(DATA_PORT);
        pm_base = pmbase<<8+tmp_reg; /*此处得到变量pm_base供后续程序
        使用*/
    }

```

(2) 配置WDT工作方式，启动或关闭WDT。

```
/*
```

描述：函数SetWDT用于配置WDT需要的参数，启动或关闭WDT。

输入：Wmode： 0 - 配置WDT成复位工作方式

IRQ_NO - 配置WDT成中断工作方式，此处请用需要使用
的中断号替换掉常量IRQ_NO，文档前端已经列出可使
用中断号的范围。（注：中断模式的说明仅适用于ACPI
和APIC同时打开的OS。）

Wtime： 0 - 配置WDT按分计时

1 - 配置WDT按秒计时

Timeout： 0 - 停止WDT

TIME_OUT_VALUE - 启动WDT，以超时时间单位数量。
(0x01~0xFF)替换掉常量TIME_OUT_VALUE。

```
*/
```

```

SetWDT(unsigned int Wmode, unsigned int Wtime, unsigned int
Timeout)
{
    unsigned int irq;

```

```

    If (Wmode == 0)

```



```
        outportb(pm_base+0x47, 0x0C);
else
{
    unsigned int irq;
    irq = Wmode;
    irq = irq<<4;
    outportb(pm_base+0x47, 0x80);
    outportb(pm_base+0x67, irq);
}

If (Wtime == 0)
    outportb(pm_base+0x65, 0x00);
else
    outportb(pm_base+0x65, 0x80);

    outportb(pm_base+0x65, Timeout);

}
```

常见故障分析与解决

序号	故障现象	故障分析解决
1	BIOS 设置不能保存	分析：可能是 CMOS 电池的问题。
		解决方法：用万用表测量 CMOS 电池，电压不足就更换新电池，重新设置保存。
2	时可开机时不可开机	分析：可能是电源接触不良，从主板电源插座上拔下电源，发现主板电源插针某根插针经多次用力插压，已经倒向一边。
		解决方法：关机拔下电源插头，用镊子将弯曲的电源插针弄直插上电源开关，重新启动，多次试验，没有出现此类故障。
3	当接上 U 盘时，系统提示一个高速设备接到一个低速接口上。	分析：U 盘是高速 USB2.0，接到电脑上有提示一个高速设备接到一个低速接口上，说明主板的接口被认为是一个 USB1.1 的接口。
		解决方法：将主板上 USB 高速传输模式打开即可。不同的主板有不同的设置。一般是将 USB 设备选项中的 FULLSPEED 改为 HISPEED 即可。
4	更换新内存后屏幕无显示，呈现黑屏状态，无法正常进入系统，换上原来的内存仍然无法启动。	分析：可能是由于在插拨内存的过程中操作不当引起主板上部件工作不正常，需要重点检查主板上与内存相关的电路。
		解决方法：首先检查内存、显卡等硬件，结果显示这些硬件都没有问题，都可以正常使用。仔细检查主板上内存插槽周围的电路，最终发现第一个内存插槽里的两根与内存金手指接触的针脚搭在一起，对照第二个内存插槽没有该现象，由此判断是第一个内存插槽短路了。用镊子小心地将两根针脚拨回原处，插上内存，重新启动，系统顺利启动。

5	更换光驱后系统无法启动	<p>分析：可能是由于在安装光驱时不小心碰撞了硬盘的数据线，从而使硬盘数据线接口接触不良导致的，或者是硬盘和光驱上的主从跳线设置不正确。</p>
		<p>解决方法：首先对硬盘数据线和硬盘及主板上的 IDE 接口进行检查，发现没有问题；然后检查主从跳线的设置，发现硬盘和光驱连接在不同的数据线上，而且硬盘和光驱的跳线都设置为主盘，从而导致硬盘无法启动；将光驱的跳线设置为从盘，重新安装好。</p>
6	进入系统后无法检测到 PCI 卡	<p>分析：确认 PCI 卡功能是否正常；将 PCI 卡重插或插入其他 PCI 插槽，看能否正常；了解使用的电源类型（是 AT 还是 ATX）；了解客户的 PCI 卡的电压需求。</p>
		<p>解决方法：如 PCI 卡功能问题，更换 PCI 卡解决；重插或插入其他 PCI 插槽即可正常，则为 PCI 卡与插槽接触问题。如果使用的是 AT 电源，但 PCI 卡需要 3.3V 电压，因为 AT 电源不提供 3.3V 电压，电源需更换为 ATX 电源方可使用 PCI 卡。（建议：在选购电源时，先了解所使用的 PCI 卡是否需要 3.3V 电压。）</p>
7	找不到外接设备	<p>分析：没有连接；没有装驱动；设备已坏。</p>
		<p>解决方法：查看设备与主板的连接线是否正常，如正常则更换正常连接线确定连接无问题；重新安装设备驱动，看是否可以识别；检测设备是否正常；如设备正常考虑与主板是否兼容。</p>

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Hotline: 4008809666



Safety Instructions

1. Please read this manual carefully before using the product;
2. Leave the board or card in the antistatic bag until you are ready to use it;
3. Touch a grounded metal object (e.g. for 10 seconds) before removing the board or card from the anti-static bag;
4. Before installing or removing a board, wear the ESD gloves or ESD wrist strap; handle the board by its edges only;
5. Before inserting, removing or re-configuring motherboards or expansion cards, first disconnect the computer and peripherals from their power sources to prevent electric shock to human bodies or damage to the product;
6. Remember to disconnect the AC power cord from the socket before removing the board or moving the PC;
7. For PC products, remember to disconnect the computer and peripherals from the power sources before inserting or removing a board;
8. Before connecting or disconnecting any terminal, peripheral or any device, be sure the system is powered off and all the power sources are disconnected;
9. After turning off the computer, wait at least 30 seconds before turning it back on

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Chapter 1 Product Introduction

Overview

The board adopts Intel® Calpella + ECC platform with i7-620UE 1.06GHz high-performance and low power consumption processor and QM57 Express Chipset. The Core™i7-620UE processor adopts 32nm craft and dual-core four-thread processing mechanism; the performance can be improved via Intel® Turbo Boost technology. The i7 processor integrates DDR3 800/1066MHz memory controller and video card controller.

The board is a rugged conduction-cooled single board computer, which adopts conductive heat dissipation mode with on-board CPU. Storage function: it supports 2GB DDR3 ECC SDRAM 800/1066MHz memory on-board and SATA storage. The signals on the two SATA channels are connected with J2 with 16GB SSD. When data are transmitted on SATA/SSD, the hard disk indicators are on. The signals on the two USB2.0 channels are connected with J2.

Graphics processing function: it adopts Intel™ HD Graphics integrated by Core™i7-620UE processor with the maximum dynamic frequency up to 766MHz. The maximum resolution supported by the VGA on rear I/O board is up to 2048 x 1536 (75Hz refresh frequency).

Network function: 2-channel independent 10/100/1000Mbps Ethernet signals are connected with J2 without transmission indicator signals.

Serial port function: two RS-232 serial ports on rear IO board with the maximum speed no less than 115200bps.

Bus expansion function: 3U 32bit, 33MHz CompactPCI bus standard, compliant with PICMG2.0 and PICMG2.1.

The board is a high-end 3U CompactPCI motherboard, which can meet customers' different requirements for connectors. The product is mainly applied in the high-end CPCI products in the fields of information communication, network storage, network audio processing, network graphics processing, industrial control, military and aviation, etc.

Mechanical Dimensions, Weight and Environment

- Dimensions: 169.3mm (L) x 100mm (W) x 15.5mm (H);
- Net Weight: 0.41Kg;
- Operating Environment:
 - Temperature: -20°C ~ 55°C;
 - Humidity: 10% ~ 95% (non-condensing);
- Storage Environment:
 - Temperature: -55°C ~ 85°C;
 - Humidity: 10% ~ 95% (non-condensing);

Typical Consumption

The typical consumption is based on the following idle status values.

CPU: Intel® Core i7-620UE 1.06GHz Memory: DDR3 800 ECC K4B2G0846D-HCH9 2GB

Operating System: Windows XP/SP3 Chinese Version

Hard Disk: Samsung K9NCG0805M 8GB(SSD) on-board

- +5V@1.52A; +5%/-3%;
- +3.3V@1.64A; +5%/-3%;

Microprocessor

Provides Intel® Core™ i7-620UE CPU, which adopts BGA1288 package, DMI: 2.5GT/S, 32nm craft, dual-core four-thread mechanism, main frequency: 1.06GHZ and rated power consumption: 18W.

Chipset

Mobile Intel® QM57 Express Chipset

System Memory

DDR3 ECC SDRAM 800/1066MHz memory IC on-board, supporting Un-buffered ECC and single-channel function. The maximum memory capacity supported by a single memory bank is up to 2GB.

Display Function

- Adopts Intel® HD Graphics chip integrated by Core™i7-620UE processor;
- Supports independent VGA output with the maximum resolution and refresh frequency supported up to 1920x1200@60Hz; the VGA signals are connected with J2.

Network Function

Provides two independent 10/100/1000Mbps Ethernet signals for J2 without data transmission indicator signals.

Power Feature

Adopts CPCI power, supporting S0 and S5.

Expansion Bus

Provides seven 32-bit CPCI slots, complying with CompactPCI standard.

Watchdog Function

- 255 levels, programmable by minute or second;
- Supports watchdog timeout interrupt or reset system.

Operating System

- Supported OSs: Windows XP, Vxworks and linux.

Note: if problems occurred when installing Windows XP operating system on the peripheral hard disk, please partition and format the SSD card first and then install the operating system on the peripheral hard disk again.

On-board I/O

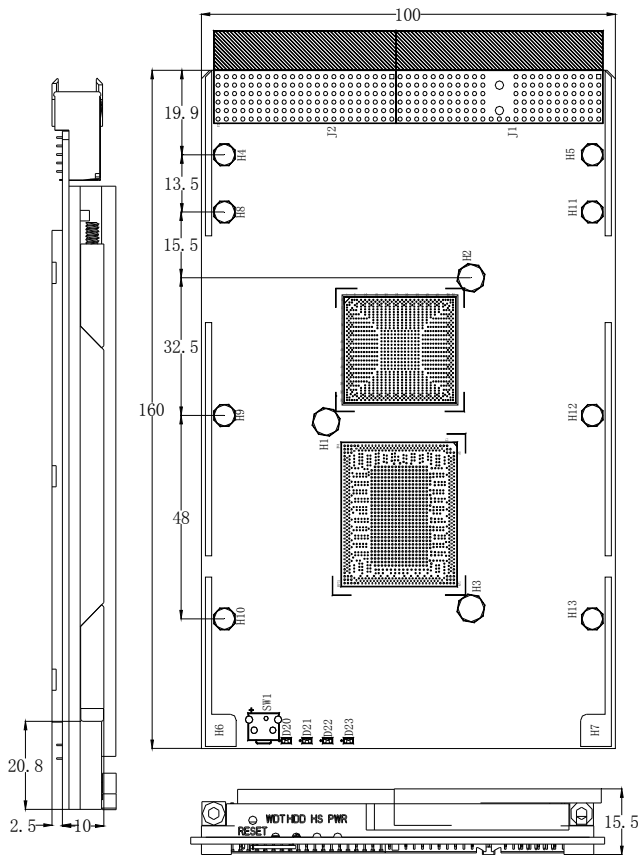
- Two serial ports; the signals on the two serial ports are connected with J2, which supports RS-232.
- Two SATA connectors, the signals on the two SATA channels are connected with J2.
- Two USB2.0 ports, the signals on the two USB2.0 channels are connected with J2.

Tips: how to identify the alarms

1. Long “beep” indicates system memory error;
2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

Product Outline

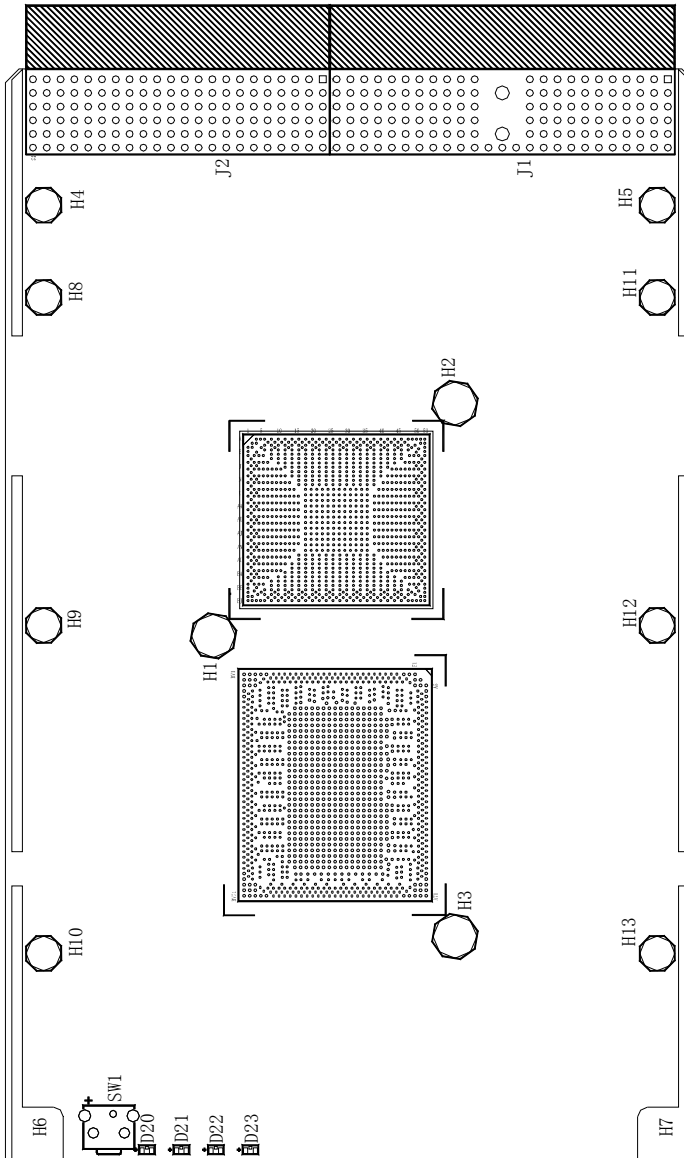


Unit: mm

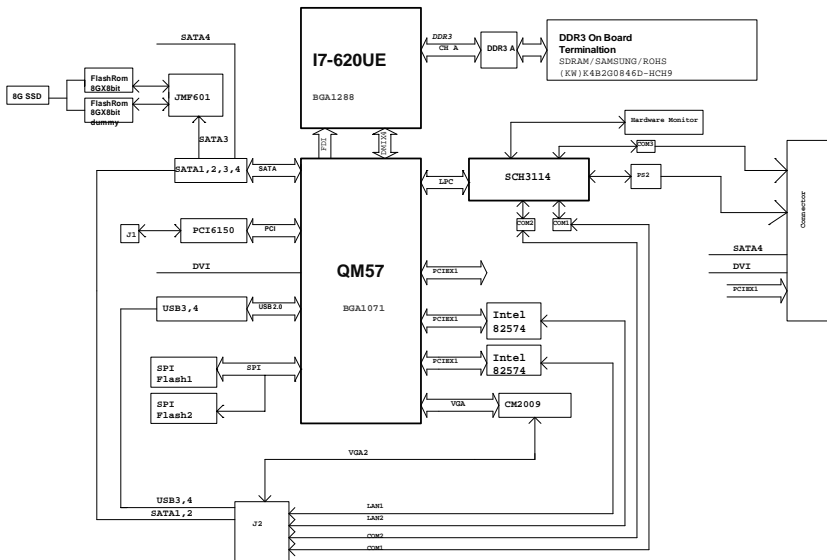
Warning!

Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use M3x6 GB9074.4-88 screws at H1 ~ H3, M2.5x4 GB/T 818-2000 screws at H4 ~ H7 and M2.5x5 GB/T 820-2000 screws at H8 ~ H13.

Locations of Connectors



Structure



Tip: How to identify the first pin of the jumpers and connectors

1. Observe the letter beside the socket: the first pin is usually marked with “1” or bold lines or triangular symbols;
2. Observe the solder pad on the back; the square pad is the first pin.

Reset Button

The board provides one trigger mode reset button, SW1, to realize Reset function.

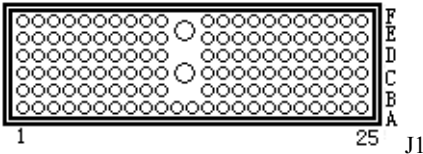
Indicator



LED	Status	Description
WDT	OFF	Watchdog unoperated
	ON	Watchdog is operating
HS	OFF	Normal operating status
	ON	Under hot-swapping status
HDD	OFF	Hard disk is idle
	ON	Hard disk is operating
PWR	OFF	Power failure
	ON	Power normal

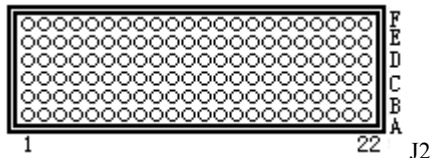
CompactPCI Connector

The pin definitions for J1



Pin	Signal Name					
	A	B	C	D	E	F
1	+5V	-12V	TRST#	+12V	+5V	GND
2	TCK	+5V	TMS#	TDO	TDI	GND
3	INTA#	IRQB#	INTC#	+5V	INTD#	GND
4	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
5	NC	NC	PCI_RST#	GND	GNT0#	GND
6	REQ0#	PCI_PRESENT#	+3.3V	CLK0	AD31	GND
7	AD30	AD29	AD28	GND	AD27	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
9	C/BE3#	GND	AD23	GND	AD22	GND
10	AD21	GND	+3.3V	AD20	AD19	GND
11	AD18	AD17	AD16	GND	C/BE2#	GND
12	KEY AREA					
13						
14						
15	+3.3V	FRAME#	IRDY#	BD_SE	TRDY#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
17	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
18	SERR#	GND	+3.3V	PAR	C/BE1#	GND
19	+3.3V	AD15	AD14	GND	AD13	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
21	+3.3V	AD9	AD8	M66EN	C/BE0#	GND
22	AD7	GND	+3.3V	AD6	AD5	GND
23	+3.3V	AD4	AD3	+5V	AD2	GND
24	AD1	+5V	V(I/O)	AD0	ACK64#	GND
25	+5V	REQ64#	ENUM#	+3.3V	+5V	GND

The pin definitions for J2



Pin	Signal Name					
	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	USB1P/bi	USB2P/bi	PWR_USB1	GND
20	CLK5	GND	USB1N/bi	USB2N/bi	PWR_USB2	GND
19	GND	GND	PWR_BTN#/in	PWR_SLPS3#/out	RIO_3.3V/out	GND
18	1RXD/in	1DCD#/in	1DTR#/out	2CTS#/in	1CTS#/in	GND
17	1TXD/out	2RXD/in	PRST#	REQ6#	GNT6#	GND
16	1DSR#/in	1RTS#/out	DEG#	GND	1RI#/in	GND
15	PWR_5VSTDBY/in	FAN_SENSE/in	FAL#	REQ5#	GNT5#	GND
14	IPA_DA+/bi	IPA_DA-/bi	2RTS#/out	IPA_DC+/bi	IPA_DC-/bi	GND
13	IPA_DB+/bi	IPA_DB-/bi	2RI#/in	IPA_DD+/bi	IPA_DD-/bi	GND
12	IPB_DA+/bi	IPB_DA-/bi	RIO_1V9/out	IPB_DC+/bi	IPB_DC-/bi	GND
11	IPB_DB+/bi	IPB_DB-/bi	2DCD#/in	IPB_DD+/bi	IPB_DD-/bi	GND
10	NC	2TXD/out	VGA_RED/out	2DTR#/out	NC	GND
9	SATA1TXP/OUT	GND	VGA_HSYNC/out	NC	SATA2TXP/OUT	GND
8	SATA1TXN/OUT	NC	VGA_BLUE/out	GND	SATA2TXN/OUT	GND
7	NC	2DSR#/in	VGA_12C_DAT/bi	PWM_OUT/out	NC	GND
6	SATA1RXP/IN	NC	VGA_GREEN/out	GND	SATA2RXP/IN	GND
5	SATA1RXN/IN	GND	VGA_VSYNC/out	NC	SATA2RXN/IN	GND
4	VI/O	RIO_5V/out	VGA_12C_CLK/out		NC	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

Chapter 3 BIOS Setup

UEFI Overview

UEFI (Unified Extensible Firmware Interface) is the latest computer firmware to replace traditional BIOS. UEFI is solidified in the flash memory on the CPU board. Its main functions include: initialize system hardware, set the operating status of the system components, adjust the operating parameters of the system components, diagnose the functions of the system components and report failures, provide hardware operating and controlling interface for the upper level software system, guide operating system and so on. UEFI provides users with a human-computer interface in menu style to facilitate the configuration of system parameters for users, control power management mode and adjust the resource distribution of system device, etc.

Setting the parameters of the UEFI correctly could enable the system operating stably and reliably; it could also improve the overall performance of the system at the same time. Inadequate even incorrect UEFI parameter setting will decrease the system operating capability and make the system operating unstably even unable to operate normally.

UEFI Parameter Setup

Prompt message for BIOS setting may appear once powering on the system. At that time (invalid at other time), press the key specified in the prompt message (usually or <F2>) to enter UEFI setting.

All the setup values modified by UEFI (excluding data and time) are saved in the flash storage in system; the contents will not be lost even if powered down or remove the battery of the board. The data and time are saved in CMOS storage, which is powered by battery; unless clearing CMOS is executed, its contents would not be lost even if powered off.

Note! UEFI setting will influence the computer performance directly. Setting parameter improperly will cause damage to the computer; it may even be unable to power on. Please use the internal default value of UEFI to restore the system.

Our company is constantly researching and updating UEFI, its setup interface may be a bit different. The figure below is for reference only; it may be different from your UEFI setting in use.

Basic Function Setting for UEFI

After starting SETUP program, the main interface of Aptio Setup Utility - Copyright

(C) 2009 American Megatrends, Inc. will appear:

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Main	Advanced	Chipset Boot Security Save & Exit
CPC-3813-MIL		
BIOS Name	Y9051000	Set the Date. Use‘Tab’ to switch between Date elements.
BIOS Version	A00	
Build Date	11/01/2010 10:10:10	→←: Select Screen
Memory Information		↑↓: Select Item
Total Memory	1024 MB (DDR3 800)	Enter: Select
		+/-: Change Opt
System Date	[Mon 11/01/2009]	F1: General Help
System Time	[00:47:55]	F2: Previous Values
		F3: Optimized Defaults
Access Level	Administrator	F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

◆ Main

➤ System Time

Choose this option and set the current date by < + > / < - >, which is displayed in format of month/date/year. Reasonable range for each option is: Month (1-12), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

➤ System Time

Choose this option and set the current time by < + > / < - >, which is displayed in format of hour/minute/second. Reasonable range for each option is: Hour (00-23), Minute (00-59), Second (00-59).

◆ Advanced

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! <ul style="list-style-type: none"> ▶ CPU Configuration ▶ SATA Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor 	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

Launch PXE OpROM

This option is the switch for LAN PXE boot function.

➤ CPU Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
CPU Configuration Intel(R) Core(TM) i7 CPU U 620 @ 1.07GHz EMT64 Supported Processor Speed 1064MHz Processor Stepping 20652 Microcode Revision 9 Processor Cores 2 Intel HT Technology Supported Hyper-threading [Enabled] Active Processor Cores [All] Intel Virtualization Technology [Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

Display the relevant information of CPU. Note: the Type, Speed, Core and HT of the CPU are related to the CPU installed in the platform; different series CPUs will display different information.

- **Hyper-Threading**
Control switch for the Hyper Threading Technology function.
- **Active Processor Cores**
Active CPU core number, only available for multi-core CPU.
- **Intel Virtualization Technology**
Switch of the Intel virtualization technology.

➤ SATA Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
SATA Configuration		→←: Select Screen
SATA Port0	EVOC	↑↓: Select Item
(7.8GB)		Enter: Select
SATA Port1	Not Present	+/-: Change Opt
SATA Port2	Not Present	F1: General Help
SATA Port3	Not Present	F2: Previous Values
SATA Port4	Not Present	F3: Optimized Defaults
SATA Port5	Not Present	F4: Save
		ESC: Exit
Serial-ATA Controller 0 [Compatible]		
Serial-ATA Controller 1 [Enhanced]		
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

SATA Port1 ~ 4 dynamically detect whether there are SATA devices connected with the motherboard. If devices are connected with the corresponding ports, then it will display the SATA device type. Otherwise, it will display “Not Present”.

- **Serial-ATA Controller 0**
Switch for Serial-ATA Controller 0, sets the mode for Serial-ATA Controller 0.
- **Serial-ATA Controller 1**
Switch for Serial-ATA Controller 1, sets the mode for Serial-ATA Controller 1.

➤ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
USB Configuration USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs Legacy USB Support [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

● **Legacy USB Support**

This option is used to support legacy USB devices (keyboard, mouse, storage device, etc). When it is set to Enabled, the USB devices can be used in the OS that does not support USB, such as DOS. When it is set to Disabled, the legacy devices cannot be used in the OS that does not support USB.

Note: USB can be used in EFI application, such as in Shell.

➤ **Super IO Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Super IO Configuration ▶ Floppy Disk Controller Configuration ▶ Serial Port 0 Configuration ▶ Serial Port 1 Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

● Floppy Disk Controller Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Floppy Disk Controller Configuration		→←: Select Screen
Floppy Disk Controller	[Enabled]	↑↓: Select Item
Device Settings	Reset Required	Enter: Select
Change Settings	[Auto]	+/-: Change Opt
Device Mode	[Read Write]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save
		ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

* Floppy Disk Controller

This option is used to enable or disable the floppy disk controller.

* Device Settings

This option is used to display the settings of the floppy disk controller.

* Change Settings

This option is used to configure the resource used by the floppy disk controller (IO and IRQ).

* Device Mode

This option is used to configure the operating mode of the floppy disk controller.

● **Serial Port 1 ~ 2 Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Serial Port 1 ~ 2 Configuration		→←: Select Screen
		↑↓: Select Item
Serial Port	[Enabled]	Enter: Select
Device Settings	IO=3F8h; IRQ=4;	+/-: Change Opt
Change Settings	[Auto]	F1: General Help
Device Mode	[Normal]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save
		ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

* **Serial Port 1 ~ 2**

This option is used to enable or disable the current serial port.

* **Device Settings**

This option is used to display the current resource settings of the serial port.

* **Change Settings**

This option is used to configure the resource used by the serial port (IO and IRQ).

* **Device Mode**

This option is used to configure the operating speed of the serial port.

➤ H/W Monitor

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
PC Health Status CPU Temperature : +38 C System Temperature : +36 C Vcore : +0.95 V V3.3 : +3.296 V V5.0 : +5.007 V V12.0 : +12.091 V Vbat : +3.21 V	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

Display the currently detected hardware monitoring information, such as voltage, temperature, fan speed, etc.

● System Temperature

Current system temperature, monitored by the thermal resistor on motherboard.

● CPU Temperature

Current CPU temperature, monitored by the temperature sensor on motherboard.

● Vcore

CPU core voltage.

● V3.3/ V5.0/V12.0

Turn on/off the power to output voltage.

● Vbat

CMOS battery voltage.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ South Bridge	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➤ **South Bridge Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
SB Chipset Configuration ▶ USB Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

● USB Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
USB Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
USB Port 1 [Enabled]	
USB Port 2 [Enabled]	
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

* USB Port 0 ~ 3

Switch for USB Port 0 ~ 3.

◆ Boot

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Boot Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Quiet Boot [Disabled]	
Boot Numlock State [On]	
Boot Option Priorities	
Boot Option #1 [Built-in EFI Shell]	
Hard Drive BBS Priorities	ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➤ Quiet Boot

Boot mode selection switch; it is used to enable or disable Quiet Boot function.

➤ Bootup Numlock State

Switch for the Numlock.

➤ **Boot Option Priorities**

This option is used to configure the system booting priorities. #1 represents the highest priorities while #n represents the lowest priorities.

➤ **Hard Drive BBS Priorities**

This option is used to configure the priorities of the legacy devices in BBS. #1 represents the highest priorities while #n represents the lowest priorities.

◆ **Security**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. Administrator Password User Password	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➤ **Setup Administrator Password**

This option is used to set the administrator password.

➤ **User Password**

This option is used to set user password.

Note: If ONLY the Administrator's password is set, then this is only asked for when entering Setup;

If ONLY the User's password is set, then this must be entered to boot the computer. When entering Setup, the User will have Administrator privileges;

When both Administrator's password and User's password are set, Administrator's password or User's password is required when booting. If Administrator's password is adopted, the User will have Administrator's privileges when entering Setup; while if User's password is adopted, the User will have User's privileges when entering Setup.

◆ Save & Exit

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults Save as User Defaults Restore User Defaults Boot Override Built-in UEFI Shell	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➤ **Save Changes and Exit**

This option is used to save changes and exit Setup program. If the changes are effective after rebooting, then it will reboot automatically.

➤ **Discard Changes and Exit**

This option is used to discard changes and exit Setup program.

➤ **Save Changes and Reset**

The option is used to save changes and reset.

➤ **Discard Changes and Reset**

The option is used to discard changes and reset.

➤ **Save Changes**

Save changes.

➤ **Discard Changes**

Discard changes.

➤ **Restore Defaults**

Restore default values.

➤ **Save as User Defaults**

Save user defaults.

➤ **Restore User Defaults**

Restore user defaults.

➤ **Boot Override**

This option lists all the booting options; users may choose one of the options and press <Enter>, then you may boot according to the option.

➤ **Reset System with ME disable Mode**

Choose this option and press <Enter>, the system will be reset at ME disable mode.

System Resource Managed by UEFI under x86 Platform

We define three kinds of system resources here: I/O port address, IRQ interrupt number and DMA number.

◆ DMA

Level	Function
DMA0	Unassigned
DMA1	Unassigned
DMA2	Unassigned
DMA3	Unassigned
DMA4	Used for DMAC cascade
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ APIC

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; while some others can have up to 28 interrupt sources, such as motherboard supporting PCI-X. However, relevant OS are required to enable that function.

◆ IO Port Address

Only 16 IO address lines are designed for X86, from 0 ~ 0FFFFh; there is 64K for the system I/O address space. In traditional ISA connector, only the foregoing 1024 (0000 ~ 03FFh) are adopted while the ports above 0400h are adopted by PCI and EISA connectors. Each peripheral will occupy portion of the space. The table below shows parts of the I/O connectors used in X86 platform.

Address	Device Description
000h - 000Fh	DMA Controller #1
020h - 021h	Programmable Interrupt Controller #1
040h - 043h	System Timer#1
061h - 061h	System Speaker
070h - 071h	System CMOS/Real Time Clock
081h - 083h	DMA Controller #2
087h - 087h	DMA Controller #3
089h - 08Bh	DMA Controller #4
08Fh - 08Fh	DMA Controller #5
0A0h - 0A1h	Programmable Interrupt Controller #2
0C0h - 0DFh	DMA Controller #6
0F0h - 0FFh	Numeric data processor
170h - 177h	Secondary IDE Channel
1F0h - 1F7h	Primary IDE Channel
274h - 277h	ISAPNP Read Data Port
279h - 279h	ISAPNP Read Data Port
2F8h - 2FFh	COM2
3B0h - 3BBh	Intel(R) Graphic Media Accelerator HD
3C0h - 3DFh	Intel(R) Graphic Media Accelerator
376h - 376h	Secondary IDE Channel
3F6h - 3F6h	Primary IDE Channel
3F8h - 3FFh	COM1
A79h - A79h	ISAPNP Read Data Port

◆ IRQ Assignment Table

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be distributed. The ISA devices claim to engross the interrupt. Only the plug and play ISA devices can be distributed by the BIOS or the OS. And several PCI devices share one interrupt through the distribution of BIOS or OS. The diagram below shows parts of the interrupt distribution under X86 platform, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	Reserved
IRQ2	Reserved
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Standard floppy disk controller
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI Compliant System
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Reserved

Chapter 4 Install the Drivers

Regarding the driver program of this product, please refer to the enclosed CD.

Appendix

Watchdog Programming Guide

The board provides a programmable watchdog timer (WDT) up to 255 levels and timed by minute or second. Watchdog timeout event can be programmed to reset system or generate maskable interrupts.

The available IRQ numbers for this board are: 3, 4, 5, 7, 9, 10 and 11. The following describes WDT program in C language. The steps to program WDT are listed as follows:

- Enter WDT programming mode;
- Set WDT operating mode, enable WDT/disable WDT.

(1) Enter WDT Programming Mode

/*

Description: the function, PreInitWDT, is used to initialize the registers relevant to WDT; please invoke the function before configuring and using WDT.

Input: none

Output: none

Note: the function will modify the value of the variable pm_base, which will be quoted by the function SetWDT.

*/

```
#define INDEX_PORT 0x4E
#define DATA_PORT 0x4F
unsigned int tmp_reg;
unsigned int pm_base;
```

```
VOID PreInitWDT()
```

```
{
    outportb(INDEX_PORT, 0x55);
    outportb(INDEX_PORT, 0x07);
```

```

        outportb(DATA_PORT, 0x0A);
        outportb(INDEX_PORT, 0x30);
        outportb(DATA_PORT, 0x01);
        outportb(INDEX_PORT, 0x60);
        tmp_reg = inportb(DATA_PORT);
        pm_base = tmp_reg;
        outportb(INDEX_PORT, 0x61);
        tmp_reg = inportb(DATA_PORT);
        pm_base = pmbase<<8+tmp_reg; /*Get the variable pm_base for later
        use*/
    }

```

(2) Configure the WDT operating mode to enable or disable WDT

/*

Description: the function, SetWDT, is used to configure the parameter required when configuring WDT to enable or disable WDT.

Input: Wmode: 0 - Configure WDT to reset mode

IRQ_NO - Configure WDT to interrupt mode. Please replace the constant IRQ_NO with the interrupt number need to be used. The available range of the interrupt number has been listed in the beginning of this chapter. **(Note: the instructions for the interrupt mode are only suitable for the OS with both ACPI and APIC enabled.)**

Wtime: 0 - Configure WDT to time by minute

1 - Configure WDT to time by second

Timeout: 0 - disable WDT

TIME_OUT_VALUE - Enable WDT. Please replace the constant TIME_OUT_VALUE with the unit number of timeout value (0x01 ~ 0xFF)

*/

SetWDT(unsigned int Wmode, unsignedint Wtime, unsigned int Timeout)

```

{
    unsigned int irq;

    If (Wmode == 0)
        outportb(pm_base+0x47, 0x0C);
    else
    {
        unsigned int irq;
        irq = Wmode;
        irq = irq<<4;
        outportb(pm_base+0x47, 0x80);
        outportb(pm_base+0x67, irq);
    }

    If (Wtime == 0)
        outportb(pm_base+0x65, 0x00);
    else
        outportb(pm_base+0x65, 0x80);

    outportb(pm_base+0x65, Timeout);

}

```

Troubleshooting and Solutions

NO.	Phenomenon	Troubleshooting and Solution
1	BIOS setting cannot be saved	Analysis: it could be the problem of the CMOS battery.
		Solution: measure the CMOS battery with a multi-meter; if the voltage is insufficient, replace the battery; re-set the BIOS and save again.
2	The computer can only be powered-on occasionally	Analysis: it may be caused by poor connection. Remove the power plug from power socket on motherboard, you may find that certain pin of the motherboard power has been collapsed to one side after some forceful insertion.
		Solution: power off the computer and remove the power plug; erect the bended power pin with tweezers and re-insert in the power socket. Reboot the computer and test for several times until the problem no longer exists.
3	When connecting with a USB flash drive, the system prompts that a high-speed device has been connected with a low-speed connector.	Analysis: A USB flash drive is a high-speed USB2.0; when connecting with the computer, it prompts that a high-speed device has been connected with a low-speed connector, which indicates that the connector on motherboard is regarded as a USB1.1 port.
		Solution: enable the USB high-speed transmission mode on the motherboard. Different motherboards may have different settings. Change the FULLSPEED option to HISPEED in USB device option.
4	The screen has no display after replacing with a new memory and cannot enter system; even when the former memory is re-installed, the system cannot be booted as well.	Analysis: it could result from improper operation when inserting or removing the memory and cause abnormal operation of the components on the motherboard. Focus on the circuit related to the memory on the motherboard.
		Solution: check the hardware such as memory, video card first; if it shows that the hardware are all OK, then check the circuit around the memory slot on motherboard carefully; you may find that the two pins connected with the gold finger in the first memory slot are shorted while the second memory slot is normal, then you may know that there is short circuit in the first memory slot. Remove the two pins to their original location with tweezers carefully, insert the memory, reboot the system and the system will be booted smoothly.

5	The system cannot be booted after replacing a CD-ROM.	<p>Analysis: the data cable of the hard disk may get knocked when installing the CD-ROM, which leads to poor connection of the hard disk data cable, or the master and slave jumpers on hard disk and CD-ROM are wrongly set.</p> <p>Solution: check the data cable of the hard disk and the IDE connectors on hard disk and motherboard first; if there are no problems, then check the master and slave jumper setting. You may find that the hard disk and CD-ROM are connected with different data cables while their jumpers are all set to master; thus, the hard disk cannot be booted. Set the CD-ROM jumper to slave and then re-install it.</p>
6	No PCI card can be detected after entering the system.	<p>Analysis: make sure the PCI card functions normally; re-insert the PCI card or insert it into another PCI slot to see whether it is normal; find out the power type in use (AT or ATX); find out users' requirement for the PCI card voltage.</p> <p>Solution: if the PCI card functions abnormally, replace it with a new one; if it functions normally when re-inserted or inserted in another PCI slot, then there is something wrong between the PCI card and the slot. If AT power is adopted and the PCI card requires 3.3V voltage, then the AT power shall be replaced with ATX power because AT power cannot provide 3.3V voltage. (Suggestion: when purchasing power supplies, please check whether the PCI card in use requires 3.3V voltage or not).</p>
7	No peripheral devices can be detected.	<p>Analysis: devices are not connected; no drivers are loaded; devices are broken.</p> <p>Solution: check whether the cable between the device and the motherboard is normal; if it is normal, replace it with a new cable to make sure the connection is OK. Re-install the device driver and check whether it can be recognized; check whether the device is normal; if the device is normal, then check whether the device is compatible with the motherboard.</p>