

104-1814CLDNA Series

PCI/104-Express 单板电脑

PCI/104-Express Single Board Computer

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

104-1814CLDNA系列是一款面向高端应用的低功耗嵌入式PCI/104-Express结构的主板，板上集成了Intel® 最新低功耗双核CPU、板载1G内存、VGA/LVDS显示、1个PC/104-Plus插槽、1个PCI/104-Express扩展插槽、1个10/100/1000Mbps网络接口、在板Audio、2个SATA2.0接口、4个串口、4个USB2.0接口、看门狗定时器。

本产品主要应用于军工、铁路、通讯、实时视频监控等高端领域，本产品在该领域中主要用作主控系统。

机械尺寸、重量与环境

- 外形尺寸：115.5mm（长）×96.8（宽）×42mm（高）
- 净重：0.27Kg；
- 工作环境：
 - 温度：-40℃~+85℃；
 - 湿度：5%~90%（非凝结状态）；
- 贮存环境：
 - 温度：-40℃~+85℃；
 - 湿度：5%~90%（非凝结状态）；

典型功耗

CPU：板载 Intel® Duo SU9300

内存：板载 DDRII 1G 800MHz

- +5V@2.12A；+5%/-3%。

微处理器

支持Intel® SU9300 (FSB:800M 封装: BGA956)/SL9400 (FSB:1066M 封装: BGA956)/Celeron ULV 722 (FSB:800M 封装: BGA956) CPU。

芯片组

Intel® GS45+Intel® ICH9M-SFFE

系统内存

板载 1G DDR2 800MHz。

显示功能

采用 Intel® GS45芯片组集成显示模块, 根据需要分配显示内存, 支持VGA显示, 双通道的LVDS显示(24bit)和VGA+LVDS双显示功能, CRT支持最高分辨率到QXGA(2048x1536)。

网络功能

提供1个10/100/1000Mbps网络接口, 可支持网络唤醒功能。

音频功能

采用ALC888-GR音效芯片, 支持MIC-IN, LINE-IN, SPEAKER-OUT。

电源特性

采用ATX/AT电源, 支持S0、S1、S4、S5。

扩展总线

提供1个 PC/104-Plus插槽, 1个 PCI/104-Express插槽, 支持PCI/104-Express标准。

Watchdog功能

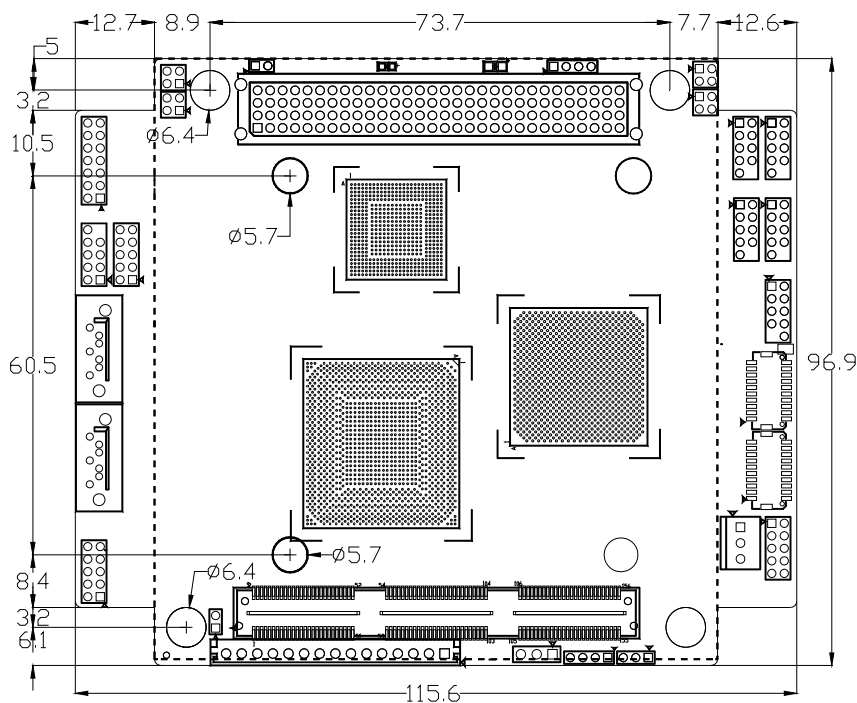
- 支持 255 级，可编程按分或秒；
- 支持看门狗超时或复位系统。

I/O接口

- 提供 4 个串口，其中 COM1 支持 MODEM 唤醒功能，COM3、COM4 支持 RS-422/RS-485 模式；
- 提供 2 个 SATA 接口；
- 提供 4 个 USB2.0 接口；
- 提供 1 个 8 位数字 I/O 接口。

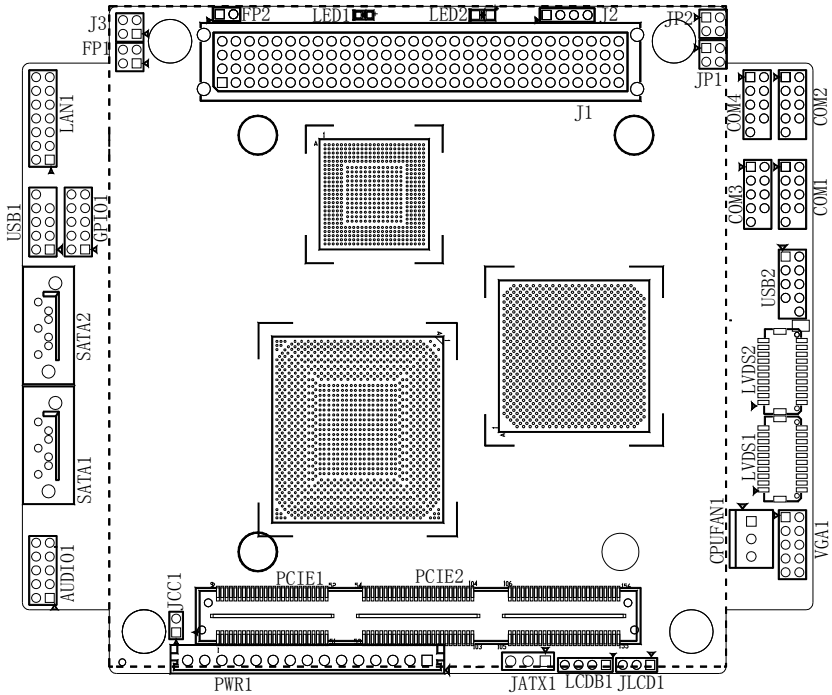
第二章 安装说明

产品外形尺寸图

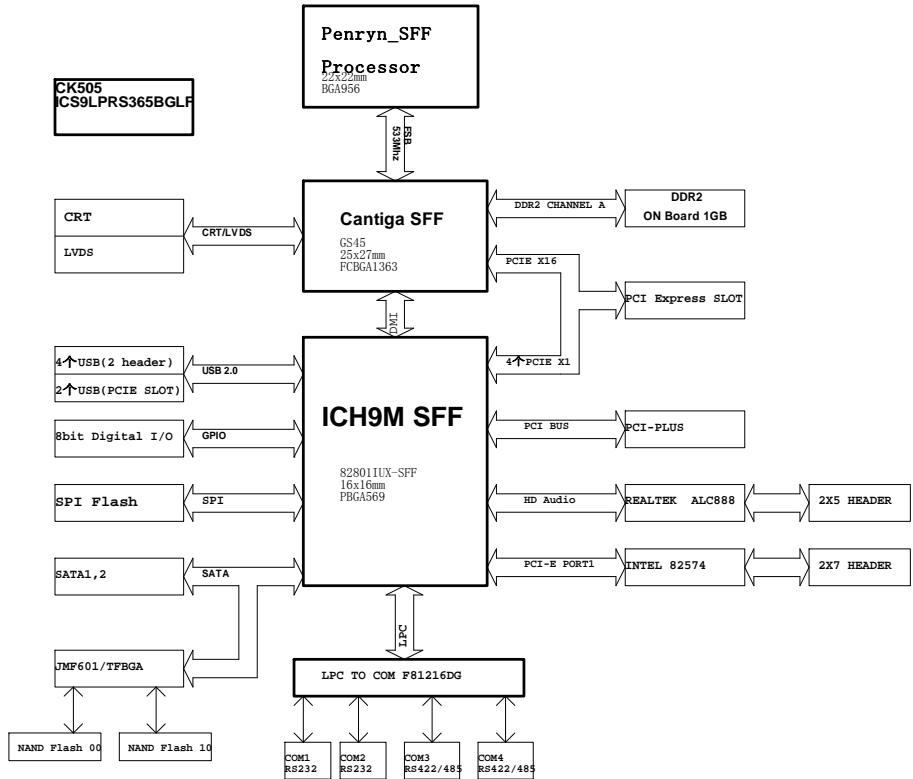


单位：mm

接口位置示意图



主板架构图



提示：如何识别跳线、接口的第一脚

- 1、观察插头、插座旁边的文字标记，通常用“1”或加粗的线条或三角符号表示。
- 2、看看背面的焊盘，通常方型焊盘为第一脚。

跳线设置

1. JCC1: CMOS内容清除/保持设置（脚距：2.0mm）

CMOS由板上钮扣电池供电。清CMOS会导致永久性消除以前系统配置并将其设为原始（工厂设置）系统设置。其步骤：(1)关闭计算机，断开电源；(2)瞬间短接JCC1插针；(3)开计算机；(4)启动时按屏幕提示按键进入BIOS设置，重新加载最优缺省值；(5)保存并退出设置。设置方式如下：

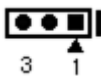


JCC1

设置	功能
1-2 开路	正常工作状态(Default)
1-2 短路	清除 CMOS 内容,所有 BIOS 设置恢复成出厂值。

2. JLCD1: LCD工作电压选择（脚距：2.0mm）

不同的 LCD 屏电压可能不同，本板提供了 3.3V 和 5V 两种电压选择，当所选择的 LCD 电压与所使用的 LCD 屏的工作电压一致时，LCD 屏才能正常显示。设置方式如下：



JLCD1

设置	功能
1-2 短路	+3.3V(Default)
2-3 短路	+5V

3. JATX1: ATX/AT电源选择（脚距：2.54mm）

ATX电源供电/AT电源供电可选，可通过设置JATX1来实现模式选择。具体设置如下：



JATX1

设置	功能
1-2 短路	ATX电源
2-3 短路	AT电源 (Default)

4. JP1、JP2:串口 (COM3、COM4) RS-422/RS-485模式选择 (脚距:2.0mm)

可通过设置JP1~JP2来实现COM3、COM4模式选择, JP1控制COM3, JP2控制COM4, 具体设置如下:

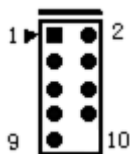


JP1、JP2

管脚设置	模式选择	
	RS-485 (Default)	RS-422
JP1	1-2短路	3-4短路
JP2	1-2短路	3-4短路

串口

本板提供4个2×5Pin插针串口 (脚距: 2.0mm)。COM1、COM2支持RS-232模式, COM3、COM4可通过设置JP1, JP2设置选择RS-422或RS-485工作模式。管脚定义如下:



COM1~COM4

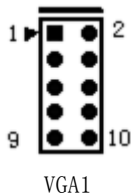
管脚	信号名称		
	COM1, COM2	COM3, COM4	
	RS-232	RS-422	RS-485 (Default)
1	DCD#	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	NC
4	DTR#	RXD-	NC
5	GND	GND	GND
6	DSR#	NC	NC
7	RTS#	NC	NC
8	CTS#	NC	NC
9	RI#	NC	NC
10	NA	NA	NA

注: 在RS-485模式下, 数据收发为自动控制。

显示接口

1、VGA接口

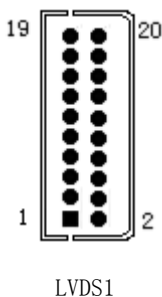
本板提供1个2×5Pin VGA插针接口（脚距：2.0mm），管脚定义如下：



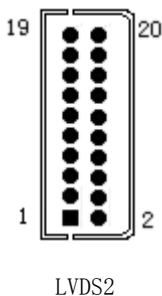
管脚	信号名称	管脚	信号名称
1	VSYNC	2	HSYNC
3	DDCDATA	4	Red
5	DDCCLK	6	Green
7	+5V	8	Blue
9	GND	10	GND

2、LVDS接口

双通道24bit LVDS接口(脚距:1.0 mm)。



管脚	信号名称	管脚	信号名称
1	LVDSO_D0+	2	LVDSO_D0-
3	GND	4	GND
5	LVDSO_D1+	6	LVDSO_D1-
7	GND	8	GND
9	LVDSO_D2+	10	LVDSO_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	LVDSO_D3+	18	LVDSO_D3-
19	VDD	20	VDD



管脚	信号名称	管脚	信号名称
1	LVDSE_D0+	2	LVDSE_D0-
3	GND	4	GND
5	LVDSE_D1+	6	LVDSE_D1-
7	GND	8	GND
9	LVDSE_D2+	10	LVDSE_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	LVDSE_D3+	18	LVDSE_D3-
19	VDD	20	VDD

注：LVDS0x 表示双扫描 PANEL 的奇数行，LVDSEx 表示双扫描 PANEL 的偶数行。

LCD背光控制接口



LCDB1

(脚距: 2.0mm)

管脚	信号名称
1	VCC_LCDBKLT
2	LCD_BKLTCTL
3	LCD_BKLTEN
4	GND

注: VCC_LCDBKLT---背光电源, 此脚电流限制在 1A 以下;

LCD_BKLTCTL---背光控制;

LCD_BKLTEN ---背光使能, 高有效。

SATA接口

本板提供2个SATA接口, 管脚定义如下:

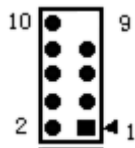


SATA1、SATA2

管脚	信号名称
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

USB接口

本主板提供2个2×5Pin USB插针接口(脚距: 2.0 mm), 可通过转接电缆接出4个USB接口, 其定义如下:

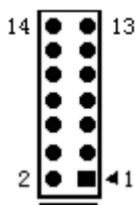


USB1、USB2

管脚	信号名称	管脚	信号名称
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NA	10	GND_CHASSIS

网络接口

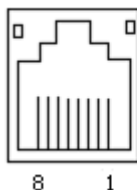
本主板提供1个2×7Pin（脚距：2.0mm）的10/100/1000Mbps网络接口，需要用转接线固定到机箱上与外部设备连接。以下给出了它的管脚定义。



LAN1

管脚	信号名称	管脚	信号名称
1	MX0+	2	MX0-
3	MX1+	4	MX1-
5	MX2+	6	MX2-
7	MX3+	8	MX3-
9	GND	10	GND
11	LINK_LED+ (SPEED100-)	12	LINK_LED- (SPEED1000-)
13	ACT_LED+	14	ACT_LED-

ACTLED LILED

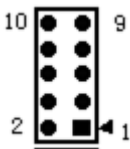


MX0+ (Pin#1)
MX0- (Pin#2)
MX1+ (Pin#3)
MX2+ (Pin#4)
MX2- (Pin#5)
MX1- (Pin#6)
MX3+ (Pin#7)
MX3- (Pin#8)

ACTLED (单色：绿色灯)	网络活动 指示状态	LILED (双色：黄/绿灯)	网络速度 指示状态
		绿色	1000Mbps
闪烁	有数据传输	黄色	100Mbps
灭	无数据传输	灭	10Mbps

音频接口

本板提供1个2×5Pin插针AUDIO接口（脚距：2.0mm），以下为它的管脚定义：

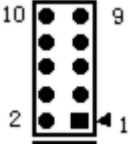


AUDIO1

管脚	信号名称	管脚	信号名称
1	LOUT_R	2	LOUT_L
3	GND_AUDIO	4	GND_AUDIO
5	LIN_R	6	LIN_L
7	GND_AUDIO	8	GND_AUDIO
9	MIC_L	10	MIC_R

数字IO接口

本主板提供八路可编程GPIO端口，输入输出可由编程随意控制，默认为1，3，5，7脚是输入，2，4，6，8脚是输出。定义如下：



管脚	信号名称	管脚	信号名称
1	INPUT0	2	OUTPUT0
3	INPUT1	4	OUTPUT1
5	INPUT2	6	OUTPUT2
7	INPUT3	8	OUTPUT3
9	GND	10	NC

GPIO1
(脚距: 2.0mm)

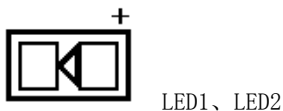
多功能接口



管脚	信号名称	管脚	信号名称
1	SPEAKER-	2	VCC5
3	RESET	4	GND

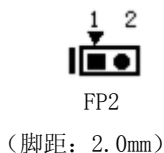
FP1
(脚距: 2.0mm)

LED灯



LED	功能
LED1	电源指示灯
LED2	硬盘指示灯

POWER BUTTON接口



设置	信号名称
1	GND
2	FP_PWRBTN-

J2 接口

非普通的USB接口，只用来出厂前开卡使用。



J2

(脚距: 2.0mm)

管脚	信号名称
1	VCC5
2	USB_Data-
3	USB_Data+
4	GND

扩展ISA接口

预留接口。



J3

(脚距: 2.0mm)

管脚	信号名称	管脚	信号名称
1	SERIRQ	2	GND
3	GND	4	CLK_14M_ISA

风扇接口



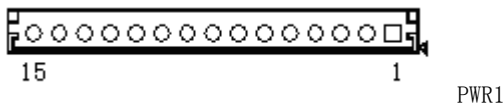
CPUFAN1

(脚距 2.54mm)

管脚	信号名称
1	GND
2	+5V
3	NC

电源接口

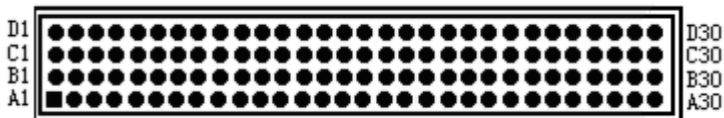
主板提供ATX与AT电源选择，并共用一个1×15 Pin插座（脚距2.5mm），以下为它的管脚定义：



管脚	信号名称	
	ATX 电源	AT 电源
1	VCC5	VCC5
2	GND	GND
3	VCC5	VCC5
4	VCC5	VCC5
5	GND	GND
6	VCC5SB	NC
7	PS_ON-	NC
8	GND	GND
9	ATX_PWROK	NC
10	VCC5	VCC5
11	GND	GND
12	VCC12	VCC12
13	VCC12	VCC12
14	GND	GND
15	VCC12-	NC

PC/104-Plus接口

支持 PCI-104 版本 2.0，接口管脚定义见下表。



J1

管脚	信号名称	管脚	信号名称	管脚	信号名称	管脚	信号名称
A1	KEY	B1	NC	C1	+5V	D1	AD0
A2	NC	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	C/BE0#	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	NC	C6	AD10	D6	NC
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1#	C8	AD15	D8	+3.3V
A9	SERR#	B9	GND	C9	NC	D9	PAR
A10	GND	B10	PERR#	C10	+3.3V	D10	NC
A11	STOP#	B11	+3.3V	C11	PLOCK#	D11	GND
A12	+3.3V	B12	TRDY#	C12	GND	D12	DEVSEL#
A13	FRAME#	B13	GND	C13	IRDY#	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	C/BE2#
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSELO	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	C/BE3#	C19	NC	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0#	B23	GND	C23	REQ1#	D23	NC
A24	GND	B24	REQ2#	C24	+5V	D24	GNT0#
A25	GNT1#	B25	NC	C25	GNT2#	D25	GND
A26	+5V	B26	CLK0	C26	GND	D26	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D27	GND
A28	GND	B28	PIRQD#	C28	+5V	D28	RESET#
A29	+12V	B29	PIRQA#	C29	PIRQB#	D29	PIRQC#
A30	-12V	B30	REQ3#	C30	GNT3#	D30	KEY

PCI/104-Express插槽

板上标识为PCIE1, PCIE2。

管脚	信号名称		管脚	信号名称
1	USB_OC#	+5 Volts	2	PE_RST#
3	+3.3V		4	+3.3V
5	USB_1p		6	USB_0p
7	USB_1n		8	USB_0n
9	GND		10	GND
11	PEx1_1Tp		12	PEx1_0Tp
13	PEx1_1Tn		14	PEx1_0Tn
15	GND		16	GND
17	PEx1_2Tp		18	PEx1_3Tp
19	PEx1_2Tn		20	PEx1_3Tn
21	GND		22	GND
23	PEx1_1Rp		24	PEx1_0Rp
25	PEx1_1Rn		26	PEx1_0Rn
27	GND		28	GND
29	PEx1_2Rp		30	PEx1_3Rp
31	PEx1_2Rn		32	PEx1_3Rn
33	GND		34	GND
35	PEx1_1C1kp		36	PEx1_0C1kp
37	PEx1_1C1kn		38	PEx1_0C1kn
39	5V_Always		40	5V_Always
41	PEx1_2C1kp		42	PEx1_3C1kp
43	PEx1_2C1kn		44	PEx1_3C1kn
45	CPU_DIR		46	PWRGOOD
47	SMB_DAT		48	PEx16_x8_x4_C1kp
49	SMB_CLK		50	PEx16_x8_x4_C1kn
51	SMB_ALERT		52	PSON#

管脚	信号名称		管脚	信号名称
53	Reserved/WAKE#	+5 Volts	54	PEG_ENA#
55	GND		56	GND
57	PEx16_OT(8)p		58	PEx16_OT(0)p
59	PEx16_OT(8)n		60	PEx16_OT(0)n
61	GND		62	GND
63	PEx16_OT(9)p		64	PEx16_OT(1)p
65	PEx16_OT(9)n		66	PEx16_OT(1)n
67	GND		68	GND
69	PEx16_OT(10)p		70	PEx16_OT(2)p
71	PEx16_OT(10)n		72	PEx16_OT(2)n
73	GND		74	GND
75	PEx16_OT(11)p		76	PEx16_OT(3)p
77	PEx16_OT(11)n		78	PEx16_OT(3)n
79	GND		80	GND
81	PEx16_OT(12)p		82	PEx16_OT(4)p
83	PEx16_OT(12)n		84	PEx16_OT(4)n
85	GND		86	GND
87	PEx16_OT(13)p		88	PEx16_OT(5)p
89	PEx16_OT(13)n		90	PEx16_OT(5)n
91	GND		92	GND
93	PEx16_OT(14)p		94	PEx16_OT(6)p
95	PEx16_OT(14)n		96	PEx16_OT(6)n
97	GND		98	GND
99	PEx16_OT(15)p		100	PEx16_OT(7)p
101	PEx16_OT(15)n		102	PEx16_OT(7)n
103	GND		104	GND

管脚	信号名称		管脚	信号名称
105	SDVO_DAT (PENA#)	+12 Volts	106	SDVO_CLK
107	GND		108	GND
109	PEx16_OR(8)p		110	PEx16_OR(0)p
111	PEx16_OR(8)n		112	PEx16_OR(0)n
113	GND		114	GND
115	PEx16_OR(9)p		116	PEx16_OR(1)p
117	PEx16_OR(9)n		118	PEx16_OR(1)n
119	GND		120	GND
121	PEx16_OR(10)p		122	PEx16_OR(2)p
123	PEx16_OR(10)n		124	PEx16_OR(2)n
125	GND		126	GND
127	PEx16_OR(11)p		128	PEx16_OR(3)p
129	PEx16_OR(11)n		130	PEx16_OR(3)n
131	GND		132	GND
133	PEx16_OR(12)p		134	PEx16_OR(4)p
135	PEx16_OR(12)n		136	PEx16_OR(4)n
137	GND		138	GND
139	PEx16_OR(13)p		140	PEx16_OR(5)p
141	PEx16_OR(13)n		142	PEx16_OR(5)n
143	GND		144	GND
145	PEx16_OR(14)p		146	PEx16_OR(6)p
147	PEx16_OR(14)n		148	PEx16_OR(6)n
149	GND		150	GND
151	PEx16_OR(15)p		152	PEx16_OR(7)p
153	PEx16_OR(15)n		154	PEx16_OR(7)n
155	GND		156	GND

第三章 BIOS功能简介

简介

BIOS (Basic Input and Output System: 基本输入输出系统) 固化在 CPU 板上的闪存存储器中, 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。BIOS 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等。

正确设置 BIOS 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 BIOS 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。

BIOS参数设置

每当系统接通电源, 正常开机后, 便可看见进入 BIOS 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)即可进入 BIOS 设置程序。

CMOS 中 BIOS 设置内容被破坏时, 系统也会要求进入 BIOS 设置或选择某种默认设置值。

通过BIOS修改的所有设置值都保存在系统的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! BIOS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, 请清CMOS后再使用BIOS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BIOS, 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BIOS设置程序不完全相同。

BIOS基本功能设置

当SETUP程序启动之后，您可以看到CMOS Setup Utility主画面如下：

BIOS SETUP UTILITY	
System Overview	←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
Processor Type : Intel(R) Core (TM) 2 Duo CPU U9300 @1.20GHz Speed :1200MHz Cores :2 System Memory Size :989MB Power Supply Type :ATX System Time [00:47:55] System Date [Tue 09/15/2009]	
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◆ Main

➤ 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)。

➤ System Date

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(Jan.-Dec.)，Date/日(01-31)，Year/年(最大至 2099)，Week/星期(Mon. ~ Sun.)。

◆ **Advanced**

BIOS SETUP UTILITY	
Advanced Settings	Configure CPU
WARNING: Setting wrong values in below sections may cause system to malfunction ▶ CPU Configuration ▶ IDE Configuration ▶ SuperIO Configuration ▶ ISA I/O Decode Configuration ▶ ISA Memory Decode Configuration ▶ USB Configuration ▶ Power Management Configuration ▶ Clock Generator Configuration	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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➤ **CPU Configuration**

BIOS SETUP UTILITY	
Configure advanced CPU settings	
Module Version:3F.15	
Manufacturer: Intel	
Brand String:	
Intel(R) Core (TM) 2 Duo CPU U9300 @ 1.20GHz	←→ Select Screen
Frequency; :1200MHz	↑ ↓ Select Item
FSB Speed; :800MHz	+ - Change Field
Cache L1; :64 KB	Tab Select Field
Cache L2; :3072 KB	F1 General Help
Ratio Actual Value :6	F10 Save and Exit
Intel® SpeedStep™ tech [Enabled]	ESC Exit
Intel® Virtualization Tech [Enabled]	
Core Multi-Processing [Enabled]	
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● **Intel® SpeedStep™ tech**

Intel SpeedStep tech功能的控制开关。

● **Intel® Virtualization Tech**

Intel Virtualization Tech功能的控制开关。

● **Core Multi-Processing**

Intel Core Multi-Processing 功能的控制开关，选择Disabled时会关掉CPU每个Die中的一个Core。

注：以上选项显示根据CPU功能是否支持而定。

➤ **IDE Configuration**

BIOS SETUP UTILITY	
IDE Configuration	
SATA#1 Configuration	[Enhanced]
Configure SATA#1 as	[IDE]
SATA#2 Configuration	[Enhanced]
▶Primary IDE Master	: [Not Detected]
▶Primary IDE Slave	: [Not Detected]
▶Secondary IDE Master	: [Not Detected]
▶Secondary IDE Slave	: [Not Detected]
▶Third IDE Master	: [Not Detected]
▶Fourth IDE Master	: [Not Detected]
←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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- **SATA#1 Configuration**

SATA#1控制器的模式选择, Disabled, Compatible, Enhanced分别对应关闭控制器, 兼容模式和增强模式。

- **Configure SATA#1 as**

SATA控制器的类型选择, 对应IDE, RAID和AHCI三个选择项, 仅在ATA/IDE Configuration为增强模式时才支持RAID和AHCI。

RAID和AHCI功能同时需要硬件芯片和操作系统支持。

- **SATA#2 Configuration**

SATA#2控制器的模式选择开关, Disabled, Enhanced对应关闭控制器和增强模式。

- **Primary~Fourth IDE Master/Slave**

- * **Type**

Not Installed: 系统没有检测到IDE设备

AUTO: 系统开机自动检测IDE参数

CD/DVD: 用于ATAPI CDROM

ARMD: 用于各种模拟IDE设备

- * **LBA/Large Mode**

用于设置是否支持LBA模式。

- * **Block(Multi-sector Transfer)**

用于设置是否支持多扇区同时传输的功能。

- * **PIO Mode**

用于PIO模式设置。

- * **DMA Mode**

用于DMA模式设置。

* S. M. A. R. T

此选项用于设置是否启用硬盘S. M. A. R. T功能，只对支持该功能的硬盘有效。

* 32Bit Data Transfer

此选项用于使能32位的硬盘访问模式，可以使硬盘读写速度达到最佳。

➤ SuperIO Configuration

BIOS SETUP UTILITY	
Configure Win627DHG Super IO Chipset	Allows BIOS to Enable or Disable Floppy Controller.
Serial Port1 Address [3F8]	
Serial Port1 IRQ [4]	
Serial Port2 Address [2F8]	←→ Select Screen
Serial Port2 IRQ [3]	↑ ↓ Select Item
Serial Port3 Address [3E8]	+ - Change Field
Serial Port3 IRQ [10]	Tab Select Field
Serial Port4 Address [2E8]	F1 General Help
Serial Port4 IRQ [11]	F10 Save and Exit
	ESC Exit
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● Serial Port n Address

设定主机板上串口1的地址，选项有：Disabled、3F8H、3E8H、2E8H、2F8H。

● Serial Port n IRQ

设定主机板上串口1的IRQ，选项有：3、4、10、11

➤ **ISA I/O Decode Configuration**

BIOS SETUP UTILITY	
Configuration ISA I/O Address By WB83628	
Decode I/O Space 0	[Enabled]
Decode I/O Base 0	[0100h]
Decode I/O Size 0	[64 Bytes]
Decode I/O Space 1	[Enabled]
Decode I/O Base 1	[0140h]
Decode I/O Size 1	[32 Bytes]
Decode I/O Space 2	[Enabled]
Decode I/O Base 2	[0200h]
Decode I/O Size 2	[128 Bytes]
Decode I/O Space 3	[Enabled]
Decode I/O Base 3	[0300h]
Decode I/O Size 3	[64 Bytes]
Decode I/O Space 4	[Enabled]
Decode I/O Base 4	[0340h]
Decode I/O Size 4	[32 Bytes]
Decode I/O Space 5	[Enabled]
Decode I/O Base 5	[0A70h]
Decode I/O Size 5	[16 Bytes]
←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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● **Decode I/O Space(0-5)**

IO解码空间开关(n)

● **Decode I/O Base(0-5)**

IO解码空间基地址

● **Decode I/O Size(0-5)**

IO解码空间大小

➤ **ISA Memory Decode Configuration**

BIOS SETUP UTILITY	
Configuration ISA Memory Address By WB83628	
Memory Space 0	[Disabled]
Decode MEM Base 0	[0000]
Decode Size 0	[16 KB]
Memory Space 1	[Disabled]
Decode MEM Base 1	[0000]
Decode Size 1	[16 KB]
Memory Space 2	[Disabled]
Decode MEM Base 2	[0000]
Decode Size 2	[16 KB]
Memory Space 3	[Disabled]
Decode MEM Base 3	[0000]
Decode Size 3	[16 KB]
←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit	
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● **Memory Space(0-3)**

Memory解码空间开关

● **Decode MEM Base(0-3)**

Memory解码空间基地址

● **Decode MEM Size(0-3)**

Memory解码空间大小

➤ **USB Configuration**

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
Module Version -2.24.3-13.4	
USB Devices Enabled :	←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
None	
USB Mass Storage Device Configuration	
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➤ **Power Management Configuration**

BIOS SETUP UTILITY	
Power Management Configuration	←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
ACPI APIC Support [Enabled]	
Restore on AC Power Loss [Last state]	
Resume on RTC Alarm [Disabled]	
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● **ACPI APIC Support**

此选项用于打开或关闭ACPI OS下的APIC（高级中断控制器）。

● **Restore on AC Power Loss**

使用该选项可以设置计算机在交流电停电后再来电时系统所处状态。

“Power Off”，让系统处于关机状态，“Power On”，系统自动开启，“Last State”，则保持到断电前的状态。

- **Resume on RTC Alarm**

此项用来打开或关闭系统闹钟，当到达指定时间时，会将系统从节电模式甚至关机状态唤醒，该功能必须有ATX电源的支持。

➤ **Clock Generator Configuration**

BIOS SETUP UTILITY	
Configure Clock Generator	
Spread Spectrum [Enabled]	←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
Auto PCI Clock [Enabled]	
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- **Spread Spectrum**

此选项用来控制时钟信号的展频功能。

- **Auto PCI Clock**

该选项可以设置是否支持未用时钟关闭功能。

◆ **Chipset**

BIOS SETUP UTILITY		
Advanced Chipset Settings		
WARNING: Setting wrong values in below sections may cause system to malfunction.		
NorthBridge Configuration		
DRAM Frequency [Auto]	←→ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit	
Configure DRAM Timing by SPD [Enabled]		
Boots Graphic Adapter Priority [PEG/PCI]		
Internal Graphics Mode Select [Enabled, 32MB]		
Boot Display Device [CRT + LVDS]		
Flat Panel Type [800*600]		
Panel Specification [24 BIT]		
Dual Channel [Enabled]		
SouthBridge Configuration		
Onboard Audio Controller [Enabled]		
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➤ **DRAM Frequency**

配置DRAM的频率，此处建议使用自动，手动更改配置可能会因为DRAM不支持而不开机。

➤ **Configure DRAM Timing by SPD**

BIOS按照SPD芯片上的内容配置SDRAM内存的时序。绝大多数内存条上有一个保存内存时序和容量等参数的一个小芯片，即SPD芯片。

➤ **Boots Graphic Adapter Priority**

此选项用于指定优先启动的显示设备类型。

➤ **Internal Graphics Mode Select**

此选项用于调整板载显卡共享物理内存的大小。

➤ **Boot Display Device**

此选项用于选择开机默认的显示输出设备。

➤ **Flat Panel Type**

此选项用于选择Flat Panel的分辨率。

➤ **Panel Specification**

此选项用于选择LVDS的色深。

➤ **Dual Channel**

此选项用于选择双通道的LVDS。

➤ **Onboard Audio Controller**

选择是否打开声卡控制器。

◆ **PCIPnP**

BIOS SETUP UTILITY	
Advanced PCI/PnP Settings	
WARNING: Setting wrong values in below sections may cause system to malfunction.	
IRQ3	[Available]
IRQ4	[Available]
IRQ5	[Available]
IRQ7	[Available]
IRQ9	[Available]
IRQ10	[Available]
IRQ11	[Available]
IRQ14	[Available]
IRQ15	[Available]
←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit	
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➤ **IRQ3~15**

此系列选项用以指定对应IRQ号是PNP方式还是保留给ISA使用。

◆ **Boot**

BIOS SETUP UTILITY	
Boot Settings	
Quick Boot [Enabled]	←→ Select Screen
Quiet Boot [Disabled]	↑ ↓ Select Item
Waite For 'F1' If Error [Enabled]	Enter Go to Sub Screen
Boot from Embedded WinCE [NO]	F1 General Help
	F10 Save and Exit
	ESC Exit
Boot Device Priority	
1 st Boot Device [1 st FLOPPY DRIVE]	
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➤ **Quick Boot**

配置在BIOS引导期间是否允许跳过某些项的测试，减少BIOS引导时间。

➤ **Quiet Boot**

配置是否显示OEM LOGO内容。

➤ **Wait For 'F1' If Error**

配置在系统出错时是否提示按”F1”键。

➤ **Boot from Embedded WinCE**

适用于经常定制WinCE的主板，把WinCE的BLDR放在BIOS中运行，加快启动速度。

➤ **1st~4th Boot Device**

配置系统启动时优先权高低的启动设备。

◆ **Security**

BIOS SETUP UTILITY	
Security Settings	Install or Change the password
Supervisor Password :Not Installed	
User Password :Not Installed	←→ Select Screen ↑↓ Select Item Enter Change
Change Supervisor Password	F1 General Help F10 Save and Exit
Change User Password	ESC Exit
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➤ **Change User/ Supervisor Password**

当按Change User/ Supervisor Password后，在对话框中输入新的密码后，此栏会显示用户密码已安装。

◆ **Exit**

South Bridge Configuration	
Exit Options	Exit system setup after saving the changes.
Save Changes and Exit	
Discard Changes and Exit	←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen
Discard Changes	F1 General Help F10 Save and Exit
Load Optimal Defaults	ESC Exit
Load Failsafe Defaults	
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➤ **Save Changes and Exit**

当您完成了所有的修改操作，想将原来的设置参数覆盖掉时，可执行此项功能，新的设置参数将保存在CMOS的存储器中。要执行此操作，先选定此项并按下< Enter >键，再按< Enter >键即可退出。

➤ **Discard Changes and Exit**

当您所做的任何更改设置的动作不想存入CMOS的存储器中，可先选定此项并按下< Enter >键，再按<Enter >键即可退出。

➤ **Discard Changes**

当您所做的任何更改设置的动作有误而需要忽略时，可先选定此项并按下< Enter >键，然后可以再次进入相应选项进行重新设置。

➤ **Load Optimal Defaults**

此菜单用于在你的系统配置中装入缺省值。这些缺省设置是最优的，可以发挥所有硬件的高性能。

➤ **Load Failsafe Defaults**

该选项的功能是将各项设置初始化为实现最基本的和最安全的系统功能的值。要执行此项功能，先选中此项按下< Enter >即可，接着系统会在屏幕上显示出要您确认的信息，按下< Enter >键确定执行该项功能。

x86 平台下BIOS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	DRAM 刷新
DMA1	未分配
DMA2	软盘
DMA3	未分配（有时用于硬盘）
DMA4	用于 DMAC 的级连
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的主板可以有长达28个中断源。但要启用该功能必须相应的操作系统支持，目前只有windows 2000以上的操作系统支持。

◆ I/O端口地址

系统I/O地址空间总共有64K，每一外围设备都会占用一段I/O地址空间。下表给出了本CPU卡部分设备的I/O 地址分配，由于PCI设备（如PCI网卡）的地址是由软件配置的，表中没有列出。

地址	设备描述
000h - 00Fh	DMA 控制器#1
000h - CF7h	PCI 总线
010h - 01Fh	底板资源
020h - 021h	可编程中断控制器#1
022h - 03Fh	底板资源
040h - 043h	系统计时器
044h - 05Fh	底板资源
060h	标准 101/102 键或 Microsoft 自然 PS/2 键盘
061h	System speaker
062h - 063h	底板资源
064h	底板资源
065h - 06Fh	底板资源
070h - 071h	实时时钟, NMI
072h - 07Fh	底板资源
080h	底板资源
081h - 083h	DMA 控制器#2
084h - 086h	底板资源
087h	DMA 控制器#3
088h	底板资源
089h - 08Bh	DMA 控制器#4
08Ch - 08Eh	底板资源
08Fh	DMA 控制器#5
090h - 09Fh	底板资源
0A0h - 0A1h	可编程中断控制器#2
0A2h - 0BFh	底板资源

地址	设备描述
0C0h - 0DFh	DMA 控制器#6
0E0h - 0EFh	底板资源
0F0h - 0FFh	数据数值处理器
274h - 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2E8h - 2EFh	通讯端口 (COM4)
2F8h - 2FFh	通讯端口 (COM2)
3B0h - 3BBh	Mobile Intel(R) 4 Series Express Chipset Family
3C0h - 3DFh	Mobile Intel(R) 4 Series Express Chipset Family
3E8h - 3EFh	通讯端口 (COM3)
3F8h - 3FFh	串行端口#1 (COM1)
400h - 41Fh	Intel(R) ICH9 Family SMBus Controller-2930
480h - 4BFh	底板资源
4D0h - 4D1h	底板资源
800h - 87Fh	底板资源
B00h-B0Fh	底板资源
B10h-B1Fh	底板资源
A79h	ISAPNP Read Data Port
D000h-DFFFh	Intel(R) ICH9M/M-E
0D00h-FFFFh	PCI bus

◆ 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BIOS或操作系统分配中断。而多个PCI设备可共享同一中断，并由BIOS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	标准 101/102 键或 Microsoft 键盘
IRQ2	可编程的中断控制器
IRQ3	串口#2
IRQ4	串口#1
IRQ5	保留
IRQ6	保留
IRQ7	保留
IRQ8	系统 CMOS/实时时钟
IRQ9	Microsoft ACPI-Compliant System
IRQ10	串口#3
IRQ11	串口#4
IRQ12	保留
IRQ13	Numeric data processor
IRQ14	保留
IRQ15	Intel (R) ICH9 Family SMBUS Controller

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**。使用前请把BIOS Setup界面PCIPnP组中对应的IRQ号选项值改成Reserved。

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WDT/关闭WDT

(1) 进入WDT编程模式

```
#define INDEX_PORT    0x2E
#define DATA_PORT    0x2F
```

```
outportb(INDEX_PORT, 0x67);
outportb(INDEX_PORT, 0x67);
outportb(INDEX_PORT, 0x07);
outportb(DATA_PORT, 0x08);
outportb(INDEX_PORT, 0x30);
outportb(DATA_PORT, 0x01);
```

(2) 配置WDT工作方式，复位或中断方式，选择一种：

```
unsigned char oldval;
outportb(INDEX_PORT, 0x70);
oldval = inportb(DATA_PORT);
```

a. 配置WDT成复位工作方式

```
oldval &= 0xef;
outportb(DATA_PORT, oldval);
```

b. 配置WDT成中断工作方式

```
oldval |= 0x10;
oldval |= IRQ_NO; /*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*/
outportb(DATA_PORT, oldval);
```

(3) 配置WDT按分或秒计时:**a. 按分计时:**

```
outportb(INDEX_PORT, 0xf0);
outportb(DATA_PORT, 0x04);
```

b. 按秒计时:

```
outportb(INDEX_PORT, 0xf0);
outportb(DATA_PORT, 0x02);
```

(4) 启动/禁止WDT**a. 启动WDT:**

```
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, TIME_OUT_VALUE); /*请以超时时间单位数量
(0x01~0xFF) 替换掉常量TIME_OUT_VALUE*/
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, TIME_OUT_VALUE); /*请以超时时间单位数量
(0x01~0xFF) 替换掉常量TIME_OUT_VALUE*/
```

b. 停止WDT:

```
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, 0x00);
```

数字I/O编程指引

本主板提供8路可编程数字I/O引脚，其中4路为输入，4路为输出。以下用C语言形式提供了数字I/O的编程范例，对数字I/O的编程需遵循以下步骤：

➤ 初始化数字I/O

➤ 输入输出编程

1. 数字I/O:

```
#define BAR 0x400

unsigned char tmp_val;
outportb(BAR, 0xbf);
outportb(BAR+0x04, 0x40);
outportb(BAR+0x03, 0x03);
outportb(BAR+0x05, 0x0F);
tmp_val = (inportb(BAR+0x02) | 0x08) & 0xeb;
tmp_val |= 0x40;
outportb(BAR+0x02, tmp_val);
delay(30);
tmp_val = inportb(BAR);
while((tmp_val & 0x02) != 0x02)
{
    tmp_val = inportb(BAR);
    if((tmp_val & 0x04) != 0)
    {
        printf("ERROR\n");
        return 0;
    }
}
```

2. 输入输出编程:

a. 输出编程

函数输入： int pin - 取值1~4分别对应输出引脚1~4

int lev_val - 1为输出高电平，0为输出低电平。

函数输出：无

```
void Out_Lev(int pin ,int lev_val)
{
    unsigned int reg_val ;
    outputb(BAR, 0xbf);
    outputb(BAR+0x04, 0x40);
    outputb(BAR+0x03, 0x01);
    reg_val = inportb(BAR+0x05);
    reg_val = lev_val ? reg_val | (0x01<<pin+3) :reg_val&(~
(0x01<<pin+3)) ;
    outputb(BAR+0x05, reg_val);
    reg_val =(inportb(BAR+0x02) |0x08)&0xeb;
    reg_val |= 0x40;
    outputb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
    {
        reg_val =inportb(BAR);
        if((reg_val &0x04)!=0)
        {
            printf("ERROR\n");
            return 0;
        }
    }
}
```

b. 输入编程

函数输入: int pin - 取值1~4分别对应输入引脚1~4

函数输出: int lev_val - 1: 输入引脚为高电平, 0: 输入引脚为低电平。

```
int In_Lev(int pin)
{
    unsigned int reg_val ;
    int lev_val ;
    outputb(BAR, 0xbf);
    outputb(BAR+0x04, 0x41);
    outputb(BAR+0x03, 0x00);
    reg_val =(inportb(BAR+0x02) | 0x08)&0xeb;
    reg_val |= 0x40;
    outputb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
    {
        reg_val =inportb(BAR);
        if((reg_val &0x04)!=0)
        {
            printf("ERROR\n");
            return 0;
        }
    }
    lev_val = inportb(BAR+0x05)&( 0x01<<pin-1);
    lev_val = lev_val ? 1:0; /*此处得到变量lev_val的值, 为1
    表示输入引脚为高电平, 为0表示输入引脚为低电平*/
    return lev_val ;
}
```

欲获更多信息请访问研祥网站: <http://www.evoc.com>。

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Safety Instructions

1. Please carefully read the users' manual before handling the product;
3. For the board which is not ready to be installed, please put it in the anti-static packaging;
4. Before taking the board out from anti-static packaging, please put your hand on grounded metal object for a while (about 10 seconds) to discharge static;
5. Please wear static protective gloves when holding the board; and always hold the board by edges;
6. Before inserting, removing or re-configuring the motherboard or the expansion card, please firstly disconnect the AC power or unplug the AC power cable from the power source to prevent damage to the product and ensure your personal safety;
7. Before removing the boards or Box PC, firstly turn off all power resources and unplug the power cable from power source;
8. For Box PC products, when inserting or removing boards, please disconnect the AC power in advance;
9. Before connecting or disconnecting any device, make sure all power cables are unplugged in advance;
10. To avoid unnecessary damage caused by turning on/off computer frequently, wait at least 30 seconds before re-turning on the computer.

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Chapter 1 Product Introduction

Overview

104-1814CLDNA is an embedded PCI/104-Express motherboard facing the high-end application with low power consumption. The board integrates the latest Intel® dual-core CPU, on-board 1G memory, VGA/LVDS, one PC/104-Plus slot, one PCI/104-Express expansion slot, one 10/100/1000Mbps network port, on-board Audio, two SATA2.0 connectors, four serial ports, four USB2.0 ports and watchdog timer.

This product is mainly used in high-end fields such as military industry, railway, communication and real-time video monitor as main control system.

Mechanical Dimension, Weight and Environment

- Dimension: 115.5mm (L) x 96.8mm (W) x 42mm (H)
- Net Weight: 0.27Kg;
- Operating Environment:
 - Temperature: -40°C ~ +85°C;
 - Humidity: 5% ~ 90%, non-condensing;
- Storage Environment:
 - Temperature: -40°C ~ +85°C;
 - Humidity: 5% ~ 90%, non-condensing;

Typical Power Consumption

CPU: On-board Intel® Duo SU9300

Memory: On-board DDRII 1G 800MHz

- +5V@2.12A; +5%/-3%

Microprocessor

Intel® SU9300 (FSB: 800M; BGA956)/SL9400 (FSB: 1066M; BGA956)/Celeron ULV 722(FSB: 800M BGA956) CPU

Chipset

Intel® GS45+Intel® ICH9M-SFFE

System Memory

On-board memory, 1G DDR2 800MHz;

Video Function

Intel® GS45 chipset integrates the display module; the display memory can be assigned according to requirements; support VGA, dual-channel LVDS (24bit) and VGA+LVDS dual-display function; the resolution of CRT reaches up to QXGA (2048x1536).

Network Function

One 10/100/1000Mbps LAN port; support Wake-On-LAN function;

Audio Function

ALC888-GR sound effect chip; support MIC-IN, LINE-IN, SPEAKER-OUT;

Power Feature

ATX/AT Power, support S0, S1, S4 and S5.

Expansion Bus

One PC/104-Plus slot; one PCI/104-Express slot; support PCI/104-Express standard;

Watchdog Function

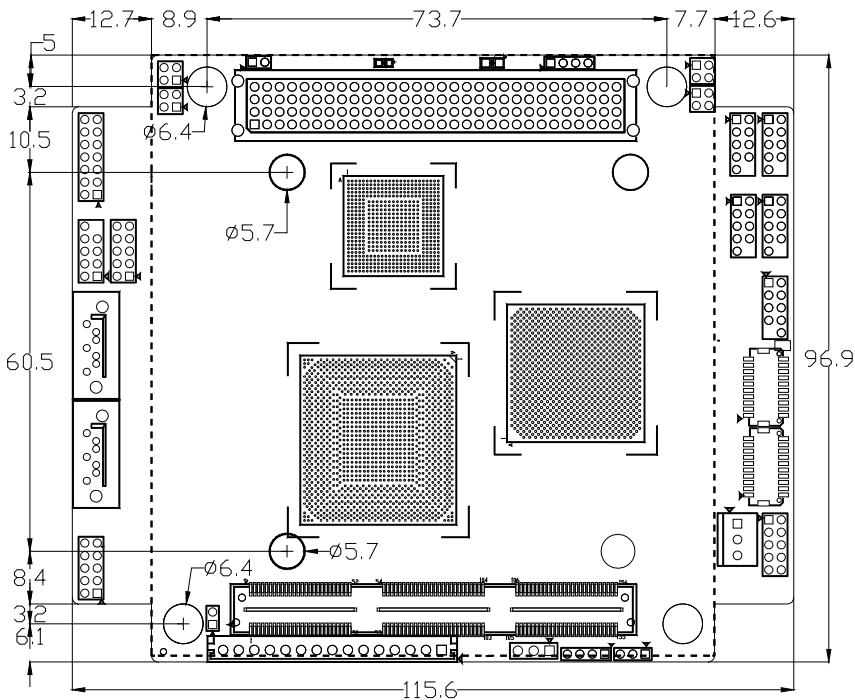
- 255 levels, programmable by minute or second;
- Support watchdog overtime interrupt or reset system.

I/O Connectors

- Four serial ports, among which COM1 supports MODEM wake-up function while COM3 and COM4 support RS-422/RS-485 mode;
- Two SATA connectors;
- Four USB2.0 ports;
- One 8-bit digital I/O connector.

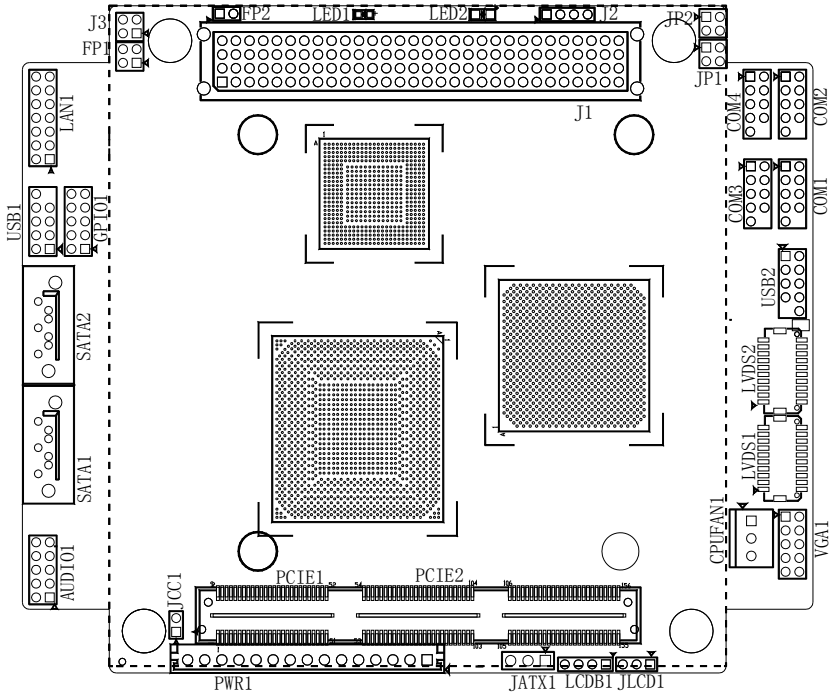
Chapter 2 Installation

Product Outline

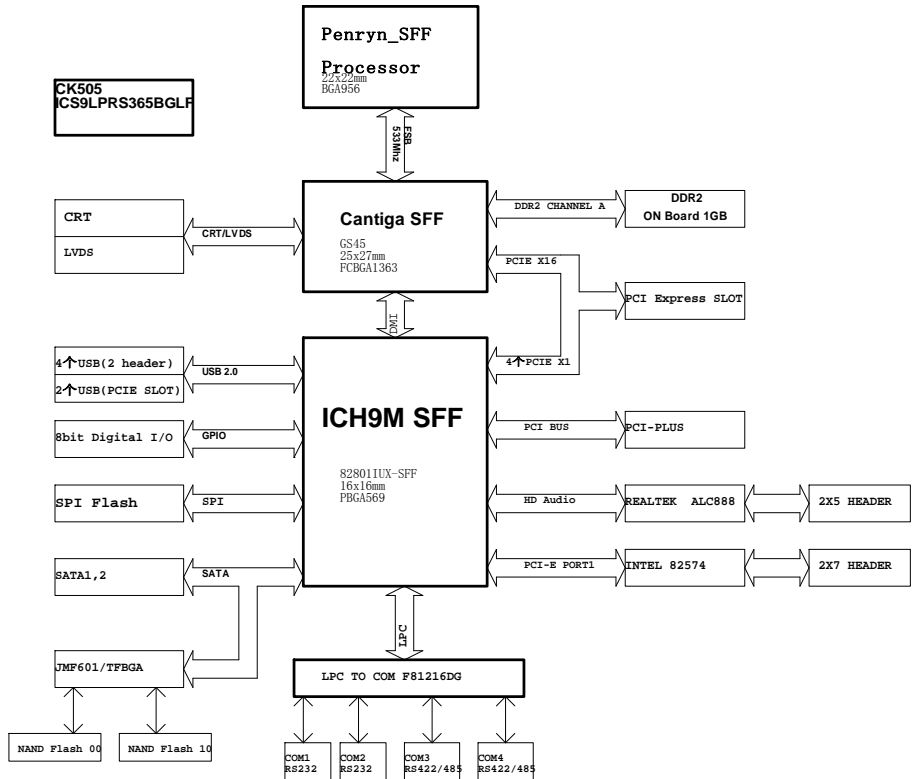


Unit: mm

Locations of Connectors



Motherboard Structure




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

1. Observe the letter beside the socket, it would be marked with “1” or thickened lines or triangular symbols;
2. Observe the solder pad on the back, the square pad is the first pin;

Jumper Settings

1. JCC1: Clear/Keep CMOS Setting (Pin Distance: 2.0mm)

CMOS is powered by the button battery on board. Clear CMOS will restore original settings (factory default). The steps are listed as follows : (1) Turn off the computer and unplug the power cable; (2) Short circuit JCC1; (3) Turn on the computer; (4) Follow the hint on screen to enter BIOS setup when starting the computer, load optimized defaults; (5) Save and exit. Please set it as follows:

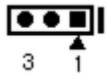


Setup	Function
1-2 Open	Normal (Default)
1-2 Short	Clear CMOS, all BIOS setting will restore to factory default values.

JCC1

2. JLCD1: Select Operating Voltage for LCD (Pin Distance: 2.0mm)

Different LCD screens support different voltages; the board provides two voltage options, 3.3V and 5V. Only when the selected LCD voltage is in accord with the LCD voltage in use, the LCD screen could display normally.



Setup	Function
1-2 Short	+3.3V (Default)
2-3 Short	+5V

JLCD1

3. JATX1: Select ATX/AT Power (Pin Distance: 2.54mm)

ATX power or AT power can be selected via JATX1. Please set it as follows:



JATX1

Setup	Function
1-2 Short	ATX Power
2-3 Short	AT Power(Default)

4. JP1, JP2: Select RS-422/RS-485 Mode for COM3/COM4 (Pin Distance: 2.0mm)

The mode of COM3/COM4 can be selected by JP1/JP2; JP1 controls COM3 while JP2 controls COM4. Please set as follows:

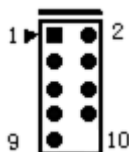


JP1/JP2

Pin Setup	Mode Selection	
	RS-485(Default)	RS-422
JP1	1-2 Short	3-4 Short
JP2	1-2 Short	3-4 Short

Serial Port

This board provides four 2×5Pin serial port connectors (Pin Distance: 2.0mm); COM1 and COM2 support RS-232 mode; COM3 and COM4 supports RS-422/RS-485 mode by setting JP1 and JP2. The pin definitions are listed as follows:



COM1 ~ COM4

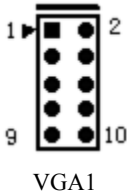
Pin	Signal Name		
	COM1/COM2	COM3/COM4	
	RS-232	RS-422	RS-485 (Default)
1	DCD#	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	NC
4	DTR#	RXD-	NC
5	GND	GND	GND
6	DSR#	NC	NC
7	RTS#	NC	NC
8	CTS#	NC	NC
9	RI#	NC	NC
10	NA	NA	NA

Note: under RS-485 mode, sending and receiving data is controlled automatically.

Video Connector

1. VGA Connector

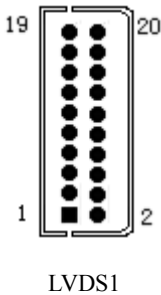
This board provides one 2×5Pin VGA connector (Pin Distance: 2.0mm). The pin definitions are listed as follows:



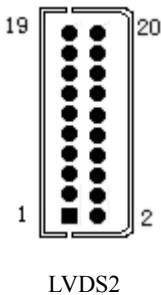
Pin	Signal Name	Pin	Signal Name
1	VSYNC	2	HSYNC
3	DDCDATA	4	Red
5	DDCCLK	6	Green
7	+5V	8	Blue
9	GND	10	GND

2. LVDS Connector

Dual-channel 24bit LVDS connector (Pin Distance: 1.0 mm)



Pin	Signal Name	Pin	Signal Name
1	LVDSO_D0+	2	LVDSO_D0-
3	GND	4	GND
5	LVDSO_D1+	6	LVDSO_D1-
7	GND	8	GND
9	LVDSO_D2+	10	LVDSO_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	LVDSO_D3+	18	LVDSO_D3-
19	VDD	20	VDD



Pin	Signal Name	Pin	Signal Name
1	LVDSE_D0+	2	LVDSE_D0-
3	GND	4	GND
5	LVDSE_D1+	6	LVDSE_D1-
7	GND	8	GND
9	LVDSE_D2+	10	LVDSE_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	LVDSE_D3+	18	LVDSE_D3-
19	VDD	20	VDD

Note: LVDSO_x indicates to dual-scan the odd line of PANEL while LVDSE_x indicates to dual-scan the even line of PANEL.

LCD Backlight Control Connector



4

1

LCDB1

(Pin Distance: 2.0mm)

Pin	Signal Name
1	VCC_LCDBKLT
2	LCD_BKLTCTL
3	LCD_BKLTEN
4	GND

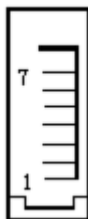
Note: VCC_LCDBKLT---backlight power, the current of this pin shall be less than 1A;

LCD_BKLTCTL---backlight control;

LCD_BKLTEN ---backlight enabling, active high.

SATA Connector

This board provides two SATA connectors. The pin definitions are listed as follows:

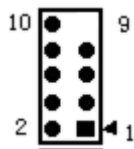


SATA1/SATA2

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

USB Port

This motherboard provides two 2×5Pin USB connectors (Pin Distance: 2.0 mm); four USB ports can be educed out via transfer cables. The pin definitions are listed as follows:

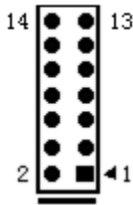


USB1/USB2

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NA	10	GND_CHASSIS

LAN Port

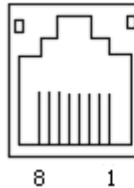
This motherboard provides one 2×7Pin 10/100/1000Mbps network port connector (Pin Distance: 2.0mm). Transfer cable is required to fix the connector to the chassis, so that it can be connected with the peripherals. The pin definitions are listed as follows:



LAN1

Pin	Signal Name	Pin	Signal Name
1	MX0+	2	MX0-
3	MX1+	4	MX1-
5	MX2+	6	MX2-
7	MX3+	8	MX3-
9	GND	10	GND
11	LINK_LED+ (SPEED100-)	12	LINK_LED- (SPEED1000-)
13	ACT_LED+	14	ACT_LED-

ACTLED LILED

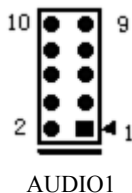


MX0+ (Pin#1)
 MX0- (Pin#2)
 MX1+ (Pin#3)
 MX2+ (Pin#4)
 MX2- (Pin#5)
 MX1- (Pin#6)
 MX3+ (Pin#7)
 MX3- (Pin#8)

ACTLED (Green)	LAN Activity Indicator	LILED (Dual-Color: Y/G)	LAN Speed Indicator
Flash	Data Transmitting	Green	1000Mbps
Off	No Data to Transmit	Yellow	100Mbps
		Off	10Mbps

Audio Connector

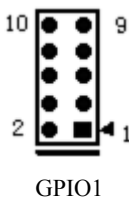
This board provides one 2×5Pin AUDIO connector (Pin Distance: 2.0mm). The pin definitions are listed as follows:



Pin	Signal Name	Pin	Signal Name
1	LOUT_R	2	LOUT_L
3	GND_AUDIO	4	GND_AUDIO
5	LIN_R	6	LIN_L
7	GND_AUDIO	8	GND_AUDIO
9	MIC_L	10	MIC_R

Digital IO Connector

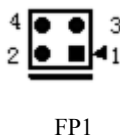
This board provides one 8-channel programmable GPIO connector; the input and output can be controlled flexibly. Pin 1, 3, 5 and 7 are for input while pin 2, 4, 6 and 8 are for output in default status. The pin definitions are listed as follows:



(Pin Distance: 2.0mm)

Pin	Signal Name	Pin	Signal Name
1	INPUT0	2	OUTPUT0
3	INPUT1	4	OUTPUT1
5	INPUT2	6	OUTPUT2
7	INPUT3	8	OUTPUT3
9	GND	10	NC

Multi-Functional Connector



(Pin Distance: 2.0mm)

Pin	Signal Name	Pin	Signal Name
1	SPEAKER-	2	VCC5
3	RESET	4	GND

LED



LED1/LED2

LED	Function
LED1	Power Indicator
LED2	Hard Disk Indicator

POWER BUTTON



FP2

(Pin Distance: 2.0mm)

Pin	Signal Name
1	GND
2	FP_PWRBTN-

J2

Un-common USB port connector, it only can be used to active the card before leaving the factory.



J2

(Pin Distance: 2.0mm)

Pin	Signal Name
1	VCC5
2	USB_Data-
3	USB_Data+
4	GND

Expansion ISA Connector

Reserved connector;



J3

(Pin Distance: 2.0mm)

Pin	Signal Name	Pin	Signal Name
1	SERIRQ	2	GND
3	GND	4	CLK_14M_ISA

Fan Connector



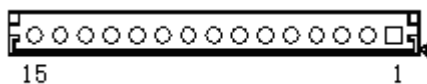
CPUFAN1

(Pin Distance: 2.54mm)

Pin	Signal Name
1	GND
2	+5V
3	NC

Power Connector

This motherboard provides ATX power and AT power selection and they share one 1×15 Pin socket (Pin Distance: 2.5mm). The pin definitions are listed as follows:

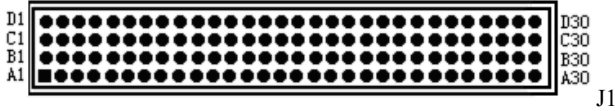


PWR1

Pin	Signal Name	
	ATX Power	AT Power
1	VCC5	VCC5
2	GND	GND
3	VCC5	VCC5
4	VCC5	VCC5
5	GND	GND
6	VCC5SB	NC
7	PS_ON-	NC
8	GND	GND
9	ATX_PWROK	NC
10	VCC5	VCC5
11	GND	GND
12	VCC12	VCC12
13	VCC12	VCC12
14	GND	GND
15	VCC12-	NC

PC/104-Plus Connector

Support PCI-104, Version 2.0. The pin definitions are listed in the following table.



Pin	Signal	Pin	Signal	Pin	Signal Name	Pin	Signal Name
A1	KEY	B1	NC	C1	+5V	D1	AD0
A2	NC	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	C/BE0#	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	NC	C6	AD10	D6	NC
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1#	C8	AD15	D8	+3.3V
A9	SERR#	B9	GND	C9	NC	D9	PAR
A10	GND	B10	PERR#	C10	+3.3V	D10	NC
A11	STOP#	B11	+3.3V	C11	PLOCK#	D11	GND
A12	+3.3V	B12	TRDY#	C12	GND	D12	DEVSEL#
A13	FRAME#	B13	GND	C13	IRDY#	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	C/BE2#
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	C/BE3#	C19	NC	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0#	B23	GND	C23	REQ1#	D23	NC
A24	GND	B24	REQ2#	C24	+5V	D24	GNT0#
A25	GNT1#	B25	NC	C25	GNT2#	D25	GND
A26	+5V	B26	CLK0	C26	GND	D26	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D27	GND
A28	GND	B28	PIRQD#	C28	+5V	D28	RESET#
A29	+12V	B29	PIRQA#	C29	PIRQB#	D29	PIRQC#
A30	-12V	B30	REQ3#	C30	GNT3#	D30	KEY

PCI/104-Express Slot

Marked as PCIE1 and PCIE2;

Pin	Signal Name		Pin	Signal Name
1	USB_OC#	+5 Volts	2	PE_RST#
3	+3.3V		4	+3.3V
5	USB_1p		6	USB_0p
7	USB_1n		8	USB_0n
9	GND		10	GND
11	PEx1_1Tp		12	PEx1_0Tp
13	PEx1_1Tn		14	PEx1_0Tn
15	GND		16	GND
17	PEx1_2Tp		18	PEx1_3Tp
19	PEx1_2Tn		20	PEx1_3Tn
21	GND		22	GND
23	PEx1_1Rp		24	PEx1_0Rp
25	PEx1_1Rn		26	PEx1_0Rn
27	GND		28	GND
29	PEx1_2Rp		30	PEx1_3Rp
31	PEx1_2Rn		32	PEx1_3Rn
33	GND		34	GND
35	PEx1_1Clkp		36	PEx1_0Clkp
37	PEx1_1Clkn		38	PEx1_0Clkn
39	5V_Always		40	5V_Always
41	PEx1_2Clkp		42	PEx1_3Clkp
43	PEx1_2Clkn		44	PEx1_3Clkn
45	CPU_DIR		46	PWRGOOD
47	SMB_DAT		48	PEx16_x8_x4_Clkp
49	SMB_CLK		50	PEx16_x8_x4_Clkn
51	SMB_ALERT		52	PSON#

Pin	Signal Name		Pin	Signal Name
53	Reserved/WAKE#	+5 Volts	54	PEG_ENA#
55	GND		56	GND
57	PEX16_0T(8)p		58	PEX16_0T(0)p
59	PEX16_0T(8)n		60	PEX16_0T(0)n
61	GND		62	GND
63	PEX16_0T(9)p		64	PEX16_0T(1)p
65	PEX16_0T(9)n		66	PEX16_0T(1)n
67	GND		68	GND
69	PEX16_0T(10)p		70	PEX16_0T(2)p
71	PEX16_0T(10)n		72	PEX16_0T(2)n
73	GND		74	GND
75	PEX16_0T(11)p		76	PEX16_0T(3)p
77	PEX16_0T(11)n		78	PEX16_0T(3)n
79	GND		80	GND
81	PEX16_0T(12)p		82	PEX16_0T(4)p
83	PEX16_0T(12)n		84	PEX16_0T(4)n
85	GND		86	GND
87	PEX16_0T(13)p		88	PEX16_0T(5)p
89	PEX16_0T(13)n		90	PEX16_0T(5)n
91	GND		92	GND
93	PEX16_0T(14)p		94	PEX16_0T(6)p
95	PEX16_0T(14)n		96	PEX16_0T(6)n
97	GND		98	GND
99	PEX16_0T(15)p		100	PEX16_0T(7)p
101	PEX16_0T(15)n		102	PEX16_0T(7)n
103	GND		104	GND

Pin	Signal Name		Pin	Signal Name
105	SDVO_DAT(PENA#)	+12 Volts	106	SDVO_CLK
107	GND		108	GND
109	PEX16_0R(8)p		110	PEX16_0R(0)p
111	PEX16_0R(8)n		112	PEX16_0R(0)n
113	GND		114	GND
115	PEX16_0R(9)p		116	PEX16_0R(1)p
117	PEX16_0R(9)n		118	PEX16_0R(1)n
119	GND		120	GND
121	PEX16_0R(10)p		122	PEX16_0R(2)p
123	PEX16_0R(10)n		124	PEX16_0R(2)n
125	GND		126	GND
127	PEX16_0R(11)p		128	PEX16_0R(3)p
129	PEX16_0R(11)n		130	PEX16_0R(3)n
131	GND		132	GND
133	PEX16_0R(12)p		134	PEX16_0R(4)p
135	PEX16_0R(12)n		136	PEX16_0R(4)n
137	GND		138	GND
139	PEX16_0R(13)p		140	PEX16_0R(5)p
141	PEX16_0R(13)n		142	PEX16_0R(5)n
143	GND		144	GND
145	PEX16_0R(14)p		146	PEX16_0R(6)p
147	PEX16_0R(14)n		148	PEX16_0R(6)n
149	GND		150	GND
151	PEX16_0R(15)p		152	PEX16_0R(7)p
153	PEX16_0R(15)n		154	PEX16_0R(7)n
155	GND		156	GND

Chapter 3 BIOS Setup

Overview

BIOS (Basic Input and Output System) 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. BIOS 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 BIOS 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 BIOS parameter setting will decrease the system operating capability and make the system operating unstably even unable to operate normally.

BIOS Parameter Setup

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

When the BIOS setting in CMOS is destroyed, system may also require entering BIOS setting or selecting certain default value.

All the setup values modified by BIOS are saved in the CMOS storage in system. The CMOS storage is powered by battery; unless clearing CMOS contents, or else its contents will not be lost even if powered off.

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

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

Basic Function Settings for BIOS

After starting SETUP program, the main interface of CMOS Setup Utility will appear:

BIOS SETUP UTILITY	
System Overview	←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
Processor Type : Intel(R) Core (TM) 2 Duo CPU U9300 @1.20GHz Speed :1200MHz Cores :2 System Memory Size :989MB Power Supply Type :ATX System Time [00:47:55] System Date [Tue 09/15/2009]	
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◆ Main

➤ System Time

Select 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)

➤ System Date

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

◆ **Advanced**

BIOS SETUP UTILITY	
Advanced Settings	Configure CPU
WARNING: Setting wrong values in below sections may cause system to malfunction ▶ CPU Configuration ▶ IDE Configuration ▶ SuperIO Configuration ▶ ISA I/O Decode Configuration ▶ ISA Memory Decode Configuration ▶ USB Configuration ▶ Power Management Configuration ▶ Clock Generator Configuration	←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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➤ **CPU Configuration**

BIOS SETUP UTILITY	
Configure advanced CPU settings	
Module Version:3F.15	
Manufacturer: Intel	
Brand String:	
Intel(R) Core (TM) 2 Duo CPU U9300 @ 1.20GHz	
Frequency; :1200MHz	←→ Select Screen
FSB Speed; :800MHz	↑↓ Select Item
Cache L1; :64 KB	+ - Change Field
Cache L2; :3072 KB	Tab Select Field
Ratio Actual Value :6	F1 General Help
Intel® SpeedStep™ tech [Enabled]	F10 Save and Exit
Intel® Virtualization Tech [Enabled]	ESC Exit
Core Multi-Processing [Enabled]	
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● **Intel® SpeedStep™ tech**

The control switch of Intel SpeedStep tech;

● **Intel® Virtualization Tech**

The control switch of Intel Virtualization Tech;

● **Core Multi-Processing**

The control switch of Intel Core Multi-Processing, one Core in each Die of CPU will be disabled when selecting “Disabled”.

Note: the options above are displayed according to whether they are supported by CPU.

➤ **IDE Configuration**

BIOS SETUP UTILITY	
IDE Configuration	
SATA#1 Configuration	[Enhanced]
Configure SATA#1 as	[IDE]
SATA#2 Configuration	[Enhanced]
▶ Primary IDE Master	:[Not Detected]
▶ Primary IDE Slave	:[Not Detected]
▶ Secondary IDE Master	:[Not Detected]
▶ Secondary IDE Slave	:[Not Detected]
▶ Third IDE Master	:[Not Detected]
▶ Fourth IDE Master	:[Not Detected]
←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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- **SATA#1 Configuration**

Mode selection for SATA#1 controller; Disabled, Compatible and Enhanced are corresponding with Disable Controller, Compatible Mode and Enhanced Mode.

- **Configure SATA#1 as**

Type selection for SATA controller, correspond with three options: IDE, RAID and AHCI. Only when “ATA/IDE Configuration” is under Enhanced mode, it supports RAID and AHCI.

Both RAID and AHCI functions require support from hardware chip and OS.

- **SATA#2 Configuration**

Mode selection switch for SATA#2 controller; Disabled and Enhanced are corresponding with Disable Controller and Enhanced Mode.

- **Primary ~ Fourth IDE Master/Slave**

- * **Type**

- Not Installed: IDE device cannot be detected by system;

- AUTO: automatic detection of IDE parameters when power on;

- CD/DVD: used for ATAPI CDROM;

- ARMD: used for various analog IDE devices.

- * **LBA/Large Mode**

- Used to set whether to support LBA mode or not.

- * **Block(Multi-sector Transfer)**

- Used to set whether to support multi-sector simultaneous transfer or not.

- * **PIO Mode**

- It is used to set the PIO mode.

- * **DMA Mode**

- It is used to set the DMA mode.

*** S.M.A.R.T**

This option is used to enable or disable S.M.A.R.T function for hard disk and it is only effective for the hard disk supporting this function.

*** 32Bit Data Transfer**

This option is used to enable 32-bit hard disk accessing mode, which could optimize hard disk read and write speed.

➤ **SuperIO Configuration**

BIOS SETUP UTILITY	
Configure Win627DHG Super IO Chipset	Allows BIOS to Enable or Disable Floppy Controller.
Serial Port1 Address [3F8]	
Serial Port1 IRQ [4]	←→ Select Screen
Serial Port2 Address [2F8]	↑↓ Select Item
Serial Port2 IRQ [3]	+ - Change Field
Serial Port3 Address [3E8]	Tab Select Field
Serial Port3 IRQ [10]	F1 General Help
Serial Port4 Address [2E8]	F10 Save and Exit
Serial Port4 IRQ [11]	ESC Exit
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● **Serial Port n Address**

Set the address of COM1 on the motherboard, the options are Disabled, 3F8H, 3E8H, 2E8H, 2F8H.

● **Serial Port n IRQ**

Set the IRQ of COM 1, the options are IRQ3, IRQ4, IRQ10 and IRQ11.

➤ **ISA I/O Decode Configuration**

BIOS SETUP UTILITY	
Configuration ISA I/O Address By WB83628	
Decode I/O Space 0	[Enabled]
Decode I/O Base 0	[0100h]
Decode I/O Size 0	[64 Bytes]
Decode I/O Space 1	[Enabled]
Decode I/O Base 1	[0140h]
Decode I/O Size 1	[32 Bytes]
Decode I/O Space 2	[Enabled]
Decode I/O Base 2	[0200h]
Decode I/O Size 2	[128 Bytes]
Decode I/O Space 3	[Enabled]
Decode I/O Base 3	[0300h]
Decode I/O Size 3	[64 Bytes]
Decode I/O Space 4	[Enabled]
Decode I/O Base 4	[0340h]
Decode I/O Size 4	[32 Bytes]
Decode I/O Space 5	[Enabled]
Decode I/O Base 5	[0A70h]
Decode I/O Size 5	[16 Bytes]
←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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● **Decode I/O Space(0-5)**

The switch of decode IO space (n);

● **Decode I/O Base(0-5)**

The base address of decode IO space;

● **Decode I/O Size(0-5)**

The size of decode IO space;

➤ **ISA Memory Decode Configuration**

BIOS SETUP UTILITY	
Configuration ISA Memory Address By WB83628	
Memory Space 0 [Disabled]	
Decode MEM Base 0 [0000]	
Decode Size 0 [16 KB]	
Memory Space 1 [Disabled]	
Decode MEM Base 1 [0000]	←→ Select Screen
Decode Size 1 [16 KB]	↑↓ Select Item
Memory Space 2 [Disabled]	+ - Change Field
Decode MEM Base 2 [0000]	F1 General Help
Decode Size 2 [16 KB]	F10 Save and Exit
Memory Space 3 [Disabled]	ESC Exit
Decode MEM Base 3 [0000]	
Decode Size 3 [16 KB]	
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● **Memory Space (0-3)**

The switch of decode memory space;

● **Decode MEM Base (0-3)**

The base address of decode memory space;

● **Decode MEM Size (0-3)**

The size of decode memory space;

➤ **USB Configuration**

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
Module Version -2.24.3-13.4	
USB Devices Enabled :	←→ Select Screen
None	↑↓ Select Item
	+ - Change Field
USB Mass Storage Device Configuration	F1 General Help
	F10 Save and Exit
	ESC Exit
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➤ **Power Management Configuration**

BIOS SETUP UTILITY	
Power Management Configuration	←→ Select Screen
ACPI APIC Support [Enabled]	↑↓ Select Item
Restore on AC Power Loss [Last state]	+ - Change Field
Resume on RTC Alarm [Disabled]	F1 General Help
	F10 Save and Exit
	ESC Exit
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● **ACPI APIC Support**

This option is used to enable or disable the APIC (advanced interrupt controller) under ACPI OS.

● **Restore on AC Power Loss**

This option is used to set the system status when the computer is re-electrified after the power loss of AC. “Power Off” is to make the system at power off status; “Power On” is to make the system power on automatically; “Last State” is to retain the status before powering off.

● **Resume on RTC Alarm**

This option is used to enable or disable the system clock. When the specified time is expired, it will wake the system from power saving mode, even from power off mode. This function shall be supported by ATX power.

➤ **Clock Generator Configuration**

BIOS SETUP UTILITY	
Configure Clock Generator	
Spread Spectrum [Enabled]	←→ Select Screen
Auto PCI Clock [Enabled]	↑↓ Select Item
	+ - Change Field
	F1 General Help
	F10 Save and Exit
	ESC Exit
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● **Spread Spectrum**

This option is used to control the spread spectrum function of the clock signal.

● **Auto PCI Clock**

This option can be used to set whether to support disabling the un-used clock.

◆ Chipset

BIOS SETUP UTILITY	
Advanced Chipset Settings	
WARNING: Setting wrong values in below sections may cause system to malfunction.	
NorthBridge Configuration	
DRAM Frequency	[Auto]
Configure DRAM Timing by SPD	[Enabled]
Boots Graphic Adapter Priority	[PEG/PCI]
Internal Graphics Mode Select	[Enabled, 32MB]
Boot Display Device	[CRT + LVDS]
Flat Panel Type	[800*600]
Panel Specification	[24 BIT]
Dual Channel	[Enabled]
SouthBridge Configuration	
Onboard Audio Controller	[Enabled]
←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit	
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➤ **DRAM Frequency**

Configure the frequency for DRAM; it is recommended to use automatic modification instead of manual modification; otherwise, it will not be able to power on because it is not supported by DRAM.

➤ **Configure DRAM Timing by SPD**

IOS configures the time sequence of SDRAM memory according to the contents on SPD chip. Most of the memory banks have a small chip to save memory sequence, contents and so on, and it is the SPD chip.

➤ **Boots Graphic Adapter Priority**

This option is used to specify the priority of video device.

➤ **Internal Graphics Mode Select**

This option is used to adjust the physical memory size shared by the on-board video card.

➤ **Boot Display Device**

This option is used to choose the default display device when powering on.

➤ **Flat Panel Type**

This option is used to choose the resolution for Flat Panel.

➤ **Panel Specification**

This option is used to select the color depth of LVDS.

➤ **Dual Channel**

This option is used to select dual channel LVDS.

➤ **Onboard Audio Controller**

Select whether to enable audio card controller.

◆ **PCIPnP**

BIOS SETUP UTILITY	
Advanced PCI/PnP Settings	
WARNING: Setting wrong values in below sections may cause system to malfunction.	
IRQ3 [Available]	
IRQ4 [Available]	←→ Select Screen
IRQ5 [Available]	↑↓ Select Item
IRQ7 [Available]	+ - Change Field
IRQ9 [Available]	F1 General Help
IRQ10 [Available]	F10 Save and Exit
IRQ11 [Available]	ESC Exit
IRQ14 [Available]	
IRQ15 [Available]	
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➤ **IRQ3 ~ 15**

This option is used to specify whether the IRQ number is in PNP mode or reserved for ISA.

◆ **Boot**

BIOS SETUP UTILITY	
Boot Settings	
Quick Boot [Enabled]	←→ Select Screen
Quiet Boot [Disabled]	↑↓ Select Item
Waite For 'F1' If Error [Enabled]	Enter Go to Sub Screen
Boot from Embedded WinCE [NO]	F1 General Help
	F10 Save and Exit
	ESC Exit
Boot Device Priority	
1 st Boot Device [1 st FLOPPY DRIVE]	
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➤ **Quick Boot**

During BIOS boot period, configure whether to permit skipping certain test, to reduce BIOS boot time.

➤ **Quiet Boot**

Configure whether to display the content of OEM LOGO.

➤ **Wait For 'F1' If Error**

Configure whether to prompt pressing "F1" during system error.

➤ **Boot from Embedded WinCE**

This is suitable for motherboard that often needs to set WinCE, operate BLDR of WinCE in BIOS to quicken the boot speed.

➤ **1st ~ 4th Boot Device**

Configure the priority of the startup sequence for devices when the system starts.

◆ **Security**

BIOS SETUP UTILITY	
Security Settings	Install or Change the password
Supervisor Password :Not Installed	←→ Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit
User Password :Not Installed	
Change Supervisor Password	
Change User Password	
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➤ **Change User/ Supervisor Password**

After pressing Change User/ Supervisor Password and input new password in the dialog box, this column will indicate that user's password has been installed.

◆ **Exit**

South Bridge Configuration	
Exit Options	Exit system setup after saving the changes.
Save Changes and Exit	←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Discard Changes and Exit	
Discard Changes	
Load Optimal Defaults	
Load Failsafe Defaults	ESC Exit
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➤ **Save Changes and Exit**

When you have finished all the changes and want to cover the original parameters, you may implement this operation and save the new parameters into CMOS storage. To implement this operation, you may choose this option and press < Enter >; press < Enter > again to exit.

➤ **Discard Changes and Exit**

If you do not want to save the change into CMOS storage, please choose this option and press < Enter >; press < Enter > again to exit.

➤ **Discard Changes**

If error occurs in your change and need to be neglected, please choose this option and press < Enter > in order to enter corresponding options again and reset it.

➤ **Load Optimal Defaults**

This menu is used to input default value in system configuration. These default values are optimized and could give play to the high capability of all hardware.

➤ **Load Failsafe Defaults**

The function of this option is to initialize the setup of each option to realize the most fundamental and secure system functional value. To implement this function, choose this option and press < Enter >; messages to be confirmed will display on the screen, press < Enter > to implement this function.

System Resources Managed by BIOS 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	DRAM Refresh
DMA1	Unassigned
DMA2	Floppy Disk
DMA3	Unassigned (sometimes used for hard disk)
DMA4	Used for DMAC Cascade
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ APIC

Advanced programmable interrupt controller. Most of motherboards above P4 level support APIC and provide more than 16 interrupt sources such as IRQ16 - IRQ23 while some others support up to 28 interrupt sources such as which supports PCI-X. However, the related OS is required in order to enable that function and only the OS above Windows 2000 could support that function currently.

◆ IO Port Address

There is 64K for the system I/O address space. Each external device will occupy portion of the space. The table below shows parts of the distribution of the I/O address. As the address of PCI device (e.g. PCI network card) is configured by software, it is not listed in this table.

Address	Device Description
000h - 00Fh	DMA Controller#1
000h - CF7h	PCI Bus
010h - 01Fh	Carrier Resource
020h - 021h	Programmable Interrupt Controller#1
022h - 03Fh	Carrier Resource
040h - 043h	System Timer
044h - 05Fh	Carrier Resource
060h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
061h	System speaker
062h - 063h	Carrier Resource
064h	Carrier Resource
065h - 06Fh	Carrier Resource
070h - 071h	Real-Time Clock, NMI
072h - 07Fh	Carrier Resource
080h	Carrier Resource
081h - 083h	DMA Controller#2
084h - 086h	Carrier Resource
087h	DMA Controller#3
088h	Carrier Resource
089h - 08Bh	DMA Controller#4
08Ch - 08Eh	Carrier Resource
08Fh	DMA Controller#5
090h - 09Fh	Carrier Resource
0A0h - 0A1h	Programmable Interrupt Controller #2
0A2h - 0BFh	Carrier Resource

Address	Device Description
0C0h - 0DFh	DMA Controller#6
0E0h - 0EFh	Carrier Resource
0F0h - 0FFh	Numeric Data Processor
274h - 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2E8h - 2EFh	COM4
2F8h - 2FFh	COM2
3B0h - 3BBh	Mobile Intel(R) 4 Series Express Chipset Family
3C0h - 3DFh	Mobile Intel(R) 4 Series Express Chipset Family
3E8h - 3EFh	COM3
3F8h - 3FFh	COM1
400h - 41Fh	Intel(R) ICH9 Family SMBus Controller-2930
480h - 4BFh	Carrier Resource
4D0h - 4D1h	Carrier Resource
800h - 87Fh	Carrier Resource
B00h-B0Fh	Carrier Resource
B10h-B1Fh	Carrier Resource
A79h	ISAPNP Read Data Port
D000h-DFFFh	Intel(R) ICH9M/M-E
0D00h-FFFFh	PCI bus

◆ 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 engress 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	Standard 101/102 Key or Microsoft natural PS/2 Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	System CMOS/ Real Time Clock
IRQ9	Microsoft ACPI-Compliant System
IRQ10	COM#3
IRQ11	COM#4
IRQ12	Reserved
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Intel(R) ICH9 Family SMBUS Controller

Chapter 4 Install the Drivers

Please refer to the equipped CD for the driver program of this product and it is omitted here.

Appendix

Watchdog Programming Guide

This board provides a programmable watchdog timer (WDT) up to 255 levels and time by minute or second. Watchdog timer overtime 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.

Before using, please modify the corresponding IRQ number in PCIPnP of BIOS Setup interface into “Reserved”.

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.

```
#define INDEX_PORT 0x2E
#define DATA_PORT 0x2F

outportb(INDEX_PORT,0x67);
outportb(INDEX_PORT,0x67);
outportb(INDEX_PORT,0x07);
outportb(DATA_PORT,0x08);
outportb(INDEX_PORT,0x30);
outportb(DATA_PORT,0x01);
```

(2) Configure WDT operating mode, reset mode or interrupt mode:

```
unsigned char oldval;
outportb(INDEX_PORT,0x70);
oldval = inportb(DATA_PORT);
```

a. Reset Operating Mode

```
oldval &= 0xef;
outportb(DATA_PORT, oldval);
```

b. Interrupt Operating Mode

```
oldval |= 0x10;
oldval |= IRQ_NO; /* Please replace the constant IRQ_NO with the
needed IRQ number, the available range of IRQ number is listed at the
beginning of this document.*/
outportb(DATA_PORT, oldval);
```

(3) WDT timer selection: time by minute or second**a. Time by minute:**

```
outportb(INDEX_PORT, 0xf0);
outportb(DATA_PORT, 0x04);
```

b. Time by second:

```
outportb(INDEX_PORT, 0xf0);
outportb(DATA_PORT, 0x02);
```

(4) Enable/Disable WDT**a. Enable WDT:**

```
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, TIME_OUT_VALUE); /* Please replace the
constant TIME_OUT_VALUE with the unit number of timeout
value(0x01 ~ 0xFF)*/
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, TIME_OUT_VALUE); /* Please replace the
constant TIME_OUT_VALUE with the unit number of timeout
value(0x01 ~ 0xFF)*/
```

b. Disable WDT:

```
outportb(INDEX_PORT, 0xf1);
outportb(DATA_PORT, 0x00);
```

Digital IO Programming Guide

This board provides 8-channel programmable digital I/O pins, 4 for input while the other 4 for output. The following shows the example of digital I/O programming in C language; please follow the steps listed below to program the digital I/O:

- Initialize digital I/O
- Input/Output program

(1) Initialize Digital I/O:

```
#define BAR 0x400

unsigned char tmp_val;
outportb(BAR,0xbf);
outportb(BAR+0x04,0x40);
outportb(BAR+0x03,0x03);
outportb(BAR+0x05,0x0F);
tmp_val =(inportb(BAR+0x02)|0x08)&0xeb;
tmp_val |= 0x40;
outportb(BAR+0x02, tmp_val);
delay(30);
tmp_val =inportb(BAR);
while((tmp_val &0x02)!=0x02)
{
    tmp_val =inportb(BAR);
    if((tmp_val &0x04)!=0)
    {
        printf("ERROR\n");
        return 0;
    }
}
```

(2) Input/Output Program

a. Output Program

Function Input: int pin - value 1~4 are corresponding with the output pin 1~4 respectively

int lev_val - 1: the output pin is high, 0: the output pin is low

Function Output: None

```
void Out_Lev(int pin ,int lev_val)
{
    unsigned int reg_val ;
    outputb(BAR,0xbf);
    outputb(BAR+0x04,0x40);
    outputb(BAR+0x03,0x01);
    reg_val = inportb(BAR+0x05);
    reg_val = lev_val ?
    reg_val|(0x01<<pin+3) :reg_val&~(0x01<<pin+3) ;
    outputb(BAR+0x05, reg_val);
    reg_val =(inportb(BAR+0x02)|0x08)&0xeb;
    reg_val |= 0x40;
    outputb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
    {
        reg_val =inportb(BAR);
        if((reg_val &0x04)!=0)
        {
            printf("ERROR\n");
            return 0;
        }
    }
}
```

b. Input Program

Function Input: int pin - value 1~4 are corresponding with the output pin 1~4 respectively

Function Output: int lev_val - 1: the input pin is high, 0; the input pin is low

```
int In_Lev(int pin)
{
    unsigned int reg_val ;
    int lev_val ;
    outportb(BAR,0xbf);
    outportb(BAR+0x04,0x41);
    outportb(BAR+0x03,0x00);
    reg_val =(inportb(BAR+0x02)|0x08)&0xeb;
    reg_val |= 0x40;
    outportb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
    {
        reg_val =inportb(BAR);
        if((reg_val &0x04)!=0)
        {
            printf("ERROR\n");
            return 0;
        }
    }
    lev_val = inportb(BAR+0x05)&( 0x01<<pin-1);
    lev_val = lev_val ? 1:0; /* Get the value of the variable lev_val here, 1
    means that the input pin is high while 0 means the input pin is low */
    return lev_val ;
}
```

Please visit <http://www.evoc.com> for more information.