



特种计算机

Industrial Computer

产品说明书

User Manual

104-1815CLD2NA

PC/104 主板带 VGA/LVDS/DVI/2LAN/4COM




PC/104 motherboard with VGA/LVDS/DVI
/2LAN/4COM

Version: C01

法律资讯

警告提示

为了您的人身安全以及避免财产损失，必须注意本手册中的提示。人身安全的提示用一个警告三角表示，仅与财产损失有关的提示不带警告三角。警告提示根据危险等级由高到低如下表示。


 危险
表示如果不采取相应的小心措施，将会导致死亡或者严重的人身伤害。
 警告
表示如果不采取相应的小心措施，可能导致死亡或者严重的人身伤害。
 小心
带有警告三角，表示如果不采取相应的小心措施，可能导致轻微的人身伤害。
注意
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产品保修期一年。用户如另有要求，以双方签署的合同为准。

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文档说明

本文档适用范围

本文档适用于EVOC 104-1815CLD2NA型号。

约定

在本文档中，术语“本板”或“产品”有时特指EVOC 104-1815CLD2NA产品。

说明

安全相关注意事项

为避免财产损失以及出于个人安全方面的原因，请注意本入门指南中关于安全方面的信息。文中使用警告三角来指示这些安全信息，警告三角的出现取决于潜在危险的程度。

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1. 产品介绍

1.1 简介

104-1815CLD2NA 是一款基于 AMD 嵌入式 G 系列处理器 + AMD A55E 芯片组的嵌入式 PC/104 结构的工业主板，该主板以其全集成性能、丰富的接口功能以及宽温、高可靠、低功耗性能，可广泛应用于交通运输、售货设备、仪器仪表、工业现场等各种嵌入式领域，主要特点如下：

- ◆ PC/104 总线单板结构；
- ◆ 支持 AMD T16R 615M, T40E 1.0G, T56E 1.65G CPU；
- ◆ AMD G Series APU + AMD A55E；
- ◆ 板载 1G/2G DDRIII 内存；
- ◆ 支持 VGA、LVDS、DVI/TTL(可选)双显功能；
- ◆ 提供 2 个 100/1000Mbps 以太网控制器；
- ◆ 提供 2 个 SATA 接口和 1 个 CF 卡接口；

此外，还提供 4 个 USB 接口、4 个串口(其中 1 个支持 RS-232 和 RS-485 可选)、1 个音频接口、1 个键盘/鼠标/复位多功能接口和看门狗定时器等功能。

1.2 机械尺寸、重量与环境

- 外形尺寸：116mm（长）×97mm（宽）×23.5mm mm（高）（含散热器高度）
- 净重：0.44Kg；
- 工作环境：
温度：0℃~60℃；可扩展温度：-40℃~85℃
湿度：5%~95%（非凝结状态）
- 贮存环境：
温度：-45℃~85℃
湿度：5%~95%（非凝结状态）

1.3 典型功耗

典型功耗是基于以下配置闲置状态的数值。

CPU: AMD G-T16R Processor 615M

内存: 板载DDR3 1GB Samsung K4B1G0846G-BCH9

➤ +5V@1.96A; +5%/-3% (待机);

CPU: AMD G-T65E Processor 1.65GHz

内存: 板载DDR3 2GB Samsung K4B2G0846D-HCH9

➤ +5V@2.122A; +5%/-3% (待机);

1.4 微处理器

支持AMD T16R(单核) 615MHz, T40E(双核)1.0GHz, T56E(双核) 1.65GHz)

1.5 芯片组

AMD G Series APU + AMD A55E

1.6 系统存储器

板载1G(板载T16R CPU时) 或者2G DDRIII内存(板载T40E或者T56E CPU时)

1.7 显示功能

- 支持VGA、LVDS、DVI和TFT LCD(可选) 显示;
- 支持VGA+LVDS、VGA+DVI或者VGA+TTL、VGA+DVI等组合双显示;
- VGA支持分辨率及刷新率有800×600@60Hz、1024×768@60Hz、1920×1200 @ 60 Hz; LVDS最大支持1024×600@60Hz; DVI最大支持1920×1200@60Hz; LCD最大支持800×600@60Hz。

注意: 显示分辨率设置, 当WINDOWS客户在使用过程中遇到显示器的分辨率不能更改的问题时, 请进入系统的显示属性--设置--高级--监视器设置画面, 去掉“隐藏该监视器无法显示的模式”前面的勾; 确定后就可以设置了。

1.8 网络功能

主板集成了2个100/1000Mbps以太网控制器，为您提供高速稳定的网络平台。

1.9 音频功能

集成1个标准的HDA音效芯片，提供优质的声音效果。

1.10 电源特性

+5V单电源供电。

1.11 扩展总线

1个PCI-104扩展总线接口和1个PC/104扩展总线接口。

1.12 Watchdog 功能

- 1~255级，可编程时间到中断
- 1~255超时事件复位系统
- 1(秒/分)分辨率向下计数器

1.13 操作系统

- 支持操作系统：WINDOWS XP、WINDOWS 7、LINUX；

1.14 I/O接口

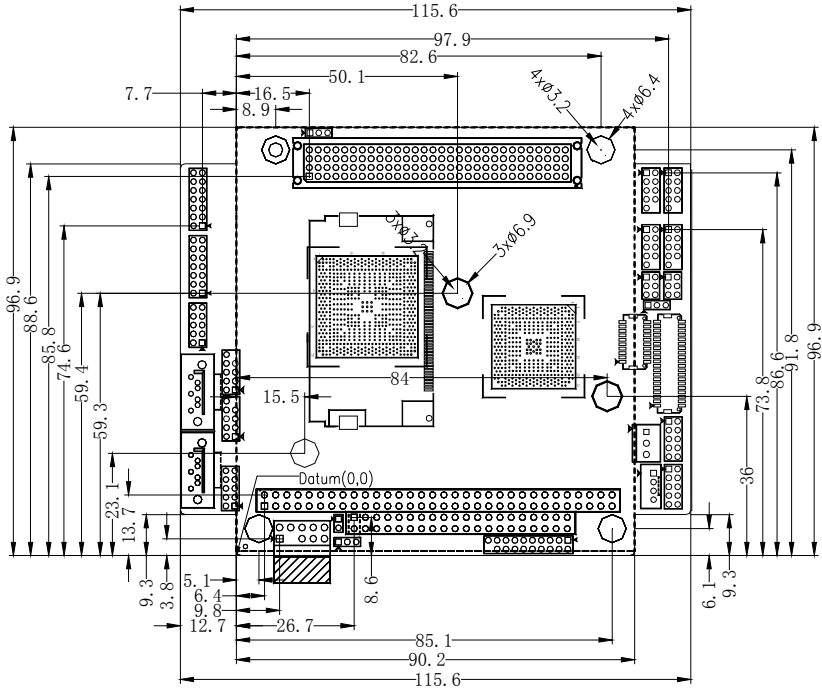
- 支持4个串口（其中1个支持RS-232/RS-485可选）
- 1个HDA音频接口
- 支持4个USB2.0接口
- 1个键盘/鼠标/蜂鸣器/复位多功能接口

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。

2. 安装说明

2.1 产品外形尺寸图

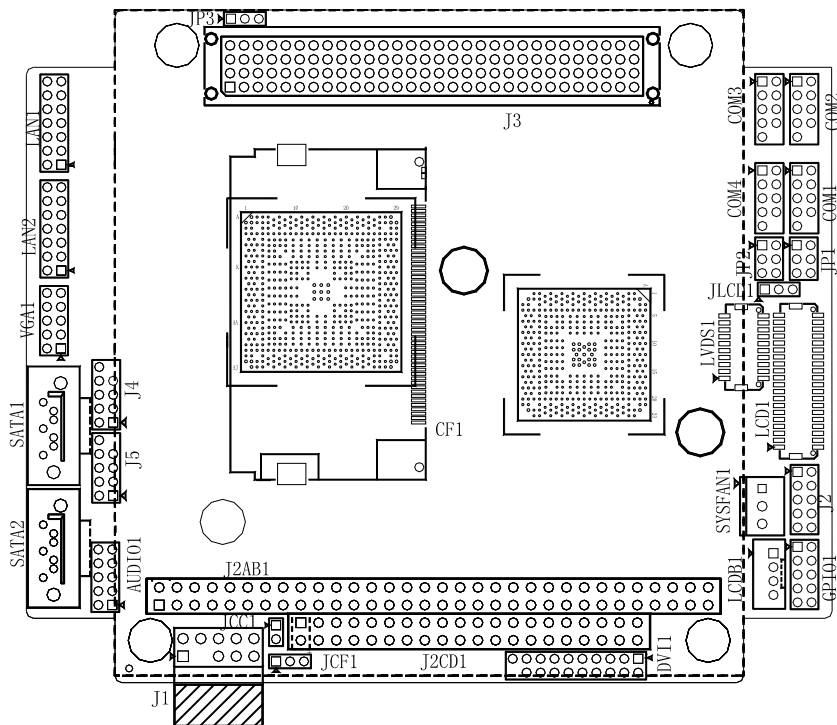


单位：mm

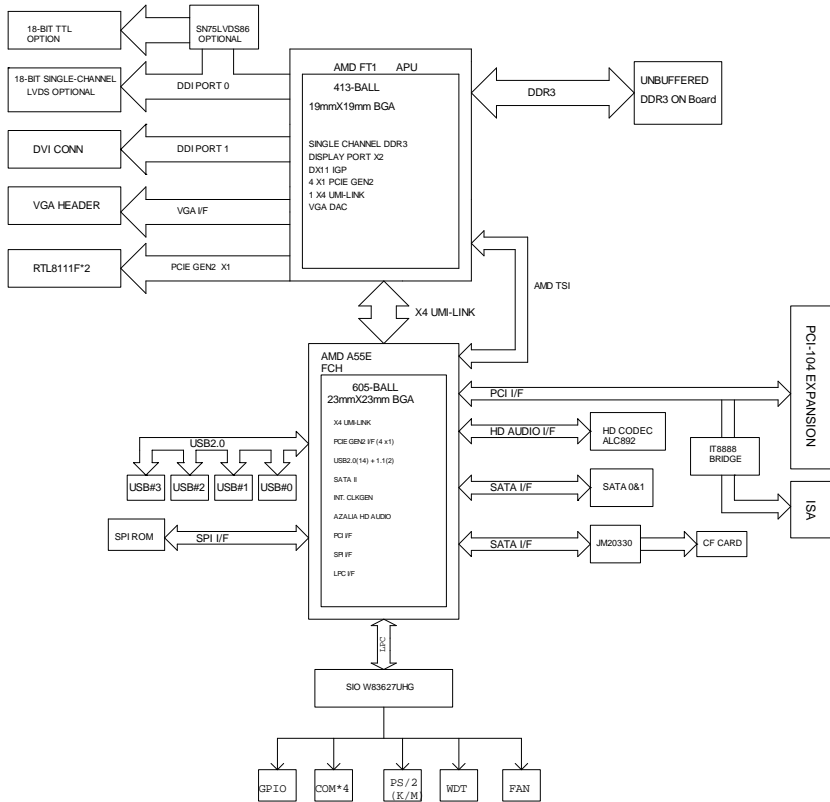
警告！

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。此板推荐使用 M3×6 GB9074.4-88 螺钉。

2.2 接口位置示意图



2.3 架构图



提示：如何识别跳线、接口第一脚

- 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。

2.4 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,重新加载最优选省值;(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. JP1/JP2: COM3 RS-232/RS-485模式选择 (脚距: 2.0mm)

COM3支持RS-232/RS-485两种工作模式, 通过跳线JP1和JP2来实现工作模式的选择。

 JP1/JP2	插针	RS-232 (Default)	RS-485
	JP1	1-2	3-4
	JP2	1-3	3-5
	JP2	2-4	4-6

4. JP3: PCI-104 扩展接口的VIO电压选择 (脚距: 2.0mm)

 JP3	设置	功能
	1-2 短路	+3.3V (Default)
	2-3 短路	+5V

5. JCF1: CF卡接口的电压选择 (脚距: 2.0mm)

 JCF1	设置	功能
	1-2 短路	+3.3V
	2-3 短路	+5V (Default)

2.5 USB接口

J4/J5为2×5Pin (脚距: 2.0)的USB插针,需使用转换电缆将接口信号接到标准插座,下表给出了接口的管脚定义。

 J4 (USB1/USB2) J5 (USB3/USB4)	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

2.6 串口

(1) COM3 口: RS-232 或 RS-485

COM3 为 2×5Pin (脚距: 2.0) 的 COM 口插针, 此 COM 口可通过 JP1 和 JP2 选择 RS-232 或 RS-485 的工作模式; 它们需使用转换电缆将接口信号接到标准插座, 下表给出了接口的管脚定义。

 <p>COM3</p>	管脚	RS-232/ RS-485 模式信号名称	管脚	RS-232/ RS-485 模式信号名称
	1	DCD#/DATA-	2	RXD/DATA+
	3	TXD/NC	4	DTR#/NC
	5	GND	6	DSR#/NC
	7	RTS#/NC	8	CTS#/NC
	9	RI#/NC	10	NA

(2) COM1、COM2、COM4 口：RS-232

COM1、COM2、COM4 为 3 个 2×5Pin（脚距：2.0）的 RS-232 插针，它们需使用转换电缆将接口信号接到标准插座，下表给出了接口的管脚定义。

 <p>COM1、COM2、COM4</p>	管脚	信号名称	管脚	信号名称
	1	DCD#	2	RXD
	3	TXD	4	DTR#
	5	GND	6	DSR#
	7	RTS#	8	CTS#
	9	RI#	10	NA

2.7 网络接口

LAN1和LAN2为2×7Pin（脚距：2.0）的网口插针，此插针式接口是主板上100Mbps/1000 Mbps以太网接口，需使用转换电缆将接口信号接到标准插座，下表给出了接口的管脚定义。

 <p>LAN1/LAN2</p>	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	LINK1000-	12	LINK100-
	13	ACT_LED+	14	ACT_LED-

2.8 显示接口

1、VGA接口

VGA1 为 2×5Pin (脚距: 2.0) 的 VGA 插针, 其接口定义如下:

<p>VGA1</p>	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	NC	8	Blue
	9	GND	10	GND

2、LVDS接口

LVDS1为单通道18bit LVDS接口(脚距:1.0 mm), 其接口定义如下:

<p>LVDS1</p>	管脚	信号名称	管脚	信号名称
	1	LVDS_D0+	2	LVDS_D0-
	3	GND	4	GND
	5	LVDS_D1+	6	LVDS_D1-
	7	GND	8	GND
	9	LVDS_D2+	10	LVDS_D2-
	11	GND	12	GND
	13	CLK+	14	CLK-
	15	GND	16	GND
	17	NC	18	NC
	19	VDD	20	VDD

3、DVI接口

DVI1 为 2×10Pin (脚距: 2.0) 的 DVI 插针, 其接口定义如下:

<p>DVI1</p>	管脚	信号名称	管脚	信号名称
	1	DATA2-	2	DATA2+
	3	GND	4	GND
	5	DATA1-	6	DATA1+
	7	GND	8	GND
	9	DATA0-	10	DATA0+
	11	GND	12	GND
	13	CLK+	14	CLK-
	15	+5V	16	HPDET
	17	DDCDATA	18	DDCCLK
	19	GND	20	NA

4、TTL接口（可选）

LCD1为单路6bit TTL液晶显示接口(脚距:1.0 mm)，其接口定义如下。

管脚	信号名称		管脚	信号名称	
	管脚	信号名称		管脚	信号名称
1	VDD		2	VDD	
3	GND		4	ENAVEE	
5	GND		6	GND	
7	NC		8	NC	
9	B1		10	B0	
11	B3		12	B2	
13	B5		14	B4	
15	NC		16	NC	
17	G1		18	G0	
19	G3		20	G2	
21	G5		22	G4	
23	NC		24	NC	
25	R1		26	R0	
27	R3		28	R2	
29	R5		30	R4	
31	GND		32	GND	
33	VSYNC		34	CLOCK	
35	HSYNC		36	LCD_EN	
37	BKL_EN		38	NC	
39	GND		40	NC	

说明：若使用VGA和LCD双显时，请在系统中将显示器刷新频率设置为60Hz。

2.9 电源接口

J1为2×5Pin（脚距:2.54 mm）的电源插针，需使用转换电缆将接口信号接到标准插座，下表给出了接口的管脚定义。

管脚	信号名称		管脚	信号名称	
	管脚	信号名称		管脚	信号名称
1	GND		2	+5V	
3	NA		4	+12V	
5	NC		6	-12V	
7	GND		8	+5V	
9	GND		10	+5V	

注意：+5V为主板工作电源，请确保输入到主板的工作电压稳定在5V ±5%范围内。+12V、-12V、-5V为外部总线扩展设备或LCD背光电源，客户可根据需要确定是否接入。

2.10 音频接口

本板提供一组音频接口(脚距:2.0mm)，LINE_OUT 可以连接到耳机或更适合的功率扬声器。LINE_IN 用于连接音频信号输入；MIC_IN 用于连接麦克风输入声音，下表给出了接口的各管脚定义。

<p>AUDIO1</p>	管脚	信号名称	管脚	信号名称
	1	LINE_OUT_R	2	LINE_OUT_L
	3	GND_AUDIO	4	GND_AUDIO
	5	LINE_IN_R	6	LINE_IN_L
	7	GND_AUDIO	8	GND_AUDIO
	9	MIC1_L	10	MIC1_R

2.11 风扇接口

<p>SYSFAN1 (脚距:2.54mm)</p>	管脚	信号名称
	1	GND
	2	+5V
	3	FAN_IO

2.12 多功能接口

J2 是一个 2×5Pin(脚距:2.0mm)的插针，是一个多功能接口，用于连接键盘、鼠标、蜂鸣器和复位，需要使用随单板电脑配置的多功能接口线连接各接口，下表给出了接口的管脚定义。

<p>J2</p>	管脚	信号名称	管脚	信号名称
	1	SPEAK-	2	+5V
	3	RESET	4	GND
	5	Keyboard Data	6	Keyboard Clock
	7	GND	8	Mouse Clock
	9	+5V	10	Mouse Data

2.13 LCD背光控制接口

本板提供1个1×4Pin 的wafer LCD背光控制接口（脚距：2.0mm），管脚定义如下：

 LCDB1	管脚	信号名称
	1	VCC_LCDBKLT
	2	LCD_BKLTCTL
	3	LCD_BKLTEN
	4	GND

注：VCC_LCDBKLT---+12V 背光电源（电流限制在1A以下）；

LCD_BKLTCTL---背光控制（该信号由CPU直接输出，为PWM信号，电压幅值0V—3.3V，占空比在0%~100%之间）；

LCD_BKLTEN ---背光使能，高有效（此板该信号由CPU直接输出，CMOS输出，电压幅值为0V-3.3V）。

2.14 SATA接口

本主板提供2个SATA接口。

 SATA1、SATA2	管脚	信号名称
	1	GND
	2	TX+
	3	TX-
	4	GND
	5	RX-
	6	RX+
	7	GND

2.15 SATA硬盘热插拔

SATA 硬盘热插拔需注意：

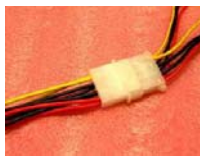
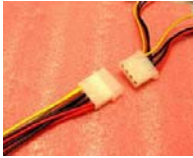
- （1） 硬盘必须支持：SATA 2.0 接口，并且采用15芯SATA硬盘电源接口。

- (2) 芯片组驱动程序支持 SATA 硬盘的热插拔。
- (3) 不能对操作系统所在的 SATA 硬盘进行带电热插拔。



请按照如下步骤进行 SATA 硬盘热插拔，否则，操作不当会导致硬盘损坏和数据丢失。

热插入SATA硬盘步骤：



步骤1：请将SATA电源线1x4-针脚(白色)一端接到电源适配器的1x4-针脚电源线一端。



步骤2：将SATA 数据线接到主板上的SATA接口。



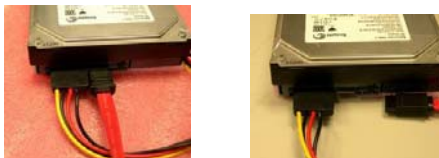
步骤3：将SATA电源线15-针脚接口(黑色)一端接到SATA硬盘。



步骤4：将SATA数据线接到SATA硬盘。

热拔出SATA硬盘步骤：

步骤 1：从设备管理器中卸载该硬盘。



步骤 2：从 SATA 硬盘一侧拔去 SATA 数据线。



步骤 3：从 SATA 硬盘一侧拔去 SATA 15-针脚电源线接口(黑色)。

2.16 GPIO 接口

 <p>GPIO1 (脚距: 2.0mm)</p>	管脚	信号名称	管脚	信号名称
	1	GPI01	2	GPI05
	3	GPI02	4	GPI06
	5	GPI03	6	GPI07
	7	GPI04	8	GPI08
	9	GND	10	NC

注：出厂Default值为连接器的第1、3、5、7脚为GPIO输入，第2、4、6、8脚为GPIO输出，出厂默认状态为高电平，输入输出信号的电压范围为0-5V。

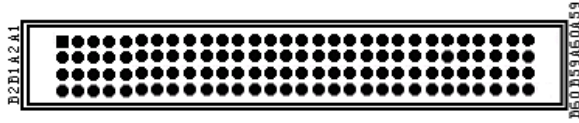
2.17 CF卡

Compact Flash卡是一种快速存储器，体积很小，使用方便，存储量随所用的卡而变化，如1M、256M等。CF卡插入时。只能以一个方向插入(在板背面，图示标识为CF1)。

管脚	信号名称	管脚	信号名称
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ
13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66_DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

2.18 PCI-104 扩展槽

J3 为 PCI-104 扩展插槽，最多可支持 3 个 PCI 设备，管脚定义如下：

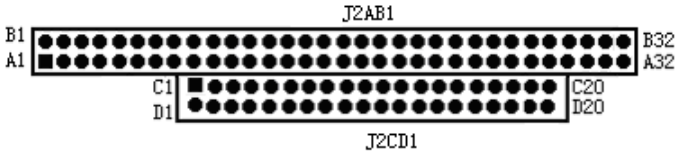


J3

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	GND	B1	+5V_SB	C1	+5V	D1	AD00
A2	VI00	B2	AD02	C2	AD01	D2	+5V
A3	AD05	B3	GND	C3	AD04	D3	AD03
A4	C/BE0-	B4	AD07	C4	GND	D4	AD06
A5	GND	B5	AD09	C5	AD08	D5	GND
A6	AD11	B6	VI01	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1-	C8	AD15	D8	+3.3V
A9	SERR-	B9	GND	C9	PS0N-	D9	PAR
A10	GND	B10	PERR-	C10	+3.3V	D10	PME-
A11	STOP-	B11	+3.3V	C11	LOCK-	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	VI03	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	VI04
A24	GND	B24	REQ2-	C24	+5V	D24	GNT0-
A25	GNT1-	B25	VI02	C25	GNT2-	D25	GND
A26	+5V	B26	CLK0	C26	GND	D26	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D27	GND
A28	GND	B28	INTD-	C28	+5V	D28	RST-
A29	+12V	B29	INTA-	C29	INTB-	D29	INTC-
A30	-12V	B30	REQ3-	C30	GNT3-	D30	GND

2.19 PC/104 接口

本主板提供一个PC/104插槽（J2AB、J2CD），管脚定义如下：



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	IOCHCK#	B1	GND	C1	GND	D1	GND
A2	SD7	B2	RESET	C2	SBHE#	D2	MEMCS16#
A3	SD6	B3	+5V	C3	LA23	D3	IOCS16#
A4	SD5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	SD4	B5	-5V	C5	LA21	D5	IRQ11
A6	SD3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	SD2	B7	-12V	C7	LA19	D7	IRQ15
A8	SD1	B8	SRDY#	C8	LA18	D8	IRQ14
A9	SD0	B9	+12V	C9	LA17	D9	DACK0#
A10	IOCHRDY	B10	KEY	C10	MEMR#	D10	DRQ0
A11	AEN	B11	SMEMW#	C11	MEMW#	D11	DACK5#
A12	SA19	B12	SMEMR#	C12	SD8	D12	DRQ5
A13	SA18	B13	IOW#	C13	SD9	D13	DACK6#
A14	SA17	B14	IOR#	C14	SD10	D14	DRQ6
A15	SA16	B15	DACK3#	C15	SD11	D15	DACK7#
A16	SA15	B16	DRQ3	C16	SD12	D16	DRQ7
A17	SA14	B17	DACK1#	C17	SD13	D17	+5V
A18	SA13	B18	DRQ1	C18	SD14	D18	MASTER#
A19	SA12	B19	REFRESH#	C19	SD15	D19	GND
A20	SA11	B20	BCLK	C20	KEY	D20	GND
A21	SA10	B21	IRQ7				
A22	SA9	B22	IRQ6				
A23	SA8	B23	IRQ5				
A24	SA7	B24	IRQ4				
A25	SA6	B25	IRQ3				
A26	SA5	B26	DACK2#				
A27	SA4	B27	TC				
A28	SA3	B28	BALE				
A29	SA2	B29	+5V				
A30	SA1	B30	OSC				
A31	SA0	B31	GND				
A32	GND	B32	GND				

3. BIOS功能介绍

3.1 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。

3.2 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<ESC>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。

3.3 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)

2012 American Megatrends, Inc.主画面如下:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Save & Exit		
Motherboard Information		Set the Date. Use 'Tab' to switch between Date elements.
Project Name	104-1815CLD2NA	
BIOS Name	Q9169000	
BIOS Version	A00	
Build Date	11/15/2012 14:24:10	→←: Select Screen
Memory Information		↑↓: Select Item
Total Memory	1008 MB (DDR3)	Enter: Select
System Date	[Mon 11/01/2009]	+/-: Change Opt
System Time	[00:47:55]	F1: General Help
Access Level	Administrator	F2: Previous Values
		F3: Optimized Defaults
		F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

◆ Main

➤ 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(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) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
<p>WARNING: Setting wrong values in below sections may cause system to malfunction!</p> <ul style="list-style-type: none"> ▶ CPU Configuration ▶ IDE Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor ▶ HDD Latency Time 	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

➤ **CPU Configuration**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<p>CPU Configuration</p> <p>Module Version:4.6.3.7 OntarioPI 030 AGESA Version:1.2.0.0</p> <p>▶Node 0 Information</p>	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Socket0: AMD G-T16R Processor Single Core Running @622 MHz 962 mV Max Speed:615 MHZ Intended Speed:615MHZ Min Speed:615MHZ Microcode Patch Level:500010d -----Cache per Core----- L1 Instruction Cache: 32 KB/2-way L1 Data Cache:32 KB/2-way L2 Cache:512 KB/16-way No L3 Cache Present	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

显示CPU的相关信息。注意，CPU的Socket，Speed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。

➤ IDE Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
IDE Configuration SATA Port0 Not Present SATA Port1 Not Present SATA Port2 Not Present SATA Port3 Not Present	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

SATA Port0~3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。

➤ USB Configuration

Aptio Setup Utility - Copyright (C) 2012 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&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 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) 2012 American Megatrends, Inc.	
Advanced	
Super IO Configuration ▶Serial Port 0 Configuration ▶Serial Port 1 Configuration ▶Serial Port 2 Configuration ▶Serial Port 3 Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

1. Serial Port Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 0~3 Configuration	→←: Select Screen
Serial Port [Enabled]	↑↓: Select Item
Device Settings IO=3F8h; IRQ=4;	Enter: Select
	+/-: Change Opt
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save&Exit
	ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

* Serial Port0~3

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。

➤ H/W Monitor

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
PC Health Status	→←: Select Screen
SYS Thermistor Temp : +26 C	↑↓: Select Item
SysFan Speed : N/A	Enter: Select
Vcore : +1.152 V	+/-: Change Opt
VIN2 (V3.3) : +3.328 V	F1: General Help
VIN0 (V5.0) : +5.058 V	F2: Previous Values
VBAT : +3.296 V	F3: Optimized Defaults
	F4: Save&Exit
	ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

显示当前所侦测到得硬件的电压，温度等监控信息。

1. 1. SYS Thermistor Temp

当前系统温度，一般主板上热敏电阻监测。

2. SYSFan Speed

风扇转速监测。

3. Vcore

CPU核心电压。

4. V3.3/ V5.0

开关电源输出电压。

5. VBAT

CMOS电池电压。

➤ HDD Latency Time

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
HDD Latency Time	[Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

1. HDD Latency Time

设置硬盘检测延时的时间。此选项一般在使用大硬盘时，根据需求适当地做调整，以确保大硬盘工作正常。

◆ Chipset

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
<ul style="list-style-type: none"> ▶ North Bridge LVDS Config Select ▶ South Bridge 	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

➤ North Bridge LVDS Config Select

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
North Bridge LVDS Config Select DPO Output Mode [LVDS] DP1 Output Mode [Single-Link DVI-D] LVDS Panel Config Select [LVDS Option1 800*600] EDID Panel Option [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.00.1201. Copyright (C) 2008, American Megatrends, Inc.	

1. DPO Output Mode

设置DPO显示模式。

2. DP1 Output Mode

设置DP1显示模式。

3. LVDS Panel Config Select

此选项用于选择Flat Panel的分辨率。

4. EDID Panel Option

EDID是否支持。

➤ **South Bridge**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
<ul style="list-style-type: none"> ▶ SB SATA Configuration ▶ SB USB Configuration ▶ SB HD Azalia Configuration ▶ SB HardWare Monitor 	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

6. SB SATA Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB Sata Configuration OnChip Sata Channel [Enabled] OnChip Sata Type [Native IDE]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

* OnChip SATA Channel

此选项用于打开或关闭 S A T A 控制器。

* ONChip Sata Type

配置 SATA 设置的类型。

7. SB U S B Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB U S B Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
OHCI HC (bus0 device18 fun0) [Enabled]	
USB Port 0 [Enabled]	
USB Port 1 [Enabled]	
USB Port 2 [Enabled]	
USB Port 3 [Enabled]	
USB Port 4 [Enabled]	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

* OHCI HC (bus0 device18 fun0)

此选项用于按控制器方式来打开或关闭。

* USB Port 0~4

此选项用于打开关闭 USB Port0~4。

8. SB HD Azalia Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB HD Azalia Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
HD Audio Azalia Device [Enabled]	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

* HD Audio Azalia Device

此选项用于打开或关闭声卡控制器。

9. SB Hardware Monitor

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB Hardware Monitor CPU Temperature : +26 C CPUFAN1 Speed :N/A	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

* CPU Temperature

显示侦测的CPU温度

* CPUFAN1 Speed

显示CPU转速

◆ Boot

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Boot Configuration Quiet Boot [Disabled] Fast Boot [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Boot Option Priorities Boot Option #1 [Built-in EFI Shell]	
Hard Drive BBS Priorities ► CSM parameters	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

➤ **Quiet Boot**

Boot模式选择开关，用于打开或关闭Quiet Boot功能。

➤ **FAST Boot**

快速启动的开关。

➤ **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。

➤ ▶ **CSM parameters**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Save & Exit		
Launch CSM	[Enabled]	→←: Select Screen
Boot option filter	[UEFI and Legacy]	↑↓: Select Item
Launch PXE Oproam policy	[UEFI only]	Enter: Select
Launch storage Oproam policy	[UEFI only]	+/-: Change Opt
Launch Video Oproam policy	[Legacy only]	F1: General Help
Other PCI device Rom priority	[UEFI only]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save&Exit
		ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

➤ **Lanuch CSM**

打开或关闭CSM功能。

➤ **Boot option filter**

启动设备启动方式选择。

➤ **Launch PXE Oproam policy**

PXE Option ROM启动方式选择。

➤ **Launch storage Oproam policy**

存储设备Option ROM启动方式选择。

➤ **Launch Video Oprom policy**

显示设备Option ROM启动方式选择。

➤ **Other PCI device Rom priority**

其它PCI设备Option ROM启动方式选择。

◆ **Security**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main Advanced Chipset Boot Security Save & Exit					
<p>Password Description</p> <p>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. The Password length must be in the following range:</p> <table> <tr> <td>Minimum length</td> <td>3</td> </tr> <tr> <td>Maximum length</td> <td>20</td> </tr> </table> <p>Administrator Password User Password</p>	Minimum length	3	Maximum length	20	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Minimum length	3				
Maximum length	20				
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.					

➤ **Setup Administrator Password**

此项用于设置管理员密码。

➤ **User Password**

此项用于设置普通用户密码。

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；

◆ **Save & Exit**

Aptio Setup Utility - Copyright (C) 2010 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	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 1.28.1119. Copyright (C) 2010, 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**

回复用户默认值。

➤ **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。

3.4 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。

◆ 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
010h - 001Fh	主板资源
020h - 021h	可编程中断控制器
022h - 03Fh	主板资源
040h - 043h	系统计时器
44h - 5fh	主板资源
61h	系统 speaker
62h-63h	主板资源
65h-6fh	主板资源
070h - 071h	系统 CMOS/实时时钟
72h-EFh	主板资源
0F0h - 0FFh	数据数值处理器
274h-277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2E8h - 2EFh	通信端口 4
2F8h - 2FFh	通信端口 2
3B0h - 3BBh	AMD Radeon HD 6250 Graphics
3C0h - 3DFh	AMD Radeon HD 6250 Graphics
3E8h - 3EFh	通信端口 3

3F8h - 3FFh	通信端口 1
40bh - 91fh	主板资源
A79h	ISAPNP Read Data Port
B20h- CDfh	主板资源
D00h - 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	标准 101/102 键或 Microsoft 键盘
IRQ2	保留
IRQ3	通信端口 2
IRQ4	通信端口 1
IRQ5	保留
IRQ6	保留
IRQ7	保留
IRQ8	系统 CMOS/实时时钟
IRQ9	Microsoft ACPI-Compliant System
IRQ10	通信端口 4
IRQ11	通信端口 3
IRQ12	PS/2 鼠标
IRQ13	数据数值处理器
IRQ14	保留
IRQ15	保留

4. 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。

5. 附录

5.1 BPI简介

EVOC BPI (BIOS Programming Interface) 是一种跨平台的，易维护的，支持操作系统保护模式下访问硬件的软件接口规范。本产品的功能是为应用层软件或驱动提供统一的标准接口，在主板硬件升级时，无需修改应用层软件或驱动，原来的软件就可新的平台上正常运行。大大提高产品的开发速度和降低产品的维护成本。目前 BPI 支持 WDT，GPIO 的配置及 H/W monitor 功能，其测试程序及库函数等相关文档详见说明书光盘。

BPI 具有如下特点：

1、 平台无关性

使用 BPI 库函数开发的软件，无需做任何修改，就可直接在支持 BPI 功能的新平台上正常运行。

2、 安全性和可靠性高

访问硬件的 BPI 库函数由主板开发商编写，并经过严格测试，可避免因对系统硬件操作不当，造成系统异常问题。

3、 配置灵活

如 GPIO 配置，通过 BPI 库函数或测试程序，用户可很方便地配置任意一个 GPIO 功能。

4、 易维护

传统方式的 WDT 及 GPIO 编程与硬件密切相关，测试及调试复杂，且需要维护不同平台的软件，而使用 BPI 开发的软件，只要维护一套软件即可。

5、 成本低

用户使用 BPI 开发应用程序，不会增加额外的硬件和软件成本。相反会大大降低软件开发难度，缩短开发周期，可帮助系统集成商产品快速上市。

5.2 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：可能是由于在插拔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>

Legal Information

Warnings


Please pay attention to the tips within the manual so as to avoid personal injury or property losses. The tips for personal injury are indicated in warning triangles while the tips only related to property losses have no warning triangles. The warning tips are listed as follows with the hazardous scale from severe to slight.

 Danger

If handled carelessly, death or severe human injury will occur.

 Warning
--

If handled carelessly, death or severe human injury might occur.
--

 Caution
--

Warning triangle indicates that slight human injury might occur if handled carelessly.
--

Note

Unexpected result or status might occur, if not handled according to the tips.
--

Professional Personnel

The product/system covered by the manual can only be handled by qualified and professional personnel. During operation, please follow the respective instructive manuals, especially the safety warnings. The professional personnel have been trained and possess relevant experiences; therefore, he/she could be aware of the risks of the product/system and avoid possible damages.

EVOC Product

Please pay attention to the following instructions:

 Warning
--

EVOC product can only be used according to the descriptions within the manual, including the contents and the relevant technical documents. If the products or components from other companies are required, please get the recommendation and grant from EVOC first. Proper transportation, storage, assembly, installation, debugging, operation and maintenance are prerequisite to ensure product safety and normal operation; therefore, please ensure permitted environment conditions and pay attention to the tips within the manual.



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Please visit our website: <http://www.evoc.com> for more information, or send an email to the Technical Support Mailbox support@evoc.com (International) or support@evoc.cn (Domestic) for consultation.

Hotline: 4008809666

About this manual

Scope of the Manual


The manual is appropriate for EVOC 104-1815CLD2NA.

Convention

The term “the board” or “the Product” within the manual usually stands for EVOC 104-1815CLD2NA.

Instructions

Safety instructions

To avoid property losses or individual injury, please pay attention to the safety instructions within the manual. The warnings within the manual are marked with warning triangle , whose existence is dependent upon the scale of the potential hazard.

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1. Product Introduction

1.1 Overview

104-1815CLD2NA is an embedded PC/104 structure industrial motherboard based on AMD embedded G-series processor + AMD A55E chipset. The motherboard features complete functions, multiple ports, wide temperature, high reliability and low power consumption. This product can be widely used in a wide range of embedded fields, such as traffic and transportation, vending machine, instrumentation and industrial sites, etc. Its main features are as follows:

- ◆ PC/104 bus single board structure;
- ◆ Supports AMD T16R 615M, T40E 1.0G, T56E 1.65G CPU;
- ◆ AMD G Series APU + AMD A55E;
- ◆ Onboard 1G/2G DDRIII memory;
- ◆ Supports VGA, LVDS, DVI/TTL (optional) dual display;
- ◆ Provides 2 x 100/1000Mbps Ethernet controller;
- ◆ Provides 2 x SATA interface and 1 x CF card slot;

In addition, the product provides 4 x USB port, 4 x COM port (one supports RS-232 and RS-485 optional), 1 x audio port, 1 x keyboard/mouse/reset multi-function port and Watchdog timer.

1.2 Mechanical Dimensions, Weight and Environment

- Dimensions: 116mm(L) x 97mm(W) x 23.5mm(H)(including heat sink)
- Net weight: 0.44Kg;
- Operating environment:

Temperature: 0°C ~ 60°C; extendable to: -40°C ~ 85°C

Humidity: 5% ~ 95% (non-condensing)

- Storage environment:

Temperature: $-45^{\circ}\text{C}\sim 85^{\circ}\text{C}$

Humidity: 5%~95% (non-condensing)

1.3 Typical Power Consumption

The typical power consumption is based on the following configuration in idle status.

CPU: AMD G-T16R Processor 615M

Memory: onboard DDR3 1GB Samsung K4B1G0846G-BCH9

- +5V@1.96A; +5%/-3% (standby);

CPU: AMD G-T65E Processor 1.65GHz

Memory: onboard DDR3 2GB Samsung K4B2G0846D-HCH9

- +5V@2.122A; +5%/-3% (standby);

1.4 Microprocessor

Supports AMD T16R(single core) 615MHz, T40E(dual core) 1.0GHz, T56E(dual core) 1.65GHz;

1.5 Chipset

AMD G Series APU + AMD A55E.

1.6 System Storage

Onboard 1G(when onboard T16R CPU is used) or 2G DDRIII memory (when onboard T40E or T56E CPU is used).

1.7 Display

- Supports VGA, LVDS, DVI and TFT LCD(optional) display;

- Supports combined dual display of VGA+LVDS, VGA+DVI or VGA+TTL, VGA+DVI;
- Supported resolutions and refresh rates are 800×600@60Hz, 1024×768@60Hz, 1920×1200@60Hz; that supported by LVDS is 1024×600@60Hz; that supported by DVI is 1920×1200@60Hz; that supported by LCD is 800×600@60Hz.

Note: Setup of display resolution: If WINDOWS users find that the display resolution cannot be modified, please enter into Display Properties—Settings—Advanced—Display Settings interfaces of the system, and remove the tick before “Hide Modes That This Monitor Cannot Display”, then press “Confirm” to finish the setting.

1.8 Network Function

This board integrates two 100/1000Mbps Ethernet controllers to provide users with a high-speed and stable network platform.

1.9 Audio

The product integrates one standard HDA sound chip, delivering excellent sound effect.

1.10 Power Feature

+5V single power supply.

1.11 Expansion Bus

1 x PCI-104 expansion bus slot and 1 x PC/104 expansion bus slot.

1.12 Watchdog

- 1~255 levels, programmable interrupt;
- 1~255 timeout event reset system;
- 1(second/minute) resolution down counter.

1.13 Operating System

- Supported operating systems: WINDOWS XP, WINDOWS 7, LINUX.

1.14 I/O ports

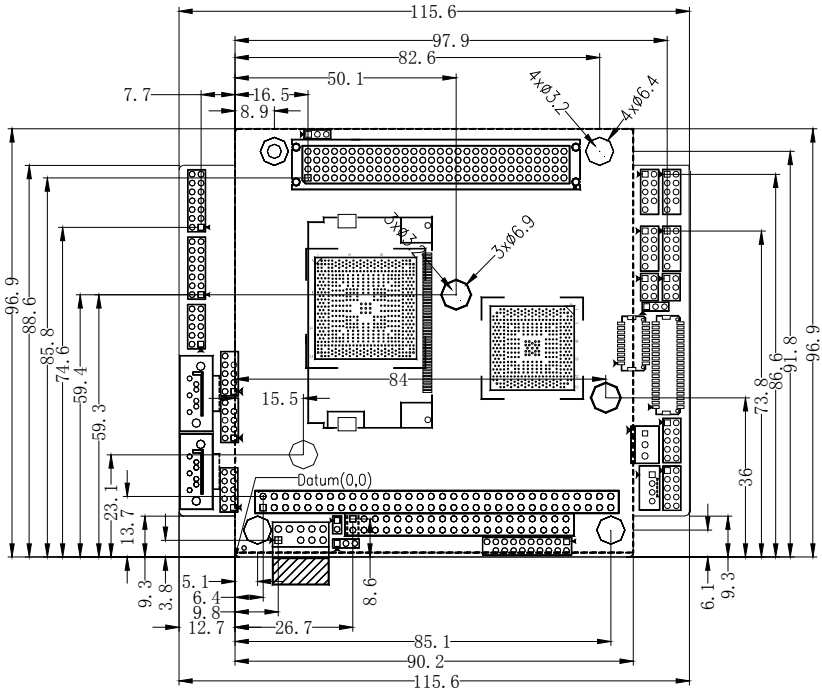
- 4 x COM port (one supports RS-232/RS-485 optional)
- 1 x HDA audio port
- 4 x USB2.0 port
- 1 x keyboard/mouse/buzzer/reset multifunction port

Tips: how to identify the alarms

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

2. Installation Instructions

2.1 Product Dimensions Drawing

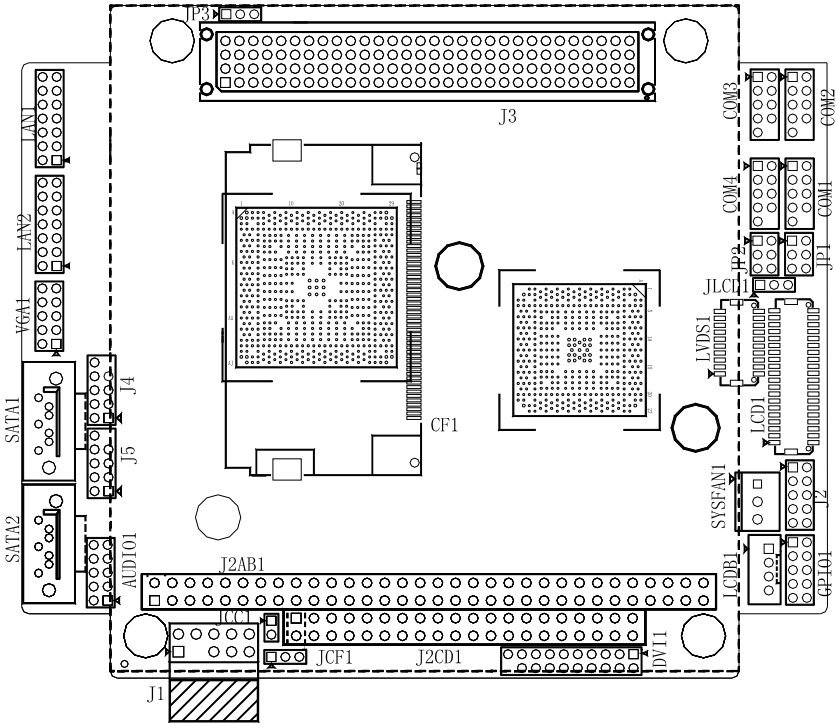


Unit: mm

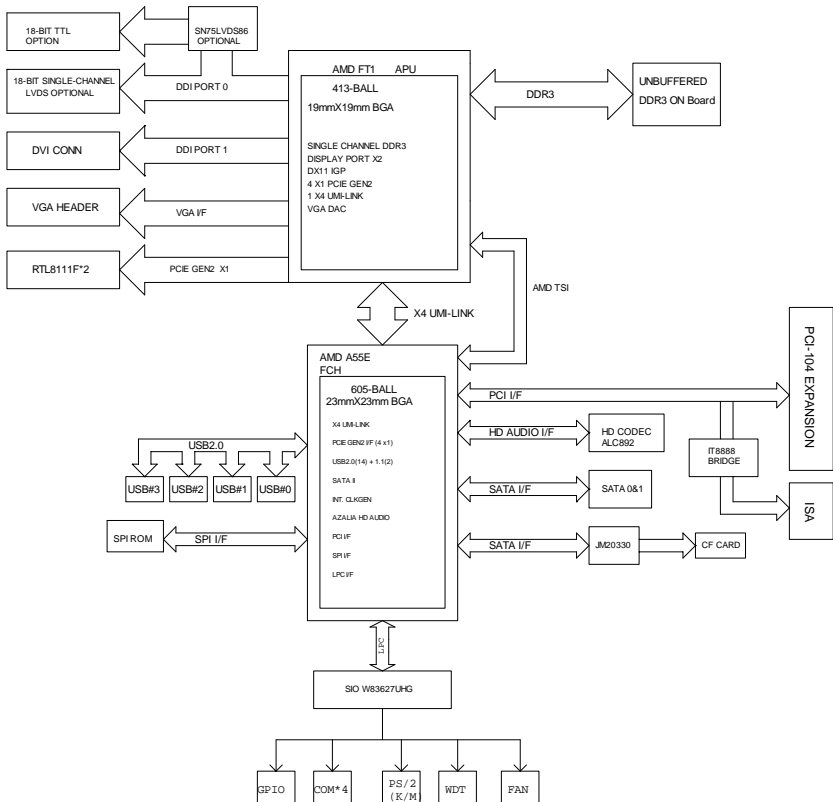
Warning!

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 for this board.

2.2 Port Location



2.3 Structure Diagram




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: usually the square pad is the first pin.

2.4 Jumper Setting

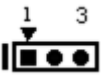
1. JCC1: Clear/Keep CMOS Setting (Pitch: 2.0mm)

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

 JCC1	Setup	Function
	1-2 Open	Normal (Default)
	1-2 Short	Clear the contents of CMOS and all BIOS settings will restore to factory default values.


2. JLCD1: Select LCD Operating Voltage (Pitch: 2.0mm)

Different LCD screens have different voltages; the board provides two voltage options, +3.3V and +5V. Only when the selected LCD voltage is in accord with the LCD screen operating voltage in use, can the LCD screen operate normally. Please set as follows:


 JLCD1	Setup	Function
	1-2 Short	+3.3V(default)
	2-3 Short	+5V

3. JP1/JP2: Select RS-232/RS-485 Mode for COM3 (Pitch: 2.0mm)


COM3 supports RS-232/RS-485 modes; and the mode selection can be realized by setting JP1 and JP2.

 JP1/JP2	Pin	RS-232 (Default)	RS-485
	JP1	1-2	3-4
	JP2	1-3	3-5
	JP2	2-4	4-6

4. JP3: VIO Voltage Selection for PCI-104 expansion slot (pitch: 2.0mm)

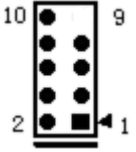
 JP3	Setup	Function
	1-2 Short	+3.3V(default)
	2-3 Short	+5V

5. JCF1: Voltage Selection for CF Card Slot (pitch: 2.0mm)

 JCF1	Setup	Function
	1-2 Short	+3.3V
	2-3 Short	+5V(default)

2.5 USB Port

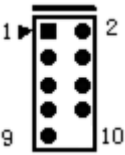
J4/J5 are 2×5Pin (pitch: 2.0) USB pin headers. Converter cable must be used to connect the port signal to standard socket. Their pin definitions are as follows:

 J4 (USB1/USB2) J5 (USB3/USB4)	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_CHAS

2.6 COM Ports

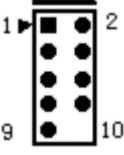
(1) COM3 port: RS-232 or RS-485

COM3 is a 2×5Pin (pitch: 2.0) COM port pin header. This COM port can select RS-232 or RS-485 mode by JP1 and JP2. Converter cables must be used to connect the port signals to standard sockets. Their pin definitions are as follows:

 <p>COM3</p>	Pin	RS-232/ RS-485 mode signal name	Pin	RS-232/ RS-485 mode signal name
	1	DCD#/DATA-	2	RXD/DATA+
	3	TXD/NC	4	DTR#/NC
	5	GND	6	DSR#/NC
	7	RTS#/NC	8	CTS#/NC
	9	RI#/NC	10	NA

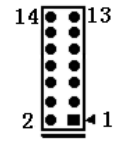
(2) COM1, COM2 and COM4 ports: RS-232

COM1, COM2 and COM4 ports are three 2×5Pin (pitch: 2.0) RS-232 pin headers. Converter cables must be used to connect the port signals to standard sockets. Their pin definitions are as follows:

 <p>COM1, 2, 4</p>	Pin	Signal Name	Pin	Signal Name
	1	DCD#	2	RXD
	3	TXD	4	DTR#
	5	GND	6	DSR#
	7	RTS#	8	CTS#
	9	RI#	10	NA

2.7 Network Port

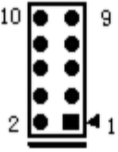
LAN1 and LAN2 are two 2×7Pin (pitch: 2.0) network port pin headers. The pin header ports are 100Mbps/1000 Mbps Ethernet ports on the motherboard. Converter cables must be used to connect the port signals to standard sockets. Their pin definitions are as follows:

 <p>LAN1/LAN2</p>	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	LINK1000-	12	LINK100-
	13	ACT LED+	14	ACT LED-

2.8. Display Ports

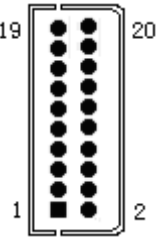
1. VGA Port

VGA1 is a 2×5Pin (pitch: 2.0) VGA pin header. Its pin definitions are as follows:

 <p>VGA1</p>	Pin	Signal Name	Pin	Signal Name
	1	VSYNC	2	HSYNC
	3	DDCDATA	4	Red
	5	DCCCLK	6	Green
	7	NC	8	Blue
	9	GND	10	GND

2. LVDS Port

LVDS1 is a single-channel 18bit LVDS port (pitch: 1.0 mm). Its pin definitions are as follows:

 <p>LVDS1</p>	Pin	Signal Name	Pin	Signal Name
	1	LVDS D0+	2	LVDS D0-
	3	GND	4	GND
	5	LVDS D1+	6	LVDS D1-
	7	GND	8	GND
	9	LVDS D2+	10	LVDS D2-
	11	GND	12	GND
	13	CLK+	14	CLK-
	15	GND	16	GND
	17	NC	18	NC
	19	VDD	20	VDD

3. DVI Port

DVI1 is a 2×10Pin (pitch: 2.0) DVI pin header. Its pin definitions are as follows:

 DVI-I	Pin	Signal	Pin	Signal Name
	1	DATA2-	2	DATA2+
	3	GND	4	GND
	5	DATA1-	6	DATA1+
	7	GND	8	GND
	9	DATA0-	10	DATA0+
	11	GND	12	GND
	13	CLK+	14	CLK-
	15	+5V	16	HPDET
	17	DDCDATA	18	DDCCLK
	19	GND	20	NA

4. TTL Port (optional)

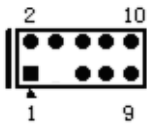
LCD1 is a single-channel 6bit TTL LCD display port (pitch: 1.0 mm). Its pin definitions are as follows:

 LCD1	Pin	Signal Name	Pin	Signal Name
	1	VDD	2	VDD
	3	GND	4	ENAVEE
	5	GND	6	GND
	7	NC	8	NC
	9	B1	10	B0
	11	B3	12	B2
	13	B5	14	B4
	15	NC	16	NC
	17	G1	18	G0
	19	G3	20	G2
	21	G5	22	G4
	23	NC	24	NC
	25	R1	26	R0
	27	R3	28	R2
	29	R5	30	R4
	31	GND	32	GND
	33	VSYNC	34	CLOCK
	35	HSYNC	36	LCD_EN
	37	BKL_EN	38	NC
39	GND	40	NC	

Note: If VGA and LCD dual display is used, please set the refresh rate of display monitor as 60Hz in the system.

2.9 Power Connector

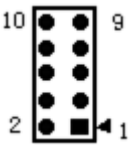
J1 is a 2×5Pin (pitch: 2.54 mm) power supply pin header. Converter cable must be used to connect the port signal to standard socket. Its pin definitions are as follows:

 <p>J1</p>	Pin	Signal Name	Pin	Signal
	1	GND	2	+5V
	3	NA	4	+12V
	5	NC	6	-12V
	7	GND	8	+5V
	9	GND	10	+5V


Note: +5V is operating power supply for the motherboard; Please make sure the operating voltage input to the motherboard is within the range of $5V \pm 5\%$. +12V, -12V, -5V are power supplies for external bus expansion devices or LCD backlight, and users can choose whether to connect them according to the actual situation.

2.10 Audio Ports

This board provides one group of audio ports (pitch: 2.0mm). LINE_OUT can be connected to earphone or speaker with appropriate power. LINE_IN can be connected to audio signal input; MIC_IN can be connected to microphone for audio input. Their pin definitions are as follows:

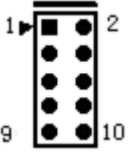
 <p>AUDIO1</p>	Pin	Signal Name	Pin	Signal Name
	1	LINE_OUT_	2	LINE_OUT_
	3	GND_AUDI	4	GND_AUDI
	5	LINE_IN_R	6	LINE_IN_L
	7	GND_AUDI	8	GND_AUDI
	9	MIC1_L	10	MIC1_R

2.11 Fan Connector

 <p>SYSFAN1 (pitch: 2.54mm)</p>	Pin	Signal Name
	1	GND
	2	+5V
	3	FAN_IO


2.12 Multi-function Port

J2 is a 2×5Pin(pitch: 2.0mm) pin header, and is a multifunction port used to connect keyboard, mouse, buzzer and reset. The multifunction port cables configured with the single board computer must be used to connect each port. Its pin definitions are as follows:

 <p>J2</p>	Pin	Signal Name	Pin	Signal Name
	1	SPEAK-	2	+5V
	3	RESET	4	GND
	5	Keyboard Data	6	Keyboard Clock
	7	GND	8	Mouse Clock
	9	+5V	10	Mouse Data

2.13 LCD Backlight Control Port

This board provides one 1×4Pin wafer LCD backlight control port (pitch: 2.0mm). Its pin definitions are as follows:

 <p>LCDDB1</p>	Pin	Signal Name
	1	VCC_LCDBKLT
	2	LCD_BKLTCTL
	3	LCD_BKLTEN
	4	GND

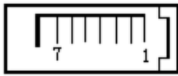
Note: VCC_LCDBKLT---+12V backlight power supply (the current should be limited below 1A);

LCD_BKLTCTL---backlight control (this signal is directly output by CPU, and is PWM signal; voltage amplitude 0V—3.3V, duty cycle is within 0-100%);

LCD_BKLTEN --- backlight enabling signal, active high. (the signal of this board is directly output by CPU, CMOS output; voltage amplitude 0V-3.3V).

2.14 SATA Interface

This motherboard provides two SATA interfaces.

 <p>SATA1, SATA2</p>	Pin	Signal Name
	1	GND
	2	TX+
	3	TX-
	4	GND
	5	RX-
	6	RX+
	7	GND

2.15 Hot-swap of SATA Hard Drive

Notes for hot-swap of SATA hard drive:

1. The hard drive shall support SATA 2.0 and use 15-pin SATA hard drive power connector.
2. The driver of chipset shall support the hot-swap of SATA hard drive.
3. Hot-swap of SATA hard drive where the operating system is located is forbidden when system is powered-on.



Please carry out hot plugging as follows. Improper operation may destroy the hard drive or result in data loss.

SATA hard drive hot plug steps:



Step 1: Please plug the 1x4-pin SATA power connector (white) into the 1x4-pin power cable of power adapter.



Step 2: Please connect the SATA data cable to the SATA interface on the motherboard.



Step 3: Please connect the 15-pin SATA power connector (black) to the SATA hard drive.



Step 4: Please connect the SATA data cable to the SATA hard disk.

Hot unplug steps:

Step 1: Uninstall the hard drive from the device manager.

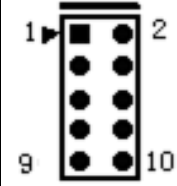


Step 2: Unplug the data cable from the SATA hard drive.



Step 3: Unplug the SATA 15-pin power connector (black) from the SATA hard drive.

2.16 GPIO Port

 <p>GPIO1 (pitch: 2.0mm)</p>	Pin	Signal Name	Pin	Signal Name
	1	GPIO1	2	GPIO5
	3	GPIO2	4	GPIO6
	5	GPIO3	6	GPIO7
	7	GPIO4	8	GPIO8
	9	GND	10	NC

Note: By the factory default, pin 1, 3, 5 and 7 are for GPIO input while pin 2, 4, 6 and 8 are for GPIO output. The factory default state is high level and the voltage range for input/output signal is 0-5V.

2.17 CF Card

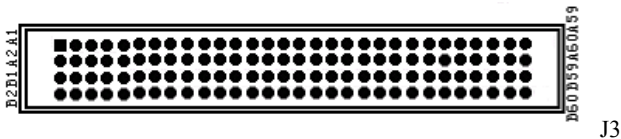
Compact Flash card is a rapid storage card, which is small in size and easy to use. Its storage capacity varies with different cards, like 128M, 256M, etc. CF card can only be inserted in one direction (on the back of the board, and the sign is CF1).

Pin	Signal Name	Pin	Signal Name
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ

13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66_DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

2.18 PCI-104 Expansion Slot

J3 is the PCI-104 expansion slot, which supports up to three PCI devices. Its pin definitions are as follows:

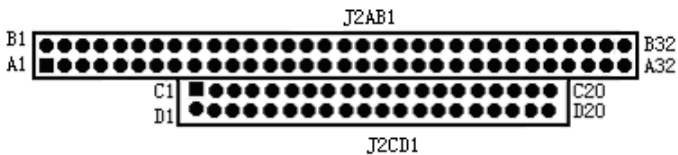


Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	GND	B1	+5V_SB	C1	+5V	D1	AD00
A2	VIO0	B2	AD02	C2	AD01	D2	+5V
A3	AD05	B3	GND	C3	AD04	D3	AD03
A4	C/BE0-	B4	AD07	C4	GND	D4	AD06
A5	GND	B5	AD09	C5	AD08	D5	GND
A6	AD11	B6	VIO1	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1-	C8	AD15	D8	+3.3V
A9	SERR-	B9	GND	C9	PSOEN-	D9	PAR
A10	GND	B10	PERR-	C10	+3.3V	D1	PME-
A11	STOP-	B11	+3.3V	C11	LOCK-	D1	GND

A12	+3.3V	B12	TRDY-	C12	GND	D1	DEVSEL-
A13	FRAME-	B13	GND	C13	IRDY-	D1	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D1	C/BE2-
A15	AD18	B15	+3.3V	C15	AD17	D1	GND
A16	AD21	B16	AD20	C16	GND	D1	AD19
A17	+3.3V	B17	AD23	C17	AD22	D1	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D1	IDSEL2
A19	AD24	B19	C/BE3-	C19	VIO3	D1	IDSEL3
A20	GND	B20	AD26	C20	AD25	D2	GND
A21	AD29	B21	+5V	C21	AD28	D2	AD27
A22	+5V	B22	AD30	C22	GND	D2	AD31
A23	REQ0-	B23	GND	C23	REQ1-	D2	VIO4
A24	GND	B24	REQ2-	C24	+5V	D2	GNT0-
A25	GNT1-	B25	VIO2	C25	GNT2-	D2	GND
A26	+5V	B26	CLK0	C26	GND	D2	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D2	GND
A28	GND	B28	INTD-	C28	+5V	D2	RST-
A29	+12V	B29	INTA-	C29	INTB-	D2	INTC-
A30	-12V	B30	REQ3-	C30	GNT3-	D3	GND

2.19 PC/104 Slot

This motherboard provides one PC/104 slot (J2AB, J2CD). Its pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	IOCHCK#	B1	GND	C1	GND	D1	GND
A2	SD7	B2	RESET	C2	SBHE#	D2	MEMCS16
A3	SD6	B3	+5V	C3	LA23	D3	IOCS16#
A4	SD5	B4	IRQ9	C4	LA22	D4	IRQ10
A5	SD4	B5	-5V	C5	LA21	D5	IRQ11
A6	SD3	B6	DRQ2	C6	LA20	D6	IRQ12
A7	SD2	B7	-12V	C7	LA19	D7	IRQ15
A8	SD1	B8	SRDY#	C8	LA18	D8	IRQ14
A9	SD0	B9	+12V	C9	LA17	D9	DACK0#



A10	IOCHRDY	B10	KEY	C10	MEMR#	D10	DRQ0
A11	AEN	B11	SMEMW#	C11	MEMW#	D11	DACK5#
A12	SA19	B12	SMEMR#	C12	SD8	D12	DRQ5
A13	SA18	B13	IOW#	C13	SD9	D13	DACK6#
A14	SA17	B14	IOR#	C14	SD10	D14	DRQ6
A15	SA16	B15	DACK3#	C15	SD11	D15	DACK7#
A16	SA15	B16	DRQ3	C16	SD12	D16	DRQ7
A17	SA14	B17	DACK1#	C17	SD13	D17	+5V
A18	SA13	B18	DRQ1	C18	SD14	D18	MASTER#
A19	SA12	B19	REFRESH#	C19	SD15	D19	GND
A20	SA11	B20	BCLK	C20	KEY	D20	GND
A21	SA10	B21	IRQ7				
A22	SA9	B22	IRQ6				
A23	SA8	B23	IRQ5				
A24	SA7	B24	IRQ4				
A25	SA6	B25	IRQ3				
A26	SA5	B26	DACK2#				
A27	SA4	B27	TC				
A28	SA3	B28	BALE				
A29	SA2	B29	+5V				
A30	SA1	B30	OSC				
A31	SA0	B31	GND				
A32	GND	B32	GND				

3. BIOS Setup

3.1 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.

3.2 UEFI Parameter Setup

Prompt message for UEFI 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 <ESC>) 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.

3.3 Basic Function Setting for UEFI

After starting SETUP program, the main interface of Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. will appear:

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc. Copyright		
Main Advanced Chipset Boot Security Save & Exit		
Motherboard Information Project Name 104-1815CLD2NA BIOS Name Q9169000 BIOS Version A00 Build Date 11/15/2012 14:24:10 Memory Information Total Memory 1008 MB (DDR3) System Date [Mon 11/01/2009] System Time [00:47:55] Access Level Administrator	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&Exit ESC: Exit	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

◆ **Main**

➤ **System Date**

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) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
<p>WARNING: Setting wrong values in below sections may cause system to malfunction !</p> <ul style="list-style-type: none"> ▶ CPU Configuration ▶ IDE Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor ▶ HDD Latency Time 	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

➤ **CPU Configuration**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<p>CPU Configuration</p> <p>Module Version:4.6.3.7 OntarioPI 030 AGESA Version:1.2.0.0</p> <p>▶Node 0 Information</p>	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Socket0: AMD G-T16R Processor Single Core Running @622 MHz 962 mV Max Speed:615 MHZ Intended Speed:615MHZ Min Speed:615MHZ Microcode Patch Level:500010d -----Cache per Core----- L1 Instruction Cache: 32 KB/2-way L1 Data Cache:32 KB/2-way L2 Cache:512 KB/16-way No L3 Cache Present	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

Display the relevant information of CPU. Note: the corresponding information of the CPU (e.g. Socket, Speed) is related to the CPU installed in the platform; different series of CPUs will display different information.

➤ IDE Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.									
Advanced									
IDE Configuration <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">SATA Port0</td> <td style="text-align: center;">Not Present</td> </tr> <tr> <td>SATA Port1</td> <td style="text-align: center;">Not Present</td> </tr> <tr> <td>SATA Port2</td> <td style="text-align: center;">Not Present</td> </tr> <tr> <td>SATA Port3</td> <td style="text-align: center;">Not Present</td> </tr> </table>	SATA Port0	Not Present	SATA Port1	Not Present	SATA Port2	Not Present	SATA Port3	Not Present	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
SATA Port0	Not Present								
SATA Port1	Not Present								
SATA Port2	Not Present								
SATA Port3	Not Present								
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.									

SATA Port0~3 dynamically detect whether there is a SATA device connected to the motherboard. If a device is connected to a SATA port, the model of the SATA device will be displayed. Otherwise, Not Present is displayed.

➤ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<p>USB Configuration</p> <p>USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs</p> <p>Legacy USB Support [Enabled]</p>	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Version 2.15.1234 Copyright (C) 2012 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) 2012 American Megatrends, Inc.	
Advanced	
<p>Super IO Configuration</p> <ul style="list-style-type: none"> ▶ Serial Port 0 Configuration ▶ Serial Port 1 Configuration ▶ Serial Port 2 Configuration ▶ Serial Port 3 Configuration 	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
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1. Serial Port Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 0~3 Configuration Serial Port [Enabled] Device Settings IO=3F8h; IRQ=4;	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
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* Serial Port0~3

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

* Device Settings

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

➤ H/W Monitor

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
PC Health Status SYS Thermistor Temp : +26 C SysFan Speed : N/A Vcore : +1.152 V VIN2(V3.3) : +3.328 V VIN0(V5.0) : +5.058 V VBAT : +3.296 V	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

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

1. SYS Thermistor Temp

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

2. SYSFan Speed

SysFan Speed monitor.

3. Vcore

CPU core voltage.

4.V3.3/ V5.0

Turn on/off the power to output voltage.

5.VBAT

CMOS battery voltage.

➤ **HDD Latency Time**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
HDD Latency Time	[Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

HDD Latency Time

To set HDD detection latency time. When a big HDD is used, this option can make adjustment to suit the actual needs, so as to ensure normal operation of the HDD.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
<ul style="list-style-type: none"> ▶ North Bridge LVDS Config Select ▶ South Bridge 	→←←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

➤ **North Bridge LVDS Config Select**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
North Bridge LVDS Config Select DP0 Output Mode [LVDS] DP1 Output Mode [Single-Link DVI-D] LVDS Panel Config Select [LVDS Option1 800*600] EDID Panel Option [Enabled]	→←←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.00.1201. Copyright (C) 2008,American Megatrends, Inc.	

1. DP0 Output Mode

To set DP0 output mode.

2. DP1 Output Mode

To set DP1 output mode.

3. LVDS Panel Config Select

This option is used to select resolution of Flat Panel.

4. EDID Panel Option

To select whether EDID is supported.

➤ **South Bridge**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
<ul style="list-style-type: none"> ▶ SB SATA Configuration ▶ SB USB Configuration ▶ SB HD Azalia Configuration ▶ SB HardWare Monitor 	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

1. SB SATA Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB Sata Configuration OnChip Sata Channel [Enabled] OnChip Sata Type [Native IDE]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

*** OnChip SATA Channel**

This option is used to enable or disable SATA controller.

*** ONChip Sata Type**

To configure SATA type.

2. SB USB Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
SB USB Configuration		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
OHCI HC (bus0 device18 fun0)	[Enabled]	
USB Port 0	[Enabled]	
USB Port 1	[Enabled]	
USB Port 2	[Enabled]	
USB Port 3	[Enabled]	
USB Port 4	[Enabled]	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

* OHCI HC (bus0 device18 fun0)

This option is used to enable or disable in the controller mode.

* USB Port 0~4

This option is used to enable or disable USB Port0~4.

3. SB HD Azalia Configuration

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
SB HD Azalia Configuration		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
HD Audio Azalia Device	[Enabled]	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

* HD Audio Azalia Device

This option is used to enable or disable audio card controller.

4. SB Hardware Monitor

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
SB Hardware Monitor CPU Temperature : +26 C CPUFAN1 Speed : N/A	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

*** CPU Temperature**

To display detected CPU temperature.

*** CPUFAN1 Speed**

To display CPU fan speed.

◆ Boot

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Boot Configuration Quiet Boot [Disabled] Fast Boot [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit
Boot Option Priorities Boot Option #1 [Built-in EFI Shell]	
Hard Drive BBS Priorities ► CSM parameters	
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.	

- **Quiet Boot**
Boot mode selection switch, used to enable or disable Quiet Boot function.
- **FAST Boot**
Switch for fast boot.
- **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.
- **► CSM parameters**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.		
Main	Advanced	Chipset Boot Security Save & Exit
Launch CSM	[Enabled]	→←: Select Screen
Boot option filter	[UEFI and Legacy]	↑↓: Select Item
Launch PXE OproM policy	[UEFI only]	Enter: Select
Launch storage OproM policy	[UEFI only]	+/-: Change Opt
Launch Video OproM policy	[Legacy only]	F1: General Help
Other PCI device Rom priority	[UEFI only]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save&Exit
		ESC: Exit
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.		

- **Launch CSM**
To enable or disable CSM function.
- **Boot option filter**
To select boot option for boot device.
- **Launch PXE OproM policy**
To select boot option for PXE Option ROM.
- **Launch storage OproM policy**

To select boot option for storage device Option ROM.

➤ **Launch Video Oprom policy**

To select boot option for video device Option ROM.

➤ **Other PCI device Rom priority**

To select boot option for other PCI device Option ROM.

◆ **Security**

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.					
Main Advanced Chipset Boot Security Save & Exit					
<p>Password Description</p> <p>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. The Password length must be in the following range:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Minimum length</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Maximum length</td> <td style="text-align: right;">20</td> </tr> </table> <p>Administrator Password User Password</p>	Minimum length	3	Maximum length	20	<p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: Exit</p>
Minimum length	3				
Maximum length	20				
Version 2.15.1234 Copyright (C) 2012 American Megatrends, Inc.					

➤ **Setup Administrator Password**

This option is used to set 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;

◆ **Save & Exit**

Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Save & Exit		
Save Changes and Exit	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save&Exit ESC: 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		
Version 1.28.1119. Copyright (C) 2010,American Megatrends, Inc.		

➤ **Save Changes and Exit**

The option is used to save changes and exit Setup program. If the changes only take effect after reboot, the system will be automatically rebooted.

➤ **Discard Changes and Exit**

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

➤ **Save Changes and Reset**

This option is used to save changes and reset.

➤ **Discard Changes and Reset**

This option is used to discard changes and reset.

➤ **Save Changes**

To save changes.

➤ **Discard Changes**

To discard changes.

➤ **Restore Defaults**

To restore defaults.

➤ **Save as User Defaults**

To save as user defaults.

➤ **Restore User Defaults**

To restore user defaults.

➤ **Boot Override**

This option lists all the boot options, and users can select one of them and press <Enter> to load the option.

3.4 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 the I/O connectors used in X86 platform.

Address	Device Description
000h - 000Fh	DMA Controller#1
010h - 001Fh	Motherboard resource
020h - 021h	Programmable Interrupt Controller
022h - 03Fh	Motherboard resource
040h - 043h	System Timer
44h - 5fh	Motherboard resource
61h	System speaker
62h-63h	Motherboard resource
65h-6fh	Motherboard resource
070h - 071h	System CMOS/Real Time Clock
72h-EFh	Motherboard 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	AMD Radeon HD 6250 Graphics
3C0h – 3DFh	AMD Radeon HD 6250 Graphics

3E8h – 3EFh	COM3
3F8h – 3FFh	COM1
40bh - 91fh	Motherboard resource
A79h	ISAPNP Read Data Port
B20h- CDfh	Motherboard resource
D00h – 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 assigned to other devices. ISA device requests exclusive use of its interrupt. Only the plug and play ISA devices can be assigned by the UEFI or the OS. And several PCI devices share one interrupt, which is assigned by UEFI or OS. Interrupt assignment of some devices of X86 platform is shown in the table below, 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 Keyboard
IRQ2	Reserved
IRQ3	COM 2
IRQ4	COM 1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	Microsoft ACPI-Compliant System
IRQ10	COM4
IRQ11	COM3
IRQ12	PS/2 mouse
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Reserved

4. Installing the Drivers

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

5. Appendix

5.1 BPI Overview

EVOC BPI (BIOS Programming Interface) is a cross-platform, easy-to-maintain software interface specification, which supports access to hardware under the Protected Mode of the operating system. The function of the product is to provide a unified standard interface for the application software or driver; therefore, when the hardware of the motherboard is upgraded, there is no need to modify the application software or driver and the former software can operate on the new platform normally. It has greatly sped up the product development and reduced the maintenance cost. Currently, BPI supports the configuration of WDT and GPIO as well as H/W monitor function. As for the test program and function library, please refer to the relevant documents in the enclosed CD.

Features of the BPI include:

1. Platform Irrelevant

The software developed by BPI function library can operate on a new platform, supporting BPI function, normally without making any modification.

2. Security and High Reliability

The BPI function library accessing the hardware is programmed by the motherboard developer and is strictly tested; therefore, it can avoid system malfunction caused by improper operation of the system hardware.

3. Flexible Configuration

Take GPIO configuration as an example, users may conveniently configure an arbitrary GPIO function by BPI function library or test program.

4. Easy Maintenance

Traditional WDT and GPIO programming are closely related to the hardware with complicated test and debug process and software of different platforms; however, the software developed by BPI only requires one set of the maintenance software.

5. Low Cost

Developing the applications by BPI will not result in additional hardware and software cost, but it will reduce the development difficulty, development cycle and time-to-market for the system integrator.

5.2 Troubleshooting and Solutions

No.	Phenomenon	Troubleshooting and Solution
1	BIOS setting cannot be saved	<p>Analysis: it could be the problem of the CMOS battery.</p> <p>Solution: measure the CMOS battery with a multi-meter; if the voltage is insufficient, replace the battery; re-set the BIOS and save again.</p>
2	The computer can only be powered-on occasionally	<p>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.</p> <p>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 exits.</p>
3	When connecting with a USB flash drive, the system prompts that a high-speed device has been connected with a low-speed connector.	<p>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.</p> <p>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.</p>
4	The screen has no display after replacing with a new memory and cannot enter system; even when	<p>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.</p>

	<p>the former memory is re-installed, the system cannot be booted as well.</p>	<p>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.</p>
<p>5</p>	<p>The system cannot be booted after replacing a CD-ROM.</p>	<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>
<p>6</p>	<p>No PCI card can be detected after entering the system.</p>	<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,</p>

		<p>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	<p>No peripheral devices can be detected.</p>	<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>