

EC5-1712CLDNA(B)

Embedded Single Board Computer with
CPU/LVDS/VGA/SSD/LAN/AUDIO

Version: C00

Announcement

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Before purchasing, please have a detailed understanding of the product performance to see whether it meets your requirements.

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Safety Instructions

1. Please carefully read the users' manual before handling the product;
2. For the board which is not ready to be installed, please put it in the anti-static packaging;
3. 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;
4. Please wear static protective gloves when holding the board; and always hold the board by edges;
5. 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;
6. Before removing the boards or PC boxes, firstly turn off all power resources and unplug the power cable from power source;
7. For PC Box products, when inserting or removing boards, please disconnect the AC power in advance;
8. Before connecting or disconnecting any device, make sure all power cables are unplugged in advance;
9. To avoid unnecessary damage caused by turning on/off computer frequently, wait at least 30 seconds before re-turning on the computer.

Contents

Chapter 1 Product Introduction	1
Overview	1
Mechanical Dimension, Weight and Environment.....	1
Typical Power Consumption	2
Microprocessor	2
Chipset	2
System Memory	2
Video Function.....	2
Network Function.....	2
Audio Function	2
Expansion Bus	3
CF Card	3
Power Feature	3
Watchdog Function.....	3
I/O Interfaces	3
Chapter 2 Installation.....	4
Product Outline	4
Locations of Interfaces	5
Motherboard Structure.....	6
Jumper Settings.....	7
Install System Memory.....	8
Video Interface.....	9
LCD Backlight Control Interface	11
SATA Interface.....	11

Hot-swap of SATA Hard Disk.....	11
IDE Interface	13
USB Interface	15
Keyboard/Mouse Interface	15
Parallel Port.....	16
Serial Port.....	16
Network Interface	18
Audio Interface.....	19
Digital I/O Interface.....	19
Power Interface.....	19
Fan Interface.....	21
Status Indicating Control Interface.....	21
CF Card.....	22
PCI Interface	23
Install CPU	25
Install CPU Fan	25
Chapter 3 BIOS Setup	26
BIOS Overview	26
BIOS Parameter Setup	26
BIOS Basic Function Setup.....	27
The System Resources Managed by BIOS under x86 Platform	39
Chapter 4 Install the Drivers	42
Appendix	43
Watchdog Programming Guide.....	43
Digital IO Programming Guide	45

Chapter 1 Product Introduction

Overview

EC5-1712CLDNA(B) adopts Intel®910GMLE+ICH6M chipset with low power consumption and high performance, on-board Intel® Celeron® M/1.0G CPU, and supports Intel® Pentium® M/1.8G CPU. This board provides one 200Pin DDR2 400M SO-DIMM memory slot; supports CRT+LVDS dual-display; provides two SATA and one 40Pin standard ATA-100IDE interface, one Compact Flash interface, four USB2.0, six RS-232 serial ports (one of which supports RS-232/RS-422/RS-485 mode selection), one 10/100/1000Mbps network interface, one Mini-PCI interface, Intel® WirelessLAN wireless module can be expanded, Mini-PCI can also provide customer-defined expansion of PCI device such as encrypt card; one PICMG1.0 PCI expansion golden finger, supports AT/ATX and single 12V optional configuration.

EC5-1712CLDNA(B) has high performance, low consumption and abundant interfaces, so that users can use it directly without adding any parts. It can be widely used in the embedded fields such as network safety, information appliance, instruments, military affairs, multi-media inquiring and intelligent products, etc.

Mechanical Dimension, Weight and Environment

- Dimension: 212.10mm (L) x 146.00mm (W) x 40.00mm (H)
- Net Weight: 0.375Kg;
- Operating Environment
 - Temperature: 0℃~60℃;
 - Humidity: 5%~95% (non-condensing);
- Storage Environment
 - Temperature: -15℃~65℃;
 - Humidity: 5%~90% (non-condensing);

Typical Power Consumption

CPU: Intel® Celeron® M 1.0GHz 400MHz

Memory: DDRII533 1GB KingMAX

- +5V@ 1.01 A; +5%/-3%;
- +3.3V@ 0.6 A; +5%/-3%;
- +12V@ 0.33 A; +5%/-3%.

Microprocessor

Support Intel® Celeron® M 1GHz 400MHz FSB CPU or Intel® Pentium® M 1.8GHz 400MHz FSB CPU.

Chipset

Intel® 910GMLE + Intel® ICH6M

System Memory

Support SO-DIMM DDRII 400MHz memory, up to 1GB.

Video Function

System integrated video chip, supports VGA and LVDS display modes, LVDS supports up to 24bit dual-channel.

Network Function

One 10/100/1000Mbps network interface, supports Wake-On-LAN function.

Audio Function

One standard AC'97 sound effect chip, provides excellent sound effect, supports MIC-in/Line-in/Speaker-out.

Expansion Bus

One PCI golden finger, compatible with PCIMG 1.0 standard; provide one Mini PCI 1.0 slot.

CF Card

Standard TYPE I and TYPE II CF card, meet more expansion requirements of users.

Power Feature

AT/ATX power, support single 12V optional configuration.

Watchdog Function

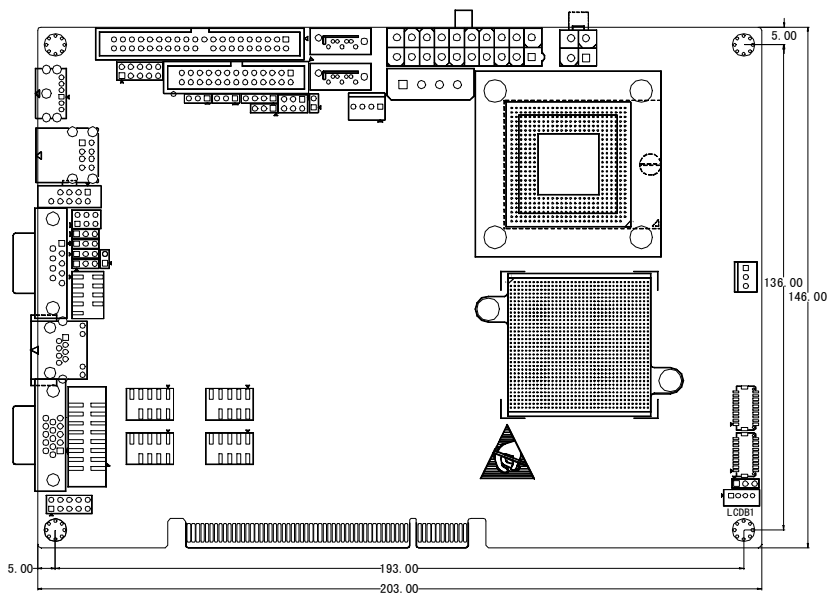
- 255 levels, programmable, by minute or second;
- Support watchdog overtime or reset system.

I/O Interfaces

- One parallel port;
- Six serial ports, and COM2 supports RS-232/RS-422/RS-485 mode selection;
- One IDE interface;
- Two SATA interfaces;
- Four USB2.0 interfaces;
- One PS/2 keyboard/mouse interface;
- One 8-bit digital I/O interface;

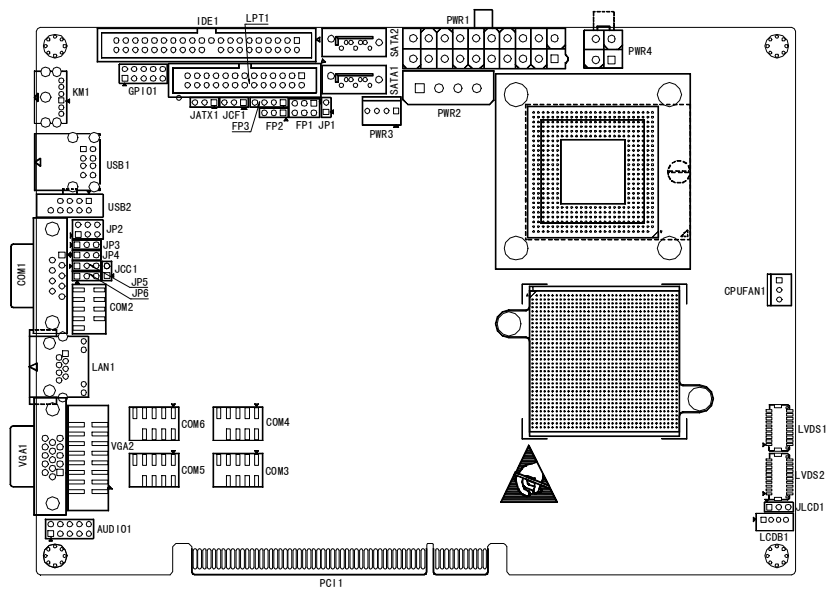
Chapter 2 Installation

Product Outline

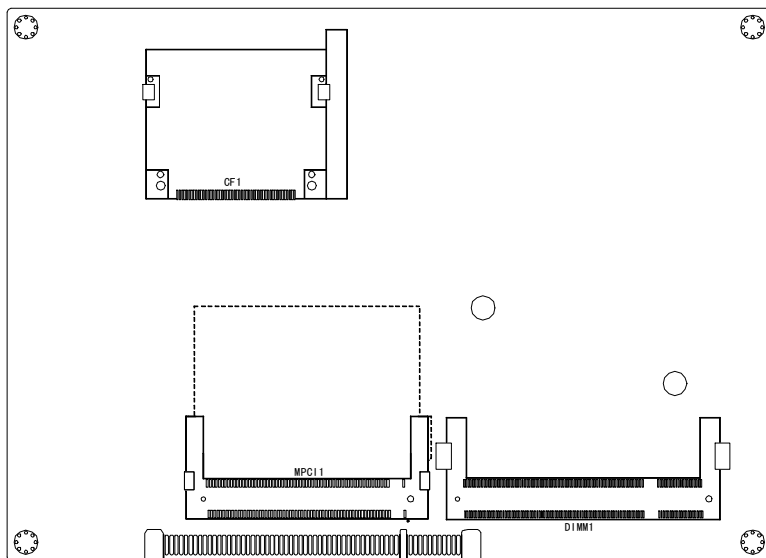


Unit: mm

Locations of Interfaces



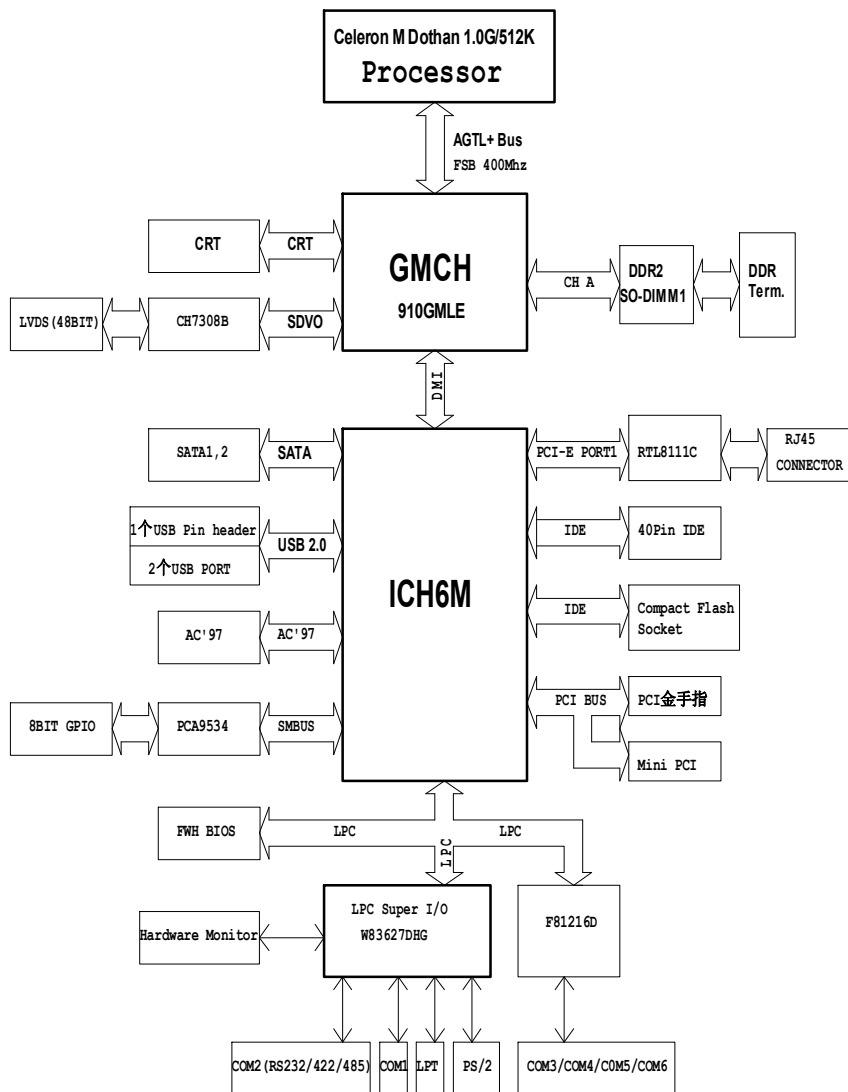
Front View



Rear View

Motherboard Structure

EC5-1712CLDNA(B) Function Block Diagram



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

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;
3. The red line on the cable or other marks shows that they should be connected with the first pin of the socket.

Jumper Settings

1. JCC1: Clear/Save the content of CMOS (Pin Distance: 2.54mm)

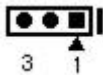
CMOS is powered by the button battery on board. Clear CMOS will restore original settings (factory default). The steps are listed as follows : (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the prompt on screen to enter BIOS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



JCC1

Setup	Function
1-2 Open	Normal Status (Default)
1-2 Short	Clear CMOS, all the BIOS setup recovers to factory default.

2. JATX1: Select the Power Type (Pin Distance: 2.54mm)

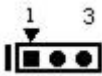


JATX1

Setup	Function
1-2 Short	ATX Power (Default)
2-3 Short	AT Power and Single 12V Power

3. JLCD1: Select LCD Operating Voltage (Pin Distance: 2.54mm)

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 voltage in use, the LCD screen could display normally. Please set it as follows:



JLCD1

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

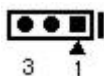
4. Select CF Card Mode, Master or Slave (Pin Distance: 2.54mm)



JP1

Setup	Function
1-2 Short	Master (Default)
1-2 Open	Slave

5. Select the Voltage for CF Card on Motherboard (Pin Distance: 2.54mm)

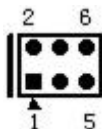


JCF1

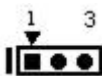
Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V (Default)

6. Select the Serial Port Mode, RS-232/RS-422/RS-485 (Mode Selection: 2.54mm)

COM2 supports RS-232/RS-422/RS-485 mode selection via JP2~JP6, refer to the following for setup details:



JP2



JP3~JP6

Pin Setup	Mode Selection		
	RS-232 (Default)	RS-422	RS-485
JP2	1-2	5-6	3-4
JP3	1-2	2-3	2-3
JP4	1-2	2-3	2-3
JP5	1-2	2-3	2-3
JP6	1-2	2-3	2-3

Install System Memory

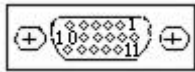
The board provides with one 200Pin DDR II memory slot (DIMM1). Pay attention as follows when installing the memory bank:

- Open the buckles beside the memory slot. During installation, aim at the gaps between memory bank and memory slot and press properly to connect them;

- Support DDR II 400MHz memory; memory capacity shall not exceed 1GB.
- It is recommended to use DIMM memory with SPD to ensure stable operation.

Video Interface

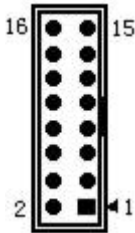
1. This board provides one standard DB15 interface. The pin definitions are listed as follows:



VGA1

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

2. This board provides one standard 2x8PIN interface (Pin Distance: 2.54mm), VGA device needs to be connected via transfer cable. The pin definitions are listed as follows:

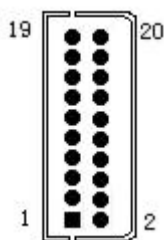


VGA2

Pin	Signal Name	Pin	Signal Name
1	Red	2	GND
3	NC	4	Green
5	GND	6	DDCDATA
7	Blue	8	GND
9	HSYNC	10	NC
11	+5V	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	shield_gnd

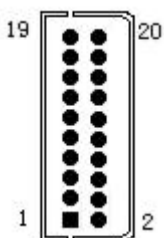
3. 24bit Dual-channel LVDS Connector (Pin Distance: 1.0mm)

LVDS connector supports 18/24bit dual-channel or single-channel LCD screen. Single-channel can only adopts LVDS1 connector and the corresponding options are required to be set in CMOS.



LVDS1

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	LVDSO_CLK+	14	LVDSO_CLK-
15	GND	16	GND
17	LVDSO_D3+	18	LVDSO_D3-
19	VDD	20	VDD



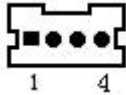
LVDS2

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	LVDSE_CLK+	14	LVDSE_CLK-
15	GND	16	GND
17	LVDSE_D3+	18	LVDSE_D3-
19	VDD	20	VDD

Note: LVDSOx represents dual-scanning the odd line of PANEL; LVDSEx represents dual-scanning the even line of PANEL.

LCD Backlight Control Interface

Pin distance: 2.0mm.



Lcdb1

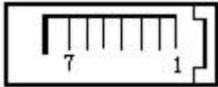
Pin	Signal Name
1	+12V
2	NC
3	LCD_BKLTEN
4	GND

Note: the current of Pin 1 is less than 1A;

LCD_BKLTEN ---Backlight enabling, active high.

SATA Interface

This board provides two SATA interfaces. 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

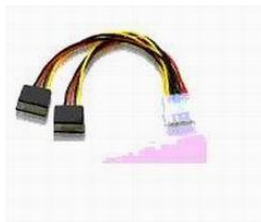
Hot-swap of SATA Hard Disk

Notices for Hot-swap of SATA Hard Disk

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



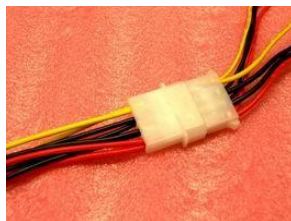
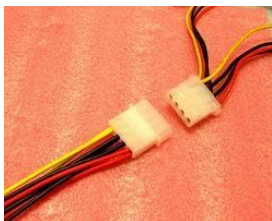
SATA Hard Disk Data Cable



SATA Hard Disk Power Cable

Please carry out hot plug as follows, improper operation may destroy the hard disk or result in data lost.

Hot Plug



Step 1: Please plug the 1 x 4 pin SATA power cable (white) into the power adapter.



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



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



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

Hot Unplug



Step 1: Unplug the data cable from the SATA hard disk.



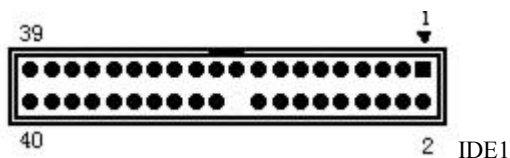
Step 2: Unplug the SATA 15-pin power cable (black) from the SATA hard disk.

IDE Interface

This board provides a set of 40-pin IDE interface (IDE1) (Pin Distance: 2.54mm), please pay attention as follows when installing the IDE device:

- IDE interface shares channel with CF card and the “Master/Slave” setup shall be corresponding with that of CF card.

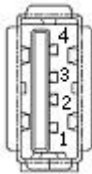
- When using an Ultra 100 hard disk, it is recommended to use 80-pin appropriate flat cable (the Pin 1 of IDE cable is marked with red sign).



Pin	Signal Name	Pin	Signal Name
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	Key
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IRDY	28	GND
29	DACK#	30	GND
31	IRQ	32	NC
33	DA1	34	ATA66_DET
35	DA0	36	DA2
37	CS1#	38	CS3#
39	LED#	40	GND

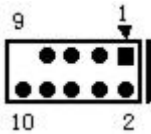
USB Interface

This board provides two sets of USB interfaces, which can connect with four standard USB devices. USB1 provides two standard USB sockets, USB2 is a 2x5Pin USB pin-style connector (Pin Distance: 2.54mm). USB2 needs transfer cable to connect the signals to the standard USB socket. The pin definitions are listed as follows:



USB1

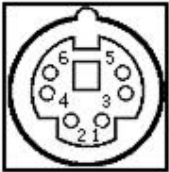
Pin	Signal Name
1	+5V
2	USB_Data-
3	USB_Data+
4	GND



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

Keyboard/Mouse Interface

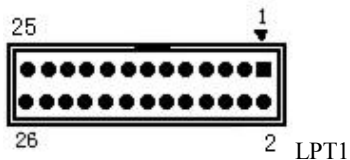


KM1

Pin	Signal Name
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

Parallel Port

This board provides one 2x13Pin slot for parallel port (Pin Distance: 2.54mm), transfer cable is needed to fix it to the chassis, so that it can connect with the peripherals. The pin definitions are listed as follows:

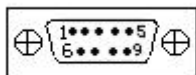


Pin	Signal Name	Pin	Signal Name
1	STB#	2	AFD#
3	PD0	4	ERR#
5	PD1	6	INIT#
7	PD2	8	SLIN#
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Serial Port

This board provides six serial ports, and COM2 supports RS-232/RS-422/RS-485 mode selection, COM3~COM6 support RS-232 mode.

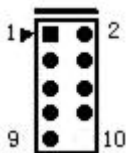
1. COM1 adopts DB9 connector, supports RS-232 mode. The pin definitions:



COM1

Pin	Signal Name
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

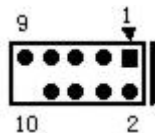
2. COM2 adopts 2×5Pin interface (Pin Distance: 2.54mm), supports RS-232/RS-422/RS-485 mode selection, transfer cable is needed to fix it to the chassis, so that it can connect with the peripherals. The pin definitions are listed as follows:



COM2

Pin	Signal Name		
	RS-232	RS-422	RS-485
1	DCD#	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	X
4	DTR#	RXD-	X
5	GND	GND	GND
6	DSR#	X	X
7	RTS#	X	X
8	CTS#	X	X
9	RI#	X	X
10	NA	NA	NA

3. COM3~COM6 adopts 2×5Pin interface (Pin Distance: 2.54mm), support RS-232 mode, transfer cable is needed to fix it to the chassis, so that it can connect with the peripherals. The pin definitions are listed as follows:

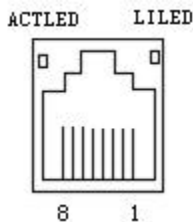


COM3~COM6

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

Network Interface

This board provides one 10/100/1000Mbps network interface. Its pin arrangement and the corresponding input socket are listed as follows:



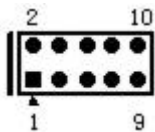
RX0+ (Pin#1)
 RX0- (Pin#2)
 RX1+ (Pin#3)
 RX2+ (Pin#4)
 RX2- (Pin#5)
 RX1- (Pin#6)
 RX3+ (Pin#7)
 RX3- (Pin#8)

LAN1

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 Interface

Lout can be connected to earphone or more suitable power loudspeaker via the cable attached to the motherboard. Lin is used for the computer to record the tape station or other sound sources, or play via Lout. Mic is used to connect the input sound of microphone. (Pin Distance: 2.54mm)

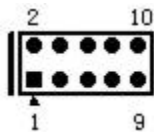


AUDIO1

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_IN	10	MIC_P

Digital I/O Interface

This board provides a GPIO interface with 4-channel input while the other 4 channels for output. (Pin Distance: 2.54mm).



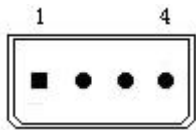
GPIO1

Pin	Signal Name	Pin	Signal Name
1	INPUT1	2	OUTPUT1
3	INPUT2	4	OUTPUT2
5	INPUT3	6	OUTPUT3
7	INPUT4	8	OUTPUT4
9	GND	10	+5V

Power Interface

1. AT Power Interface

Pin distance: 5.08mm.

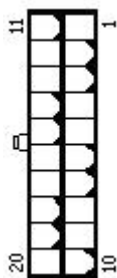


PWR2

Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

2. ATX Power Interface

Pin distance: 4.2mm.

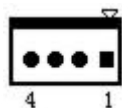


PWR1

Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON#
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWROK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

3. SATA Power Interface

Pin distance: 2.54mm.



PWR3

Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

4. Single 12V Power Interface

Pin distance: 4.2mm.

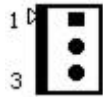


PWR4

Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

Fan Interface

Pin distance: 2.54mm.



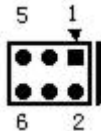
CPUFAN1

Pin	Signal Name
1	GND
2	+12V
3	FAN_IO

FAN_IO: Fan rev pulse output

Status Indicating Control Interface

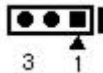
1. Power Switch and Hard Disk Indicator Interface (Pin Distance: 2.54mm)



FP1

Pin	Signal Name	Pin	Signal Name
1	PWRBTN#	2	GND
3	GND	4	RESET#
5	IDE_LED-	6	IDE_LED+

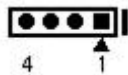
2. Power Indicator Interface (Pin Distance: 2.54mm)



FP2

Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

3. Loudspeaker Output Interface (Pin Distance: 2.54mm)



FP3

Pin	Signal Name
1	SPEAKER
2	NC
3	GND
4	+5V

CF Card

Compact Flash card is a sort of high speed memory, small in size and easy to use. Its storage capacity will vary with different cards in use, such as 128M, 256M, etc. CF card could only be inserted in one direction and it is marked as 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

PCI Interface

1. One PCI expansion interface, PCI1.

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	TRST#	A31	PCI_AD18	B1	-12V	B31	+3.3V
A2	+12V	A32	PCI_AD16	B2	TCK	B32	PCI_AD17
A3	TMS	A33	+3.3V	B3	GND	B33	PCI_C/BE#2
A4	TDI	A34	PCI_FRAME#	B4	TDO	B34	GND
A5	+5V	A35	GND	B5	+5V	B35	PCI_IRDY#
A6	INTA#	A36	PCI_TRDY#	B6	+5V	B36	+3.3V
A7	INTC#	A37	GND	B7	INTB#	B37	PCI_DEVSEL#
A8	+5V	A38	PCI_STOP#	B8	INTD#	B38	GND
A9	CLK_PCI2	A39	+3.3V	B9	PCI_REQ3#	B39	PCI_PLOCK#
A10	+5V	A40	SDONE	B10	PCI_REQ1#	B40	PCI_PERR#
A11	CLK_PCI3	A41	SBO#	B11	PCI_GNT3#	B41	+3.3V
A12	GND	A42	GND	B12	GND	B42	PCI_SERR#
A13	GND	A43	PCI_PAR	B13	GND	B43	+3.3V
A14	PCI_GNT1#	A44	PCI_AD15	B14	CLK_PCI0	B44	PCI_C/BE#1
A15	PCI_RST#	A45	+3.3V	B15	GND	B45	PCI_AD14
A16	+5V	A46	PCI_AD13	B16	CLK_PCI1	B46	GND
A17	PCI_GNT0#	A47	PCI_AD11	B17	GND	B47	PCI_AD12
A18	GND	A48	GND	B18	PCI_REQ0#	B48	PCI_AD10
A19	PCI_REQ2#	A49	PCI_AD9	B19	+5V	B49	GND
A20	PCI_AD30	A50	PCI_C/BE#0	B20	PCI_AD31	B50	PCI_AD8
A21	+3.3V	A51	+3.3V	B21	PCI_AD29	B51	PCI_AD7
A22	PCI_AD28	A52	PCI_AD6	B22	GND	B52	+3.3V
A23	PCI_AD26	A53	PCI_AD4	B23	PCI_AD27	B53	PCI_AD5
A24	GND	A54	GND	B24	PCI_AD25	B54	PCI_AD3
A25	PCI_AD24	A55	PCI_AD2	B25	+3.3V	B55	GND
A26	PCI_GNT2#	A56	PCI_AD0	B26	PCI_C/BE#3	B56	PCI_AD1
A27	+3.3V	A57	+5V	B27	PCI_AD23	B57	+5V
A28	PCI_AD22	A58	PCI_REQ64	B28	GND	B58	PCI_ACK64#
A29	PCI_AD20	A59	+5V	B29	PCI_AD21	B59	+5V
A30	GND	A60	+5V	B30	PCI_AD19	B60	+5V

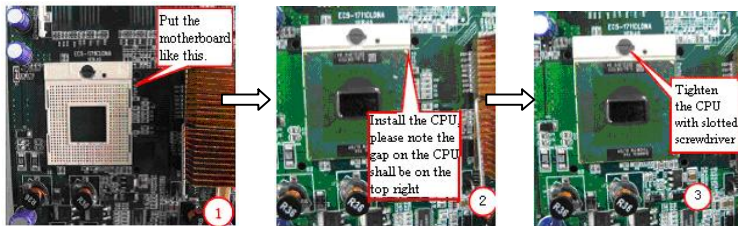
2. One 124Pin Mini-PCI expansion bus interface (on the rear of board, MPC11).

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
1	TIP	32	GND	63	+3.3V	94	AD2
2	RING	33	AD31	64	FRAME#	95	AD3
3	8PMJ-3	34	PME#	65	CLKRUN#	96	AD0
4	8PMJ-1	35	AD29	66	TRDY#	97	+5V
5	8PMJ-6	36	NC	67	SERR#	98	NC
6	8PMJ-2	37	GND	68	STOP#	99	AD1
7	8PMJ-7	38	AD30	69	GND	100	NC
8	8PMJ-4	39	AD27	70	+3.3V	101	GND
9	8PMJ-8	40	+3.3V	71	PERR#	102	GND
10	8PMJ-5	41	AD25	72	DEVSEL#	103	AC_SYNC
11	LED1_GRNP	42	AD28	73	C/BE1#	104	M66EN
12	LED2_YELP	43	NC	74	GND	105	AC_SDATA_IN
13	LED1_GRNN	44	AD26	75	AD14	106	AC_SDATA_OUT
14	LED2_YELN	45	C/BE3#	76	AD15	107	AC_BIT_CLK
15	CHSGND	46	AD24	77	GND	108	AC_CODEC_ID0#
16	NC	47	AD23	78	AD13	109	AC_CODEC_ID1#
17	PIRQB#	48	IDSEL	79	AD12	110	AC_RESET#
18	+5V	49	GND	80	AD11	111	MOD_AUDIO_MON
19	+3.3V	50	GND	81	AD10	112	NC
20	PIRQA#	51	AD21	82	GND	113	AUDIO_GND
21	NC	52	AD22	83	GND	114	GND
22	NC	53	AD19	84	AD9	115	SYS_AUDIO_OUT
23	GND	54	AD20	85	AD8	116	SYS_AUDIO_IN
24	+3.3AUX	55	GND	86	C/BE0#	117	SYS_AUDIO_OUT_GND
25	CLK	56	PAR	87	AD7	118	SYS_AUDIO_IN_GND
26	RESET#	57	AD17	88	+3.3V	119	AUDIO_GND
27	GND	58	AD18	89	+3.3V	120	AUDIO_GND
28	+3.3V	59	C/BE2#	90	AD6	121	NC
29	REQ#	60	AD16	91	AD5	122	MPCIACT#
30	GNT#	61	IRDY#	92	AD4	123	+5V
31	+3.3V	62	GND	93	NC	124	+3.3AUX

Install CPU

Please install the CPU as follows (See the figure below):

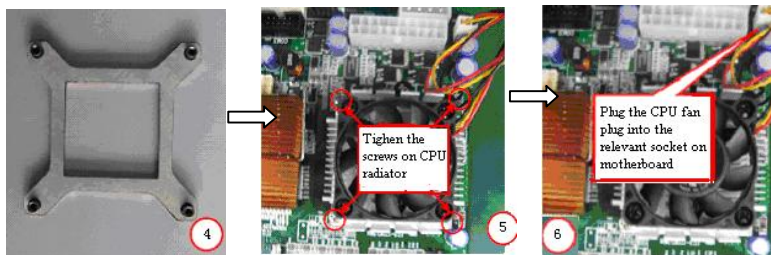
- Aim the first pin of the CPU (with triangular symbol) with the gap on the CPU socket and insert the CPU into the socket.
- After the CPU is installed properly, tighten the screws on the CPU socket in clockwise direction via screwdriver. Pay attention to the strength and do not destroy the CPU socket.



Install CPU Fan

Please install the CPU fan as follows: (See the figure below):

- Firstly, aim the backplane of the cooling fin (see figure ④) with the fixing holes on the rear of the CPU card;
- Connect the cooling fin (see figure ⑤) with the backplane in the front and fix them; pay attention that the surface between the cooling fin and the CPU crystal wafer is well contacted;
- Fix the cooling fin with two screws on the cross (do not tighten it) and then the other two screws; then tighten the four screws;
- Lastly, connect the fan power cable onto the fan socket on the CPU card.



Note! It is recommended to use cooling fan authenticated by Intel; before installing the fan, smear the heat sink compound on the surface between CPU and the fan cooling fin to improve the heat dissipation performance; always check whether the fan is operating normally to ensure the heat dissipation within the chassis. When holding a board, please hold the edge instead of the cooling fin.

Chapter 3 BIOS Setup

BIOS 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.

BIOS Basic Function Setup

After starting SETUP program, you may see the main interface of CMOS Setup Utility as follows:

BIOS SETUP UTILITY	
System Overview	
Processor	←→ Select Screen
CPU Type :	↑↓ Select Item
Intel(R) Celeron® M processor 1.0GHz	+ - Change Field
Speed :1.0GHz	Tab Select Field
System Memory	F1 General Help
Size: 248MB	F10 Save and Exit
Power Supply	ESC Exit
Type : AT	
System Time [00:47:55]	
System Date [Wed 01/02/2002]	
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1. Main

(1) 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).

(2) System Date

Select this option and set the current data 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.).

2. Advanced

BIOS SETUP UTILITY	
Advanced Settings WARNING: Setting wrong values in below sections may cause system to malfunction ▶ CPU Configuration ▶ IDE Configuration ▶ SuperIO Configuration ▶ Hardware Health Configuration ▶ USB Configuration ▶ Power Management Configuration ▶ Clock Generator Configuration	Configure CPU ←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.57 (c) Copyright 1985-2004, American Megatrends, Inc.	

(1) CPU Configuration

BIOS SETUP UTILITY	
Configure advanced CPU settings Module Version – 11.05 Manufacturer: Intel Brand String: Intel(R) Celeron® M processor 1.0GHz Frequency; : 1.0GHz FSB Speed; : 400MHz Cache L1; : 32 KB Cache L2; : 512 KB	←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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(2) IDE Configuration

BIOS SETUP UTILITY	
IDE Configuration	
ATA/IDE 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]
▶ Third IDE Slave	: [Not Detected]
←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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① ATA/IDE Configuration

There are three options for this item, Disabled, Compatible and Enhanced. Compatible mode could map the SATA hard disk interface to the corresponding interface on the parallel IDE channel.

② Legacy IDE Channels

There are three options, SATA Only; SATA Pri, PATA Sec and PATA Only to set IDE channel.

③ Primary, Secondary, Third IDE Master/Slave

a) Type

Not Installed: system has not detected IDE device.

AUTO: automatic detection of IDE parameters when power on;

CD/DVD: used for ATAPI CDROM;

ARMD: used for various analog IDE devices.

b) LBA/Large Mode

Used to set whether to support LBA mode.

c) Block (Multi-sector Transfer)

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

d) PIO Mode

Used to set PIO mode.

e) DMA Mode

Used to set DMA mode.

f) S.M.A.R.T

This option is used to set whether to enable hard disk S.M.A.R. function, can only be applied to the hard disk that supports this function.

g) 32Bit Data Transfer

This option is used to enable the 32-bit hard disk access mode, which will optimize the read and write speed of hard disk.

(3) Super IO Configuration

BIOS SETUP UTILITY	
	Allows BIOS to Enable or Disable Floppy Controller.
Floppy A [Disabled]	
OnBoard Floppy Controller [Enabled]	
Serial Port1 Address [3F8/IRQ4]	
Serial Port2 Address [2F8/IRQ3]	←→ Select Screen
Serial Port3 Address [200]	↑↓ Select Item
Serial Port3 IRQ [10]	+ - Change Field
Serial Port4 Address [208]	Tab Select Field
Serial Port4 IRQ [10]	F1 General Help
Serial Port2 Address [210]	F10 Save and Exit
Serial Port5 IRQ [10]	ESC Exit
Serial Port6 Address [218]	
Serial Port6 IRQ [10]	
Parallel Port Address [378]	
Parallel Port Mode [Normal]	
Parallel Port IRQ [IRQ7]	
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① Floppy A

This options is used to configure floppy driver, the default value is “Disabled”.

② Onboard Floppy Controller

This option is used to configure the floppy driver controller; the default value is “Enabled”.

③ Serial Port 1-6 Address

This option is used to set the address of serial port 1~6 on the motherboard.

④ Serial Port 3-6 IRQ

This option is used to set the IRQ of serial port 3~6.

⑤ Parallel Port Address

This option is used to set the address of parallel port on the motherboard, the default value is 378.

⑥ Parallel Port Mode

This option is used to set the operating mode of the parallel port, Normal, Bi-Directional, ECP, EPP. EPP represents the maximum speed under bi-directional data transmission; and ECP represents a faster speed than EPP under bi-directional data transmission.

⑦ Parallel Port IRQ

This option is used to set the IRQ of the parallel port on motherboard.

(4) Hardware Health Configuration

BIOS SETUP UTILITY	
Hardware Health Configuration	Enables Hardware Health Monitoring Device
System Temperature : 33°C/138°F	←→ Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
CPU Temperature : 34°C/120°F	
CPUFAN1 Speed :N/A	
Vcore : 0.929 V	
V3.3 : 3.298V	
V5.0 : 5.041 V	
V12.0 : 12.294V	
VBAT : 3.148 V	
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① System Temperature

The current system temperature, typically, there is thermo-sensitive resistor monitor on motherboard.

② CPU Temperature

The current CPU temperature, it is monitored by the temperature sensor on board.

③ CPUFAN Speed

The current rev of CPU and system fan.

④ Vcore

CPU core voltage.

⑤ V3.3/V5.0/V12.0

The output voltage of switch.

⑥ VBAT

Battery Voltage.

(5) USB Configuration

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
Module Version -2.24.0-11.4	
USB Devices Enabled :	
None	
USB Function [4 USB Ports]	←→ Select Screen
Legacy USB Support [Enabled]	↑↓ Select Item
USB 2.0 Controller [Enabled]	+ - Change Field
	F1 General Help
	F10 Save and Exit
	ESC Exit
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① USB Function

This option is used to set the number of USB controller, confirming how many controllers will be supported; typically, one controller support two USB interfaces.

② Legacy USB Support

Support traditional USB keyboard and mouse, when this option is set to be “Enabled”, USB device is available even under the operating system that does not support USB such as DOS.

③ USB 2.0 Controller

This option is used to select whether to support USB2.0 controller.

(6) Power Management Configuration

BIOS SETUP UTILITY	
ACPI Settings	
ACPI Aware O/S	[YES]
Resume On RTC Alarm	[Disabled]
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←→ Select Screen
↑↓ Select Item
+ - Change Field
F1 General Help
F10 Save and Exit
ESC Exit

① ACPI Aware O/S

This option is used to set whether the OS is ACPI or APM.

(7) Clock Generator Configuration

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

① Spread Spectrum

This option is used to set whether to support spread spectrum function.

② Auto PCI Clock

This option is used to set whether to support disabling function of un-used clock.

3. 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,8MB]
Boot Display Device	[CRT]
SDVO Flat Panel Type	[1024×768LVDS]
SDVO Panel Connector	[SPWG]
LVDS Channel	[Dual channel]
Panel Color Depth	[24-bit color depth]
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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(1) RAM Frequency

Configure the frequency of DRAM.

(2) Configure DRAM Timing by SPD

BIOS configures the SDRAM timing according to the content in SPD. There is a little chip on most of the memory stick for holding the memory timing and capacity parameter, i.e. SPD chip.

(3) Boots Graphic Adapter Priority

Select the priority of graphic adapter.

(4) Internal Graphics Mode Select

The graphic adapter applies a appropriate system address space for graphic memory address space.

(5) Boot Display Device

Select the type of boot device.

(6) SDVO Flat Panel Type

Select the resolution of LVDS.

(7) SDVO Panel Connector

Select the connector type of LVDS.

(8) LVDS Channel

Select the channel of LVDS, dual-channel or single-channel.

(9) Panel Color Depth

Select the color depth of panel.

(10) Onboard Audio Controller

Select whether to turn on audio card controller.

4. PCIPnP

BIOS SETUP UTILITY		
Advanced PCI/PnP Settings		←→ Select Screen ↑↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
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]	
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(1) IRQ 3~15

This option is used to specify the IRQ interrupt mode, PNP mode or reserved for ISA.

5. Boot

BIOS SETUP UTILITY		
Boot Settings		←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Quick Boot	[Enabled]	
Quiet Boot	[Disabled]	
Waite For 'F1' If Error	[Enabled]	
Boot Device Priority		
1 st Boot Device	[]	
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(1) Quick Boot

Configure whether to permit skipping certain test during BIOS boot to reduce BIOS booting time.

(2) Quiet Boot

Configure whether to display the content of OEM LOGO.

(3) Wait for ‘F1’ If Error

Configure whether to prompt pressing “F1” if error.

(4) 1st~4th Boot Device

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

6. Security

BIOS SETUP UTILITY	
Security Settings	
Supervisor Password	:Not Installed
User Password	:Not Installed
Change Supervisor Password	
Change User Password	
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(1) 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.

7. Exit

South Bridge Configuration	
Exit Options	Exit system setup after saving the changes.
Save Changes and Exit	
Discard Changes and Exit	←→ Select Screen
Discard Changes	↑↓ Select Item
	Enter Go to Sub Screen
	F1 General Help
Load Optimal Defaults	F10 Save and Exit
Load Failsafe Defaults	ESC Exit
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(1) 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.

(2) 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.

(3) Discard Changes

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

(4) Load Optimal Defaults

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

(5) 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.

The 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.

1. DMA

Level	Function
DMA0	Not Assigned
DMA1	Not Assigned
DMA2	Not Assigned
DMA3	Not Assigned (Sometimes used for hard disk)
DMA4	Used for the cascade of DMAC
DMA5	Not Assigned
DMA6	Not Assigned
DMA7	Not Assigned

2. 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. However, relevant OS are required to support that function, and currently, only the OS above Windows 2000 could support that function.

3. IO Port Address

There are 16 I/O address lines for X86, from 0 ~ 0FFFFh; and there is altogether 64K I/O address space. In traditional ISA interface, only the first 1024 ports are in use (0000~03FFh) and the port number above 0400h are used by PCI interface and EISA

interface. Each peripheral device shall occupy a part of the I/O address. The table below lists the I/O interfaces used roughly in X86 platform.

Address	Device Description
000h - 00Fh	DMA Controller#1
020h - 021h	Programmable Interrupt Controller#1
040h - 043h	System Timer
060h - 064h	Standard 101/102 Keyboard Controller
070h - 071h	Real-time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0A1h	Programmable Interrupt Controller#2
0C0h - 0DFh	DMA Controller#2
0F0h - 0FFh	Numeric Data Processor
1F0h - 1F7h	Primary IDE
200h - 207h	COM3
208h - 20Fh	COM4
210h - 217h	COM5
218h - 21Fh	COM6
274h - 277h	PnP Configuration Register Port
279h、A79h	PnP Configuration Register Port
2F8h - 2FFh	COM2
378h - 37Fh	Parallel Port#1(LPT1)
3B0h - 3DFh	Display Card Interface
3F6h	Primary IDE(dual FIFO)
3F8h - 3FFh	COM1

4. IRQ Assignment Table

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

Level	Function
IRQ0	System Timer
IRQ1	Standard 101/102 Key or Microsoft Keyboard
IRQ2	Reserved
IRQ3	COM2
IRQ4	COM1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	System CMOS/Real-time Clock
IRQ9	Microsoft ACPI Compatible System/AMQZBM50 IDE Controller
IRQ10	COM3/4/5/6
IRQ11	Intel (R)82801 FB/FBM SMBus Controller
IRQ12	Mouse
IRQ13	Reserved
IRQ14	Primary IDE

Chapter 4 Install the Drivers

Please install the drivers of this product according to the content of the equipped CD,
it will not be introduced here.

Appendix

Watchdog Programming Guide

This board provides a programmable watchdog timer (WDT) up to 255 levels. 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 gives an example for WDT programming 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, 0x87);
outportb(INDEX_PORT, 0x87);
outportb(INDEX_PORT, 0x07);
outportb(DATA_PORT, 0x08);
outportb(INDEX_PORT, 0x30);
outportb(DATA_PORT, 0x01);
```

(2) Configure the Operating Mode for WDT, Reset or Interrupt

```
unsigned char oldval;
outportb(INDEX_PORT, 0x2d);
oldval = inportb(DATA_PORT);
```

a. Reset Mode

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

b. Interrupt Mode

```
oldval |= 0x01;
outportb(DATA_PORT, oldval);
outportb(INDEX_PORT, 0xf7);
outportb(DATA_PORT, IRQ_NO); /*Please replace the constant
```

IRQ_NO with the needed IRQ number, the available range of IRQ numbers are listed at the beginning of this document. */

(3) Configure WDT to Time by Minute or Second**a. Time by Minute**

```
outportb(INDEX_PORT, 0xf5);
outportb(DATA_PORT, 0x08);
```

b. Time by Second

```
outportb(INDEX_PORT, 0xf5);
outportb(DATA_PORT, 0x00);
```

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

```
outportb(INDEX_PORT, 0xf6);
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, 0xf6);
outportb(DATA_PORT, 0x00);
```

Digital IO Programming Guide

The motherboard 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:

Functions input: int pin – Value 1~4 are corresponding with output pin 1~4 respectively.

int lev_val – 1: output high level; 0: output low level

Functions 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

Functions input: int pin – vaule 1~4 are corresponding with input pin 1~4 respectively;

Functions output: int lev_val – 1: input pin is high level; 0: input pin is low level

```
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 variable lev_val here, 1
    means the input pin is high level while 0 means the input pin is low
    level.*/
    return lev_val ;
}
```

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

声明

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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。

目录

第一章 产品介绍	1
简介	1
机械尺寸、重量与环境	1
典型功耗	2
微处理器	2
芯片组	2
系统内存	2
显示功能	2
网络功能	2
音频功能	2
扩展总线	3
电源特性	3
Watchdog 功能	3
I/O 接口	3
第二章 安装说明	4
产品外形尺寸图	4
接口位置示意图	5
主板架构图	6
跳线设置	7
系统内存安装	8
显示接口	9
LCD 背光控制接口	11
SATA 接口	11
SATA 硬盘热插拔	11

IDE 接口	13
USB 接口	15
键盘/鼠标接口	15
并口	16
串口	16
网络接口	18
音频接口	19
数字 I/O 接口	19
电源接口	19
风扇接口	21
状态指示控制接口	21
CF 卡	22
PCI 接口	23
CPU 安装	25
CPU 散热风扇安装	25
第三章 BIOS 功能简介	26
BIOS 简介.....	26
BIOS 参数设置.....	26
BIOS 基本功能设置.....	27
x86 平台下 BIOS 所要管理的系统资源.....	39
第四章 驱动程序安装说明.....	42
附录	43
Watchdog 编程指引	43
数字 IO 编程指引	45

第一章 产品介绍

简介

EC5-1712CLDNA(B)采用 Intel®低功耗、高性能芯片组 910GML+ICH6M, 板载 Intel® Celeron® M/1.0G CPU, 可支持 Intel® Pentium® M/1.8G CPU。提供一个 200Pin DDR2 400M SO-DIMM 内存插槽、支持 CRT+LVDS 的“双显示”、提供两个 SATA、一个 40Pin 标准 ATA-100IDE 接口、一个 Compact Flash 电子盘接口、四个 USB2.0、六个 RS-232 串口(其中一个支持 RS-232/RS-422/RS-485 可选)、一个 10/100/1000Mbps 网口、提供一个 Mini-PCI 接口, 可以扩展 Intel® WirelessLAN 无线模组, 该 Mini-PCI 也可以提供客户自定义的加密卡等 PCI 设备的扩展, 1 个 PICMG1.0 PCI 扩展金手指, 支持 AT/ATX 与单 12V 可选配置。

EC5-1712CLDNA(B)以其高性能、低功耗和丰富的扩展接口, 用户无需增加任何部件即可使用。可广泛应用于网络安全、信息家电、仪器仪表、军事、多媒体查询、智能产品各种嵌入式领域。

机械尺寸、重量与环境

- 外形尺寸: 212.10mm (长) × 146.00mm (宽) × 40.00mm (高)
- 净重: 0.375Kg;
- 工作环境:
 - 温度: 0℃~60℃;
 - 湿度: 5%~95% (非凝结状态);
- 贮存环境:
 - 温度: -15℃~65℃;
 - 湿度: 5%~90% (非凝结状态);

典型功耗

CPU: Intel® Celeron® M 1.0GHz 400MHz

内存: DDRII533 1GB KingMAX

- +5V@ 1.01 A; +5%/-3%;
- +3.3V@ 0.6 A; +5%/-3%;
- +12V@ 0.33 A; +5%/-3%。

微处理器

支持Intel® Celeron® M 1GHz 400MHz FSB CPU或Intel® Pentium® M 1.8GHz 400MHz FSB CPU。

芯片组

Intel® 910GML + Intel® ICH6M。

系统内存

支持SO-DIMM DDRII 400MHz内存，最大内存容量1GB。

显示功能

采用系统集成显示芯片，支持VGA和LVDS两种显示模式，LVDS最高支持双通道24bit。

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

一个标准的AC'97音效芯片，提供优质的声音效果，支持MIC-in/Line-in/Speaker-out。

扩展总线

提供1个PCI金手指，兼容PCIMG 1.0标准，提供1个Mini PCI 1.0插槽。

CF 卡

支持标准的TYPE I和TYPE II型CF卡，满足用户更多的扩展需求。

电源特性

采用AT/ATX电源，支持单12V可选配置。

Watchdog 功能

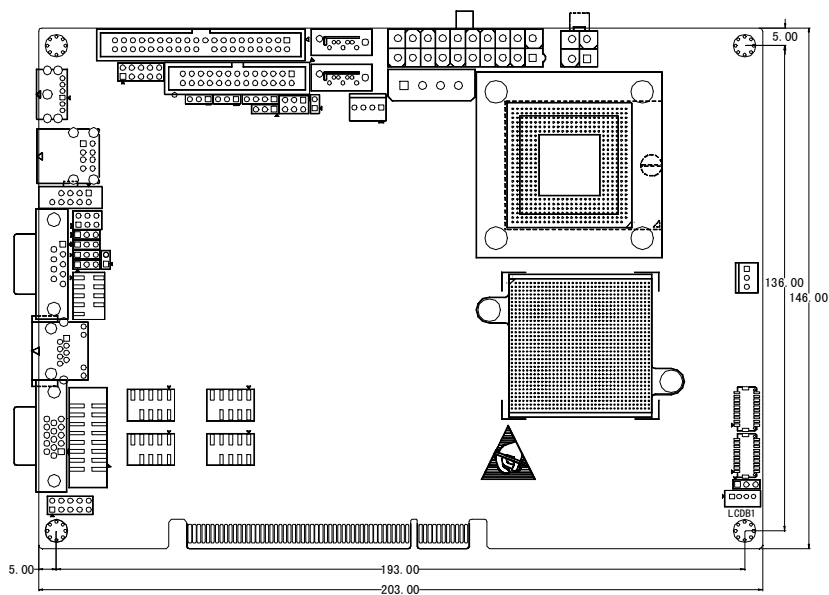
- 支持 255 级，可编程按分或秒；
- 支持看门狗超时或复位系统。

I/O 接口

- 提供 1 个并口；
- 提供 6 个串口，其中 COM2 支持 RS-232/RS-422/RS-485 模式选择；
- 提供 1 个 IDE 接口；
- 提供 2 个 SATA 接口；
- 提供 4 个 USB2.0 接口；
- 提供 1 个 PS/2 键盘/鼠标接口；
- 提供 1 个 8 位数字 I/O 接口。

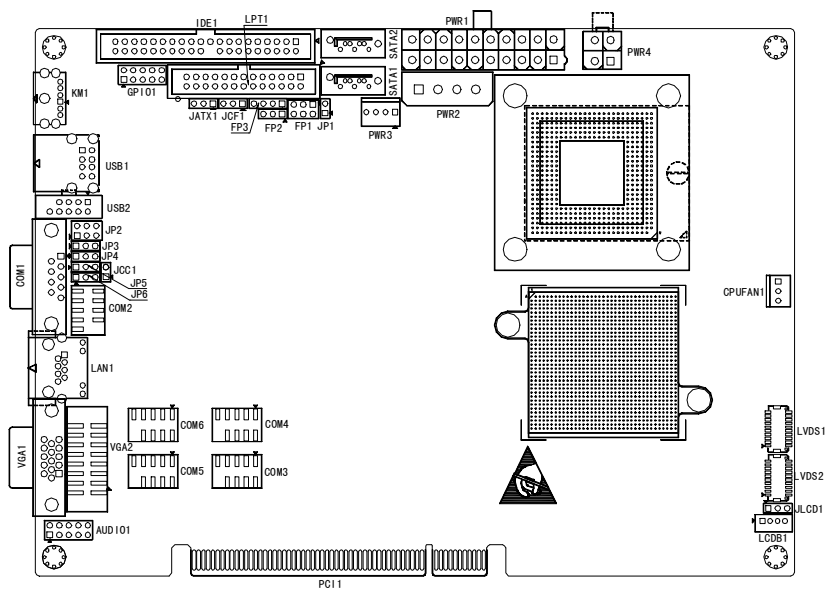
第二章 安装说明

产品外形尺寸图

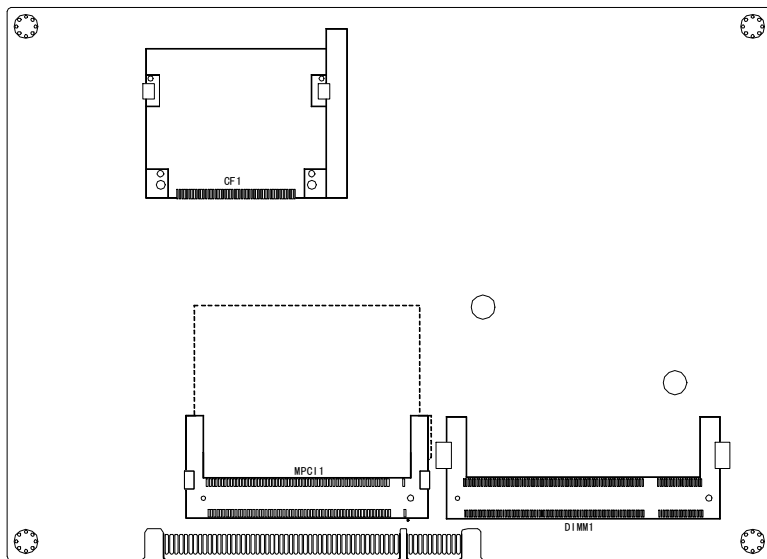


单位: mm

接口位置示意图



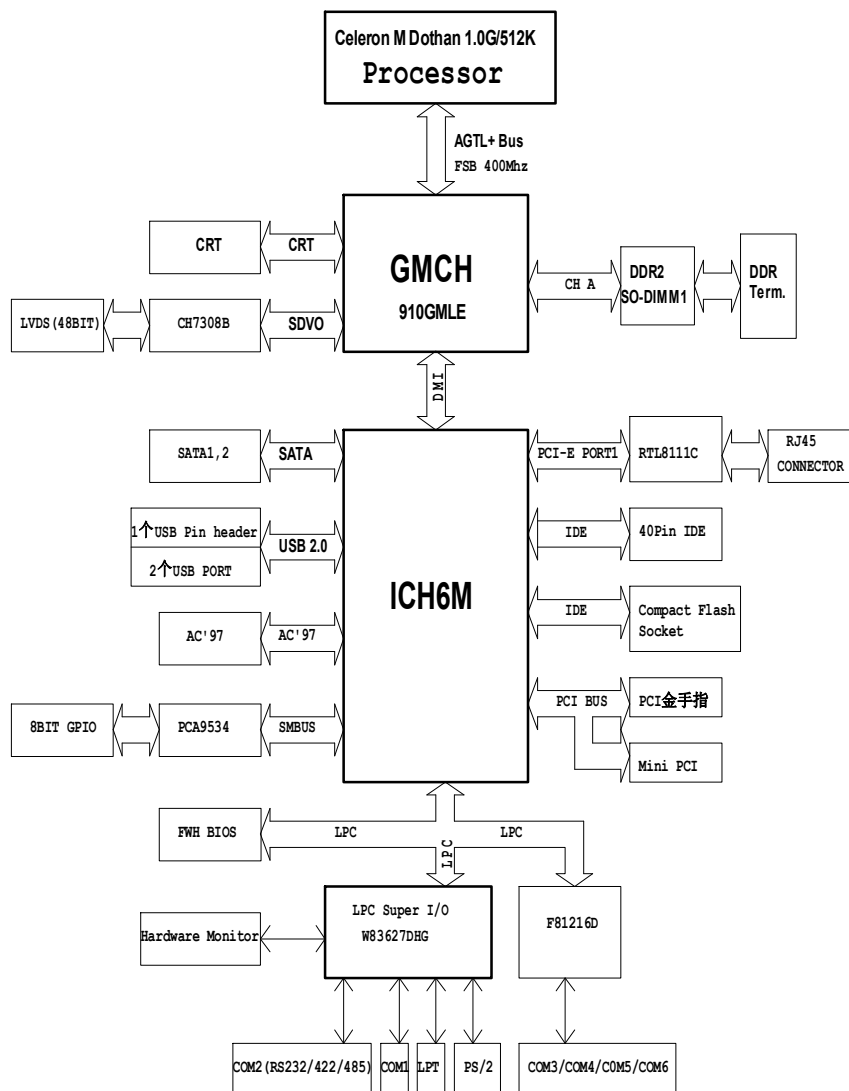
正面示意图



背面示意图

主板架构图

EC5-1712CLDNA(B) Function Block Diagram



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。
- 3、电缆上的红线或其它第一脚标记要与插座的第一脚相接。

跳线设置

1. JCC1:CMOS内容清除/保持设置（脚距：2.54mm）

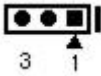
CMOS由板上钮扣电池供电。清CMOS会导致永久性消除以前系统配置并将其设为原始（工厂设置）系统设置。其步骤: (1) 关闭计算机，断开电源；(2) 瞬间短接JCC1插针；(3) 开计算机；(4) 启动时按屏幕提示按键进入BIOS设置，重新加载最优缺省值；(5) 保存并退出设置。设置方式如下：



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. JATX1:电源类型选择（脚距：2.54mm）

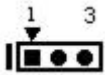


JATX1

设置	功能
1-2 短路	ATX 电源（Default）
2-3 短路	AT 电源及单 12V 电源

3. JLCD1:LCD工作电压选择（脚距：2.54mm）

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

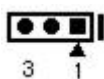
4. 主板CF卡主从选择（脚距：2.54mm）



JP1

设置	功能
1-2 短路	Master (Default)
1-2 开路	Slave

5. 主板CF卡电压选择（脚距：2.54mm）

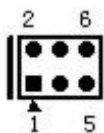


JCF1

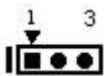
设置	功能
1-2 短路	+3.3V
2-3 短路	+5V (Default)

6. 串口RS-232/RS-422/RS-485模式选择（脚距：2.54mm）

COM2支持RS-232/RS-422/RS-485可选，COM2通过设置JP2～JP6实现模式选择，具体设置如下：



JP2



JP3～JP6

管脚设置	模式选择		
	RS-232 (Default)	RS-422	RS-485
JP2	1-2	5-6	3-4
JP3	1-2	2-3	2-3
JP4	1-2	2-3	2-3
JP5	1-2	2-3	2-3
JP6	1-2	2-3	2-3

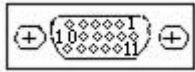
系统内存安装

本板配有一条200Pin DDRII内存插槽（图示标识为DIMM1）。安装内存条时，要注意以下几点：

- 安装时，先对准内存条与内存插槽的缺口，用力插到位，再将内存条向下并扣入内存插槽，使内存插槽两侧的手柄扣紧并锁住内存条；
- 支持内存为 DDRII 400MHz，内存的总容量不得超过 1GB；
- 最好选择带 SPD（内存自动识别功能）的内存条，以保证内存条工作稳定。

显示接口

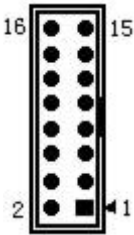
1. 本板提供1个标准DB15接口，管脚定义如下：



VGA1

管脚	信号名称	管脚	信号名称
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

2. 本板提供1个标准2x8PIN插针（脚距：2.54mm），需要用转接线接标准VGA设备，管脚定义如下：

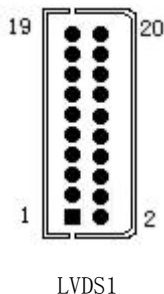


VGA2

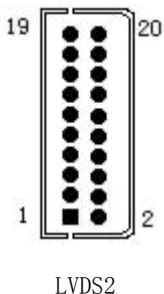
管脚	信号名称	管脚	信号名称
1	Red	2	GND
3	NC	4	Green
5	GND	6	DDCDATA
7	Blue	8	GND
9	HSYNC	10	NC
11	+5V	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	shield_gnd

3. 双通道24bit LVDS接口（脚距：1.0mm）

LVDS接口支持双通道18/24bit或单通道18/24bit LCD屏，单通道只能用LVDS1接口，需要在CMOS中进行相应的设置。



管脚	信号名称	管脚	信号名称
1	LVDS0_D0+	2	LVDS0_D0-
3	GND	4	GND
5	LVDS0_D1+	6	LVDS0_D1-
7	GND	8	GND
9	LVDS0_D2+	10	LVDS0_D2-
11	GND	12	GND
13	LVDS0_CLK+	14	LVDS0_CLK-
15	GND	16	GND
17	LVDS0_D3+	18	LVDS0_D3-
19	VDD	20	VDD

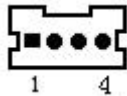


管脚	信号名称	管脚	信号名称
1	LVDSE_D0+	2	LVDSE_D0-
3	GND	4	GND
5	LVDSE_D1+	6	LVDSE_D1-
7	GND	8	GND
9	LVDSE_D2+	10	LVDSE_D2-
11	GND	12	GND
13	LVDSE_CLK+	14	LVDSE_CLK-
15	GND	16	GND
17	LVDSE_D3+	18	LVDSE_D3-
19	VDD	20	VDD

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

脚距：2.0mm。



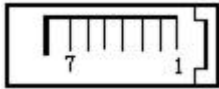
LCDB1

管脚	信号名称
1	+12V
2	NC
3	LCD_BKLTEN
4	GND

注：第1Pin 电流小于 1A；LCD_BKLTEN ---背光使能，高有效。

SATA 接口

本板提供2个串行ATA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

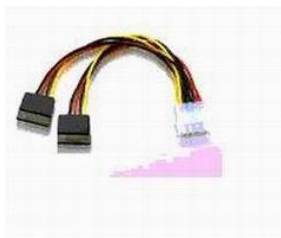
SATA 硬盘热插拔

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。



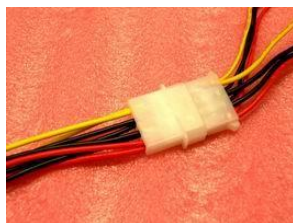
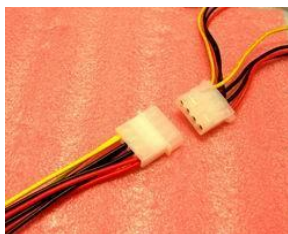
SATA 硬盘数据线



SATA 硬盘电源线

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。

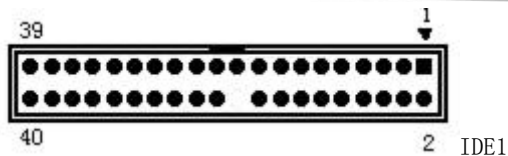


步骤 3: 从 SATA 硬盘一侧拔去 SATA 15-针脚电源线接口(黑色)。

IDE 接口

本板提供一组40针IDE接口（IDE1）（脚距：2.54mm），安装IDE设备时，需注意：

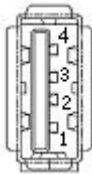
- IDE接口与CF卡共享通道，使用时主从设置要与CF卡对应。
- 连接使用 Ultra100 的硬盘时，建议使用80线的专用扁平电缆(IDE电缆有红色标示的为第一脚)。



管脚	信号名称	管脚	信号名称
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	Key
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY	28	GND
29	DACK#	30	GND
31	IRQ	32	NC
33	DA1	34	ATA66_DET
35	DA0	36	DA2
37	CS1#	38	CS3#
39	LED#	40	GND

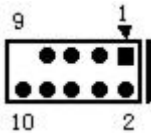
USB 接口

本主板提供2组USB接口，可连接4个标准的USB设备。USB1提供两个USB标准插座，USB2为一组2x5Pin的USB设备接针（脚距：2.54mm）。USB2需使用转换电缆将USB接口信号接到标准USB插座。管脚定义如下。



USB1

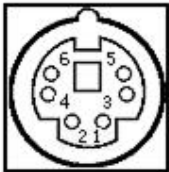
管脚	信号名称
1	+5V
2	USB_Data-
3	USB_Data+
4	GND



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

键盘/鼠标接口

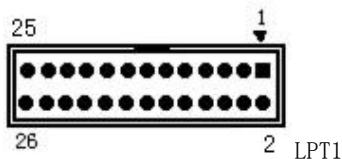


KM1

管脚	信号名称
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

并口

本板提供1个2×13Pin插槽并口（脚距：2.54mm），需要用转换电缆固定到机箱才能与外部设备连接，管脚定义如下：

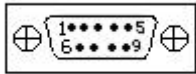


管脚	信号名称	管脚	信号名称
1	STB#	2	AFD#
3	PD0	4	ERR#
5	PD1	6	INIT#
7	PD2	8	SLIN#
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

串口

本板提供6个串行通讯口，其中COM2支持RS-232/RS-422/RS-485可选，COM3～COM6支持RS-232模式。

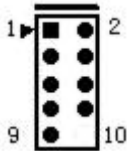
1、COM1采用DB9连接器，支持RS-232模式，管脚定义如下：



COM1

管脚	信号名称
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

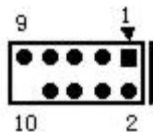
2、COM2采用2×5Pin插针（脚距：2.54mm），支持RS-232/RS-422/RS-485模式，需要用转换电缆固定到机箱才能与外部设备连接，管脚定义如下：



COM2

管脚	信号名称		
	RS-232	RS-422	RS-485
1	DCD#	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	X
4	DTR#	RXD-	X
5	GND	GND	GND
6	DSR#	X	X
7	RTS#	X	X
8	CTS#	X	X
9	RI#	X	X
10	NA	NA	NA

3、COM3~COM6采用2×5Pin插针串口（脚距：2.54mm），支持RS-232模式，需要用转换电缆固定到机箱才能与外部设备连接，管脚定义如下：

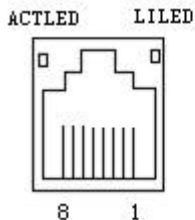


COM3~COM6

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

网络接口

本主板提供1个10/100/1000Mbps网络接口，以下给出了它的管脚安排和相应的输入插座。



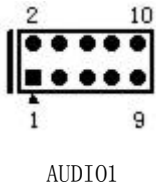
MX0+ (Pin#1)
MX0- (Pin#2)
MX1+ (Pin#3)
MX2+ (Pin#4)
MX2- (Pin#5)
MX1- (Pin#6)
MX3+ (Pin#7)
MX3- (Pin#8)

LAN1

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
闪烁	有数据传输	绿色	1000Mbps
灭	无数据传输	黄色	100Mbps
		灭	10Mbps

音频接口

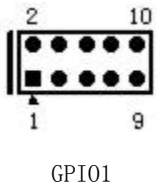
利用附在主板上的电缆，Lout可以连接到耳机或更适合的功率扬声器。Lin用于计算机对磁带机或其他声频源的录音或通过 Lout播放。Mic用于连接麦克风输入声音。（脚距：2.54mm）



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_IN	10	MIC_P

数字 I/O 接口

主板提供四路输入、四路输出的GPIO接口（脚距：2.54mm）。

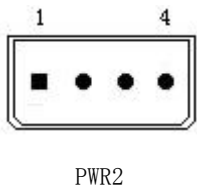


管脚	信号名称	管脚	信号名称
1	INPUT1	2	OUTPUT1
3	INPUT2	4	OUTPUT2
5	INPUT3	6	OUTPUT3
7	INPUT4	8	OUTPUT4
9	GND	10	+5V

电源接口

1、AT 电源接口

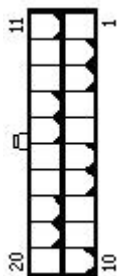
脚距：5.08mm。



管脚	信号名称
1	+12V
2	GND
3	GND
4	+5V

2、ATX 电源接口

脚距：4.2mm。

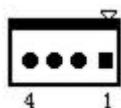


PWR1

管脚	信号名称	管脚	信号名称
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON#
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWROK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

3、SATA 电源接口

脚距：2.54mm。



PWR3

管脚	信号名称
1	+12V
2	GND
3	GND
4	+5V

4、单 12V 电源接口

脚距：4.2mm。



PWR4

管脚	信号名称
1	GND
2	GND
3	+12V
4	+12V

风扇接口

脚距：2.54mm。

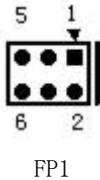


管脚	信号名称
1	GND
2	+12V
3	FAN_IO

FAN_IO ： 风扇转速脉冲输出

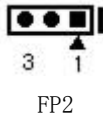
状态指示控制接口

1、电源开关及硬盘指示灯接口(脚距：2.54mm)



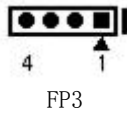
管脚	信号名称	管脚	信号名称
1	PWRBTN#	2	GND
3	GND	4	RESET#
5	IDE_LED-	6	IDE_LED+

2、电源指示灯接口(脚距：2.54mm)



管脚	信号名称
1	PWR_LED+
2	NC
3	GND

3、扬声器输出接口(脚距：2.54mm)



管脚	信号名称
1	SPEAKER
2	NC
3	GND
4	+5V

CF 卡

Compact Flash卡是一种快速存储器，体积很小，使用方便，存储量随使用的卡变化，如128M，256M等。CF卡插入时只能以一个方向插入，板上标识为(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

PCI 接口

1、一个 PCI 扩展接口，板上标识为 PCI1。

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	TRST#	A31	PCI_AD18	B1	-12V	B31	+3.3V
A2	+12V	A32	PCI_AD16	B2	TCK	B32	PCI_AD17
A3	TMS	A33	+3.3V	B3	GND	B33	PCI_C/BE#2
A4	TDI	A34	PCI_FRAME#	B4	TDO	B34	GND
A5	+5V	A35	GND	B5	+5V	B35	PCI_IRDY#
A6	INTA#	A36	PCI_TRDY#	B6	+5V	B36	+3.3V
A7	INTC#	A37	GND	B7	INTB#	B37	PCI_DEVSEL#
A8	+5V	A38	PCI_STOP#	B8	INTD#	B38	GND
A9	CLK_PCI2	A39	+3.3V	B9	PCI_REQ3#	B39	PCI_PLOCK#
A10	+5V	A40	SDONE	B10	PCI_REQ1#	B40	PCI_PERR#
A11	CLK_PCI3	A41	SB0#	B11	PCI_GNT3#	B41	+3.3V
A12	GND	A42	GND	B12	GND	B42	PCI_SERR#
A13	GND	A43	PCI_PAR	B13	GND	B43	+3.3V
A14	PCI_GNT1#	A44	PCI_AD15	B14	CLK_PCIO	B44	PCI_C/BE#1
A15	PCI_RST#	A45	+3.3V	B15	GND	B45	PCI_AD14
A16	+5V	A46	PCI_AD13	B16	CLK_PCI1	B46	GND
A17	PCI_GNT0#	A47	PCI_AD11	B17	GND	B47	PCI_AD12
A18	GND	A48	GND	B18	PCI_REQ0#	B48	PCI_AD10
A19	PCI_REQ2#	A49	PCI_AD9	B19	+5V	B49	GND
A20	PCI_AD30	A50	PCI_C/BE#0	B20	PCI_AD31	B50	PCI_AD8
A21	+3.3V	A51	+3.3V	B21	PCI_AD29	B51	PCI_AD7
A22	PCI_AD28	A52	PCI_AD6	B22	GND	B52	+3.3V
A23	PCI_AD26	A53	PCI_AD4	B23	PCI_AD27	B53	PCI_AD5
A24	GND	A54	GND	B24	PCI_AD25	B54	PCI_AD3
A25	PCI_AD24	A55	PCI_AD2	B25	+3.3V	B55	GND
A26	PCI_GNT2#	A56	PCI_ADO	B26	PCI_C/BE#3	B56	PCI_AD1
A27	+3.3V	A57	+5V	B27	PCI_AD23	B57	+5V
A28	PCI_AD22	A58	PCI_REQ64#	B28	GND	B58	PCI_ACK64#
A29	PCI_AD20	A59	+5V	B29	PCI_AD21	B59	+5V
A30	GND	A60	+5V	B30	PCI_AD19	B60	+5V

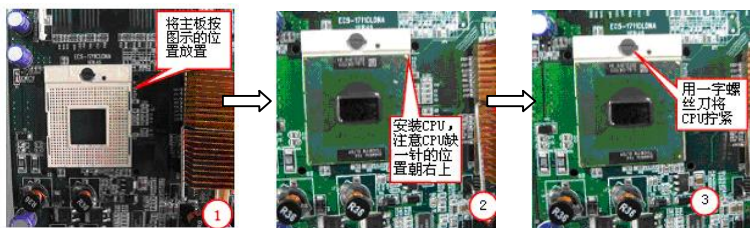
2、一个 124Pin Mini-PCI 扩展总线接口（在板背面，标识为：MPCI1）

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	TIP	32	GND	63	+3.3V	94	AD2
2	RING	33	AD31	64	FRAME#	95	AD3
3	8PMJ-3	34	PME#	65	CLKRUN#	96	AD0
4	8PMJ-1	35	AD29	66	TRDY#	97	+5V
5	8PMJ-6	36	NC	67	SERR#	98	NC
6	8PMJ-2	37	GND	68	STOP#	99	AD1
7	8PMJ-7	38	AD30	69	GND	100	NC
8	8PMJ-4	39	AD27	70	+3.3V	101	GND
9	8PMJ-8	40	+3.3V	71	PERR#	102	GND
10	8PMJ-5	41	AD25	72	DEVSEL#	103	AC_SYNC
11	LED1_GRNP	42	AD28	73	C/BE1#	104	M66EN
12	LED2_YELP	43	NC	74	GND	105	AC_SDATA_IN
13	LED1_GRNN	44	AD26	75	AD14	106	AC_SDATA_OUT
14	LED2_YELN	45	C/BE3#	76	AD15	107	AC_BIT_CLK
15	CHSGND	46	AD24	77	GND	108	AC_CODEC_ID0#
16	NC	47	AD23	78	AD13	109	AC_CODEC_ID1#
17	PIRQB#	48	IDSEL	79	AD12	110	AC_RESET#
18	+5V	49	GND	80	AD11	111	MOD_AUDIO_MON
19	+3.3V	50	GND	81	AD10	112	NC
20	PIRQA#	51	AD21	82	GND	113	AUDIO_GND
21	NC	52	AD22	83	GND	114	GND
22	NC	53	AD19	84	AD9	115	SYS_AUDIO_OUT
23	GND	54	AD20	85	AD8	116	SYS_AUDIO_IN
24	+3.3AUX	55	GND	86	C/BE0#	117	SYS_AUDIO_OUT_GND
25	CLK	56	PAR	87	AD7	118	SYS_AUDIO_IN_GND
26	RESET#	57	AD17	88	+3.3V	119	AUDIO_GND
27	GND	58	AD18	89	+3.3V	120	AUDIO_GND
28	+3.3V	59	C/BE2#	90	AD6	121	NC
29	REQ#	60	AD16	91	AD5	122	MPCIACT#
30	GNT#	61	IRDY#	92	AD4	123	+5V
31	+3.3V	62	GND	93	NC	124	+3.3AUX

CPU 安装

安装 CPU 按以下步骤进行（安装见下图）：

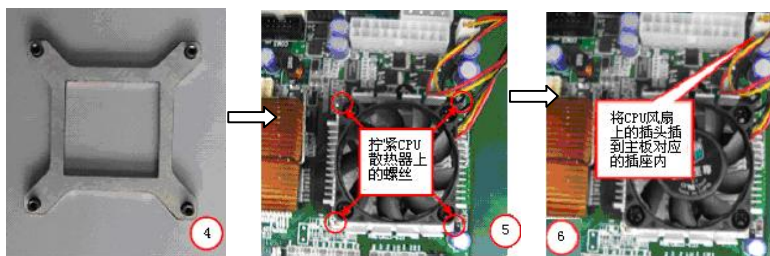
- 将 CPU 的第一脚（三角记号处）对准 CPU 插座上的缺脚记号，将 CPU 插入插座。
- 检查 CPU 完全安装到位后，用螺丝刀将 CPU 座上螺钉沿顺时针方向固定好，注意力度要适中，不要拧坏 CPU 座。



CPU 散热风扇安装

安装 CPU 散热风扇按以下步骤进行（安装见下图）：

- 先将散热片背板(如图④)从 CPU 卡背面的固定孔放置好；
- 把散热片(如图⑤)从正面与背板对接固定，注意散热片与 CPU 的晶片的平面接触良好；
- 然后用两颗螺丝固定散热片的对角两端（先不要拧到紧），再添加另外对角两颗螺丝，再将四个螺丝拧紧；
- 最后将风扇电源线接到 CPU 卡上的风扇插座上。



注意！ 建议使用经Intel认证过的散热风扇；在安装风扇前，先把散热膏涂抹在CPU与风扇散热片接触的表面上以增强散热效果；经常检查CPU风扇是否正常工作，以确保机箱内的散热情况。拿板时不能拿着散热片，要拿板边。

第三章 BIOS 功能简介

BIOS 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	
Processor	←→ Select Screen
CPU Type :	↑ ↓ Select Item
Intel(R) Celeron® M processor 1.0GHz	+ - Change Field
Speed :1.0GHz	Tab Select Field
System Memory	F1 General Help
Size: 248MB	F10 Save and Exit
Power Supply	ESC Exit
Type : AT	
System Time [00:47:55]	
System Date [Wed 01/02/2002]	
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1. Main

(1) 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)。

(2) 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.)。

2. 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 ▶ Hardware Health 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
V02.57 (c)Copyright 1985-2004, American Megatrends, Inc.	

(1) CPU Configuration

BIOS SETUP UTILITY	
Configure advanced CPU settings Module Version - 11.05 Manufacturer: Intel Brand String: Intel(R) Celeron® M processor 1.0GHz Frequency; : 1.0GHz FSB Speed; : 400MHz Cache L1; : 32 KB Cache L2; : 512 KB	←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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(2) IDE Configuration

BIOS SETUP UTILITY	
IDE Configuration	
ATA/IDE 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]
▶Third IDE Slave	: [Not Detected]
←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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① ATA/IDE Configuration

此项有Disabled, Compatible, Enhanced三个选择项，Compatible即兼容模式，可把把SATA硬盘端口映射到并口IDE通道的相应端口，Enhanced为增强模式。

② Legacy IDE Channels

此项有SATA Only; SATA Pri, PATA Sec; PATA Only三个选择项，来设置IDE通道。

③ Primary, Secondary, Third IDE Master/Slave

a) 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。

b) LBA/Large Mode

用于设置是否支持LBA模式。

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

用于设置是否支持多扇区同时传输的功能。

d) **PIO Mode**

用于PIO模式设置。

e) **DMA Mode**

用于DMA模式设置。

f) **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。

g) **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。

(3) Super IO Configuration

BIOS SETUP UTILITY	
Allows BIOS to Enable or Disable Floppy Controller.	
Floppy A [Disabled]	
OnBoard Floppy Controller [Enabled]	
Serial Port1 Address [3F8/IRQ4]	
Serial Port2 Address [2F8/IRQ3]	←→ Select Screen
Serial Port3 Address [200]	↑ ↓ Select Item
Serial Port3 IRQ [10]	+ - Change Field
Serial Port4 Address [208]	Tab Select Field
Serial Port4 IRQ [10]	F1 General Help
Serial Port2 Address [210]	F10 Save and Exit
Serial Port5 IRQ [10]	ESC Exit
Serial Port6 Address [218]	
Serial Port6 IRQ [10]	
Parallel Port Address [378]	
Parallel Port Mode [Normal]	
Parallel Port IRQ [IRQ7]	
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① Floppy A

设定软驱选项，默认值为：Disabled。

② Onboard Floppy Controller

设定软驱控制器选项，默认值为：Enabled。

③ Serial Port 1-6 Address

设定主机板上串口1至6的地址。

④ Serial Port 3-6 IRQ

设定主机板上串口3至6的中断。

⑤ Parallel Port Address

设定主机板上并口的地址，地址缺省值为378。

⑥ Parallel Port Mode

该项设置指定并行口的工作模式：Normal, Bi-Directional, ECP, EPP。EPP表示双向数据传输下的最大速度；而ECP表示在双向数据传输下比EPP更快的速度。

⑦ Parallel Port IRQ

设定主机板上并口的中断。

(4) Hardware Health Configuration

BIOS SETUP UTILITY	
Hardware Health Configuration	Enables Hardware Health Monitoring Device
System Temperature : 33°C/138°F	←→ Select Screen ↑ ↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
CPU Temperature : 34°C/120°F	
CPUFAN1 Speed :N/A	
Vcore : 0.929 V	
V3.3 : 3.298V	
V5.0 : 5.041 V	
V12.0 : 12.294V	
VBAT : 3.148 V	
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① System Temperature

当前系统温度，一般主板上热敏电阻监测。

② CPU Temperature

当前CPU温度。CPU的温度由板上的温度传感器监测。

③ CPUFAN Speed

显示的是CPU和系统风扇当前的转速。

④ Vcore

CPU核心电压。

⑤ V3.3/V5.0/V12.0

开关电源输出电压。

⑥ VBAT

电池电压。

(5) USB Configuration

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers. ←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
Module Version -2.24.0-11.4	
USB Devices Enabled :	
None	
USB Function [4 USB Ports]	
Legacy USB Support [Enabled]	
USB 2.0 Controller [Enabled]	
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① USB Function

此选项设置USB控制器的数量，即确定支持几个USB控制器，通常一个控制器有两个USB接口。

② Legacy USB Support

支持传统的USB键盘和鼠标，当该项设为Enabled(有效)时，即使不支持USB的操作系统如DOS下也能使用USB设备。

③ USB 2.0 Controller

此选项用来选择是否支持USB 2.0 控制器。

(6) Power Management Configuration

BIOS SETUP UTILITY	
ACPI Settings	
ACPI Aware O/S	[YES]
Resume On RTC Alarm	[Disabled]
←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit	
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① ACPI Aware O/S

使用该选项可以设置操作系统是ACPI还是APM。

(7) Clock Generator Configuration

BIOS SETUP UTILITY	
Clock Generator Configuration	←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
Spread Spectrum : [Enabled]	
Auto PCI Clock : [Enabled]	
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① Spread Spectrum

使用该选项可以设置是否要支持展频功能。

② Auto PCI Clock

该选项可以设置是否支持未用时钟关闭功能。

3. 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,8MB]
Boot Display Device	[CRT]
SDVO Flat Panel Type	[1024×768LVDS]
SDVO Panel Connector	[SPWG]
LVDS Channel	[Dual channel]
Panel Color Depth	[24-bit color depth]
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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(1) RAM Frequency

配置DRAM的频率。

(2) 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。

(3) Boots Graphic Adapter Priority

指定优先使用的图形设备。

(4) Internal Graphics Mode Select

图形设备从系统地址空间申请一块专用地址空间，用于图形内存地址空间。

(5) Boot Display Device

选项用于选择启动设备的类型。

(6) SDVO Flat Panel Type

此选项用于选择LVDS的分辨率。

(7) SDVO Panel Connector

此选项用于选择LVDS的接口类型。

(8) LVDS Channel

此选项用于选择LVDS是否为单通道或者双通道。

(9) Panel Color Depth

此选项用于选择LVDS颜色位数。

(10) Onboard Audio Controller

选择是否打开声卡控制器。

4. PCIPnP

BIOS SETUP UTILITY		
Advanced PCI/PnP Settings		←→ Select Screen ↑ ↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
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]	
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(1) IRQ 3~15

本项目用以指定IRQ中断是PNP方式还是保留给ISA使用

5. Boot

BIOS SETUP UTILITY		
Boot Settings		↔ Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
Quick Boot	[Enabled]	
Quiet Boot	[Disabled]	
Waite For 'F1' If Error	[Enabled]	
Boot Device Priority		
1 st Boot Device	[]	
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(1) 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

(2) Quiet Boot

配置是否显示OEM LOGO内容

(3) Wait for ‘F1’ If Error

配置在系统出错时是否提示按” F1” 键

(4) 1st~4th Boot Device

配置系统启动时优先权高低的启动设备

6. Security

BIOS SETUP UTILITY	
Security Settings	
Supervisor Password	:Not Installed
User Password	:Not Installed
Change Supervisor Password	
Change User Password	
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(1) 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

7. Exit

South Bridge Configuration	
Exit Options	Exit system setup after saving the changes.
Save Changes and Exit	
Discard Changes and Exit	←→ Select Screen
Discard Changes	↑ ↓ Select Item
	Enter Go to Sub Screen
	F1 General Help
Load Optimal Defaults	F10 Save and Exit
Load Failsafe Defaults	ESC Exit
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(1) 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，先选定此选项并按下< Enter >键，再按< Enter >键即可退出

(2) 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，可先选定此选项并按下< Enter >键，再按<Enter >键即可退出

(3) Discard Changes

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

(4) 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

(5) 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，先选中此选项按下< 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

1. DMA

级别	功能
DMA0	未分配
DMA1	未分配
DMA2	未分配
DMA3	未分配（有时用于硬盘）
DMA4	用于 DMAC 的级联
DMA5	未分配
DMA6	未分配
DMA7	未分配

2. 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的主板可以有高达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。

3. IO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 - 00Fh	DMA 控制器#1
020h - 021h	可编程中断控制器#1
040h - 043h	系统计时器
060h - 064h	标准 101/102 键盘控制器
070h - 071h	实时时钟, NMI
080h - 09Fh	DMA 页寄存器
0A0h - 0A1h	可编程中断控制器#2
0C0h - 0DFh	DMA 控制器#2
0F0h - 0FFh	数据数值处理器
1F0h - 1F7h	主 IDE
200h - 207h	通讯端口 (COM3)
208h - 20Fh	通讯端口 (COM4)
210h - 217h	通讯端口 (COM5)
218h - 21Fh	通讯端口 (COM6)
274h - 277h	PnP 组态寄存器端口
279h、A79h	PnP 组态寄存器端口
2F8h - 2FFh	通讯端口 (COM2)
378h - 37Fh	并行端口#1 (LPT1)
3B0h - 3DFh	显示卡接口
3F6h	主 IDE (dual FIFO)
3F8h - 3FFh	通讯端口 (COM1)

4. 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	保留
IRQ3	通讯端口 2
IRQ4	通讯端口 1
IRQ5	保留
IRQ6	保留
IRQ7	保留
IRQ8	系统 CMOS/实时时钟
IRQ9	微软 ACPI 兼容系统/AMQZBM50 IDE 控制器
IRQ10	通讯端口 3/4/5/6
IRQ11	Intel (R)82801 FB/FBM SMBus Controller
IRQ12	鼠标端口
IRQ13	保留
IRQ14	主 IDE

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, 0x87);
outportb(INDEX_PORT, 0x87);
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, 0x2d);
oldval = inportb(DATA_PORT);
```

a. 配置WDT成复位工作方式

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

b. 配置WDT成中断工作方式

```
oldval |= 0x01;
outportb(DATA_PORT, oldval);
outportb(INDEX_PORT, 0xf7);
outportb(DATA_PORT, 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*/

(3) 配置WDT按分或秒计时：**a. 按分计时：**

```
outportb(INDEX_PORT, 0xf5);
outportb(DATA_PORT, 0x08);
```

b. 按秒计时：

```
outportb(INDEX_PORT, 0xf5);
outportb(DATA_PORT, 0x00);
```

(4) 启动/禁止WDT**a. 启动WDT：**

```
outportb(INDEX_PORT, 0xf6);
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, 0xf6);
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) 初始化数字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 ;
    outportb(BAR, 0xbf);
    outportb(BAR+0x04, 0x40);
    outportb(BAR+0x03, 0x01);
    reg_val = inportb(BAR+0x05);
    reg_val = lev_val ?
reg_val | (0x01<<pin+3) : reg_val & ~(0x01<<pin+3)) ;
    outportb(BAR+0x05, reg_val);
    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;
        }
    }
}
```

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 ;
    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; /*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>。