PPC-1507

15″ LCD Panel PC

Version: A3

Announcement

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Safety Instructions

1. Please carefully read the users' manual before handling the product;
2. Before inserting, removing or re-configuring the boards, 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;
3. Before removing this product, please firstly unplug the AC cable from power source;
4. When inserting or removing boards, please firstly unplug the AC power cable from power sources;
5. Before connecting or disconnecting any signal cable, make sure all power cables are unplugged in advance;
6. To avoid unnecessary damage caused by turning on/off computer frequently, wait at least 30 seconds before re-turning on the computer.
7. All the operations such as upgrade, remove or installation shall be implemented on the ESD worktable, because some exactitude components are sensitive to electrostatic discharge (ESD).
8. If there's no ESD worktable, please take the following steps to prevent damage from electrostatic discharge (ESD):
    a) Wear a antistatic wrist strap and connect it with the metal part of the corresponding product;
    b) Always touch the metal chassis or frame before touching any components;
    c) Keep part of your body in contact with the metal chassis to discharge the static while handling components;
    d) Avoid all unnecessary movement;
    e) Hold the components (especially the boards) by the edges;

f) Place the components on a grounded, static-free operating platform. Use a conductive foam pad if available (not the component wrapper).

g) Do not let the components slide on the operating platform.

9. Use cross-head screwdriver to operate. A magnetic screwdriver is recommended (magnet helps to collect screws). Do not leave any tools or screws inside the chassis;
10. Assure abundant cooling and ventilation.

Contents

Chapter 1

Product Introduction

Overview

PPC-1507 is a sort of industrial level panel PC with 15″ LCD. The whole set is configured with 15″ high luminance LCD; it integrates the latest low consumption motherboard, with build-in super slim CD-ROM and 2.5″ 80G SATA hard disk. It integrates three COMs (one of which is optional with RS-232/RS-422/RS-485 operating mode), one parallel port, two USB2.0 high-speed interfaces, one Intel 10M/100Mbps LAN port, one AC'97 Audio interface, one keyboard/mouse interface and watchdog timer. It could be expanded to 1G DDR2 notebook 200Pin memory and resistance touch screen (or tempered glass); it also possesses standby energy mode.

The computer is advanced in structure designing, flexible and convenient in system installation. Its installing mode is compatible with panel type, VESA standard support arm and so on. The chassis is equipped with fan; therefore, it is excellent in heat dissipation. The product is compact and solid in its structure, excellent in anti-vibration and anti-shock and stable in performance.

PPC-1507 is a sort of industrial level panel PC with high performance-price ratio. It could be widely used for communication and terminal control in the fields of electric power, manufacturing, financing, traffic controlling and so on.

Ordering Information

Model	Descriptions
PPC-1507	Panel PC with 15″ LCD On board low consumption Celeron M 1G (0Cache), 512M memory, 80G SATA hard disk with PCI-E expansion with tempered glass protection
PPC-1507-01	Panel PC with 15″ LCD On board low consumption Pentium M 1.4G (0Cache), 512M memory, 80G SATA hard disk with PCI-E expansion with tempered glass protection
PPC-1507-02	Panel PC with 15″ LCD On board low consumption Pentium M 2G (0Cache), 1G memory, 80G SATA hard disk with PCI-E expansion with tempered glass protection
PPC-1507T	Panel PC with 15″ LCD On board low consumption Celeron M 1G (0Cache), 512M memory, 80G SATA hard disk with PCI-E expansion with touch screen
PPC-1507T-01	Panel PC with 15″ LCD On board low consumption Pentium M 1.4G (0Cache), 512M memory, 80G SATA hard disk with PCI-E expansion with touch screen
PPC-1507T-02	Panel PC with 15″ LCD On board low consumption Pentium M 2G (0Cache), 1G memory, 80G SATA hard disk with PCI-E expansion with touch screen

Product Configuration

- Motherboard: low consumption industrial level motherboard (refer to the above table)
- Power: 220W ATX power
- Hard Disk: 80G SATA hard disk
- CD-ROM: 24X super slim CD-ROM
- LCD Screen: 15″ high luminance LCD with VGA interface
- Touch Screen: touch screen with RS232 interface (refer to the configuration in the above table)
- PCI-E Expansion Slots: PCI-E transfer card (with one X1 X4 slot each)
- SDD: CF card (optional)
- Switch: ATX power switch

Note: the factory default setting might be different with the above configuration, please subject to the packing list.

LCD Screen Introduction

Dimension: 15″ TFT LCD;

Interface: LVDS;

Resolution: 1024*768;

Luminance: ≥300cd/m2, adjustable, inhomogeneity ≤1.5:1;

Contrast: ≥400:1, adjustable;

Depth of the Color: ≥262144 Colors;

Responding Time: ≤8ms.

Touch Screen Introduction

Touch screen is a sort of resistance 15″ touch screen and its dimension is adapted with LCD screen.

Power Introduction

The power of PPC-1507 industrial-level panel PC is a sort of 220W ATX industrial power, which possesses advantage of high stability, reliability, long operation time, stability in electric performance and so on.

The power also possesses over-load and over-voltage dual protection with low drain current and stable performance. Its EMC compliance and safety meets relevant national standards for industrial PC power (GB4943, GB9254, GB/T17618).

Main Performances (Motherboard Introduction)

CPU

Configured as the ordering information table

Chipset

Intel 82915GM+ICH6M (82801FBM) chipset

System Storage

Provide one 200PIN SO-DIMM memory slot, support DDR Ⅱ 400/533 memory and maximum memory capacity up to 1GB.

LAN Function

Integrate one 10/100Mbps Ethernet controller on board to provide you with high-speed and stable network platform selection.

IDE Function

One ATA100/66/33 channel, support two IDE devices;

One SATA interface, data transmission speed is up to 1.5Gb/s (minimum 150MB/s).

Audio Function

Integrate one standard AC'97 sound effect chip on board to provide you with excellent sound effect.

USB Function

Provide two USB2.0 high-speed interfaces, which make the massive removable storage of embedded single board be possible.

Warning: 1) Please use qualified USB device and make sure it is well grounded; ill grounding might cause damage to the system; 2) At any time, before you want to touch the USB device, please touch the chassis to eliminate the static on your body; 3) If you want to remove the USB device with power on, please make sure the USB device is standby (unoperating).

PCIE Function

One PCIE X1 interface,

One PCIE X4 interface.

BIOS

PnP BIOS with AMI new kernel

Watchdog Function

- 1～255 levels, program time to interrupt
- 1～255 overtime event reset system
- 1 (s/m) resolution down counter

I/O Function

- One high-speed parallel port, SPP/EPP/ECP mode
- Exteriorly configured with three RS-232 COMs, COM1 is RS-232/RS-422/RS-485 optional
- Keyboard/Mouse socket

Display Function

Intel 82915GM display chip adopts Intel 3rd generation graphic core technique and supports dual channel multi-interface display: CRT, LVDS.

Graphic Core Frequency

- ✓ 2D displaying core frequency: 133 or 190/200MHZ, varies with different configuration of CPU/memory
- ✓ 3D processing core frequency: 133, 160/166 or 190/200MHz, varies with different configuration of CPU/memory
- ✓ Intel Smart 2D display technique
- ✓ Intel dual-frequency graphic technique
- ✓ Dynamic display storage technique DVMT 3.0

3D Graphic Engine

- ✓ Support DirectX 9.0
- ✓ Support OpernGL 1.5 and 2.0
- ✓ Support regional processing

Analog CRT DA Conversion Interface

- ✓ Maximum DA conversion frequency is up to 400MHz
- ✓ 24-bit RAMDAC
- ✓ Maximum Resolution: 2048x1536

Digital LVDS Output Interface

- ✓ Support signal channel LVDS interface, which is in accord with ANSI/TIA/EIA–644-2001 specification
- ✓ Support 25MHz to 112MHZ signal-channel LVDS LCD interface:
  Signal channel LVDS 18bpp TFT LCD screen;
- ✓ Support maximum UXGA screen dimension
- ✓ Support maximum WUXGA wide screen dimension

Power Saving Feature

We may define the power switch signal as ATX power switch function or system sleeping/operating status conversion function via BIOS.

Other Features

- Temperature Monitor: CPU is equipped with one sensor to monitor the temperature of CPU.
- ATX power supply
- Accord with ACPI (Advanced Configuration and Power Management Specification) and support more power management functions.

Main Performances

Dimension, Weight and Environment

- Dimensions: 400.00mm (W) × 300.00mm (H) × 90.00mm (D);
- Operating Temperature: 0℃～50℃
- Operation Humidity: Hr=20%～93%, 40℃ no condensing
- Non-Operating Temperature: -20℃～60℃

EMC Compliance

- Limits of radio disturbance is compliant with GB9254-1998, class B
- Immunity is compliant with GB/T 17618-1998

Reliability

- MTBF≥50000h
- MTTR≤0.5h

Safety

- Meet the basic requirement of GB4943.

Environment Requirement

- Anti-vibration: amplitude 5-19Hz/1.0mm; acceleration 19-200Hz/1g
- Anti-shock: acceleration 10g, duration 11ms
- Front panel level IP65

Requirements of Transportation and Storage

- **Transportation**

Well-packaged products suit for transportation by truck, ship, and plane. During transportation, products should not be put in open cabin or carriage. When transshipping in route, products should not be stored in the open without protection from the atmospheric conditions. Products should not be transported together with inflammable, explosive and corrosive substances and are not allowed to be exposed to rain, snow and liquid substances and mechanical force.

- **Storage**

Products should be stored in package box when it is not used. And the warehouse temperature should be -20°C~+60°C, and relative humidity is 20%~93%. In the warehouse, there shall not be harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field affection. The package box should be over ground at least 10cm height, and 50cm away from wall, thermal source, and vent.

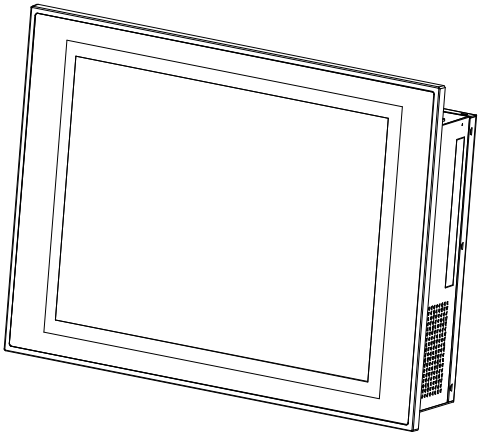
Troubleshooting

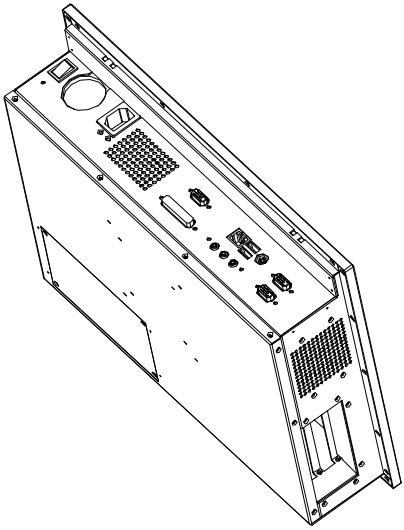
Please refer to *Common Trouble Analysis and Treatment of Industrial Control Computer* for a detailed description of the troubleshooting.

Chapter 2

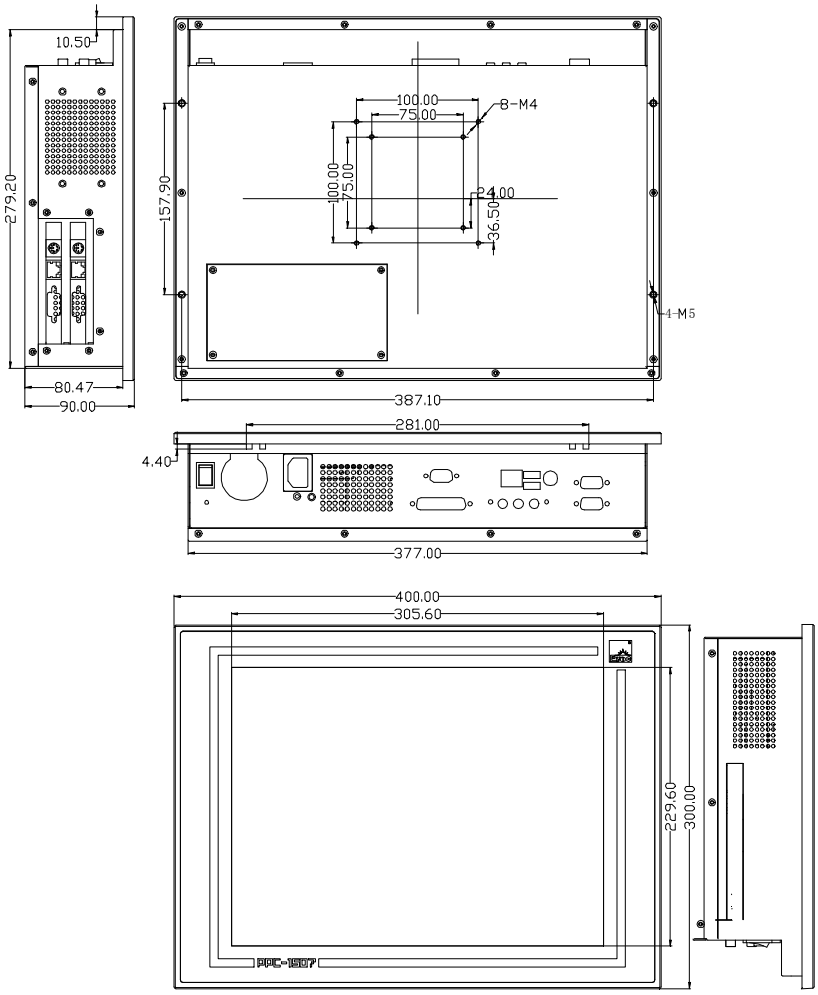
Computer Installation

Product Outline



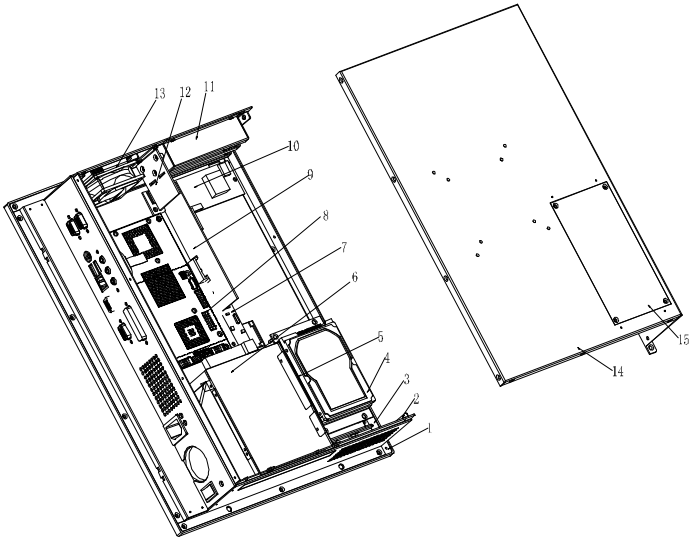


Product Dimension Drawing



Unit: mm

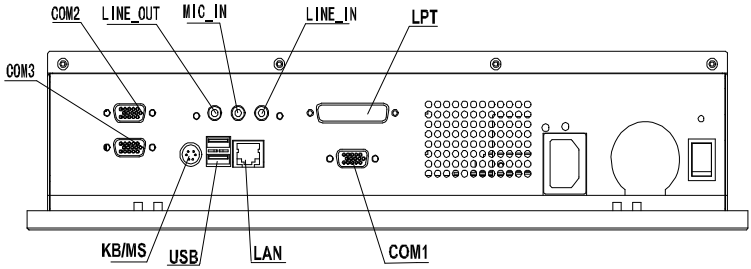
Assembly Explanation



1. Interface Cover Panel Components
2. Chassis Butt-welding
3. LCD Components
4. Hard Disk Components
5. Power
6. CD-ROM Components
7. Touch Screen Drive Board
8. Motherboard
9. Transfer Board
10. Inverter
11. PCI Bracket
12. Backplane Bracket
13. Fan Components
14. Cover Butt-welding
15. Hard Disk Cover

Note: (1) Be careful when removing the LCD screen and the touch screen; handle with care to avoid unnecessary damage.

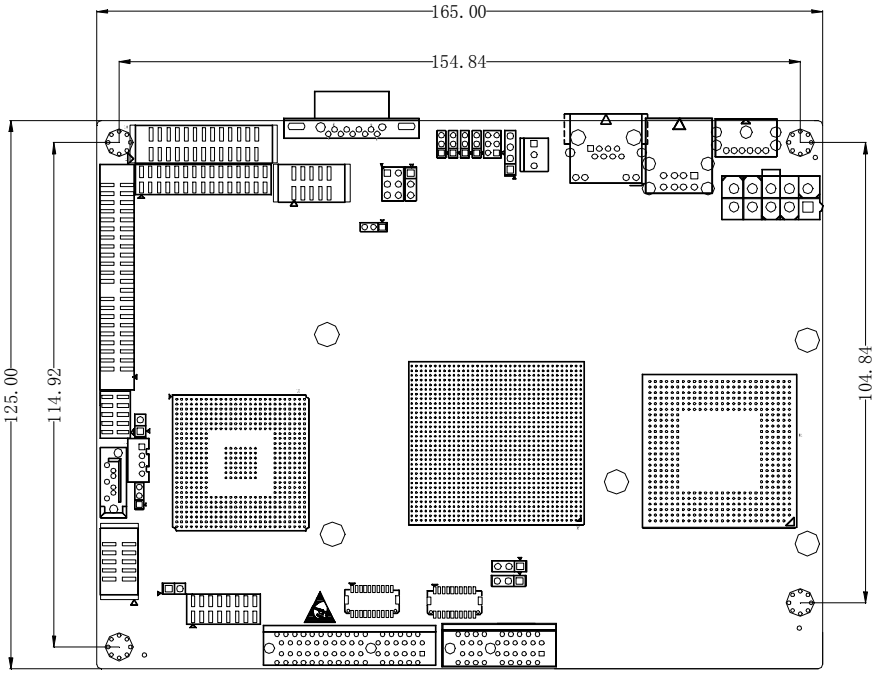
External Interfaces Outline



Chapter 3

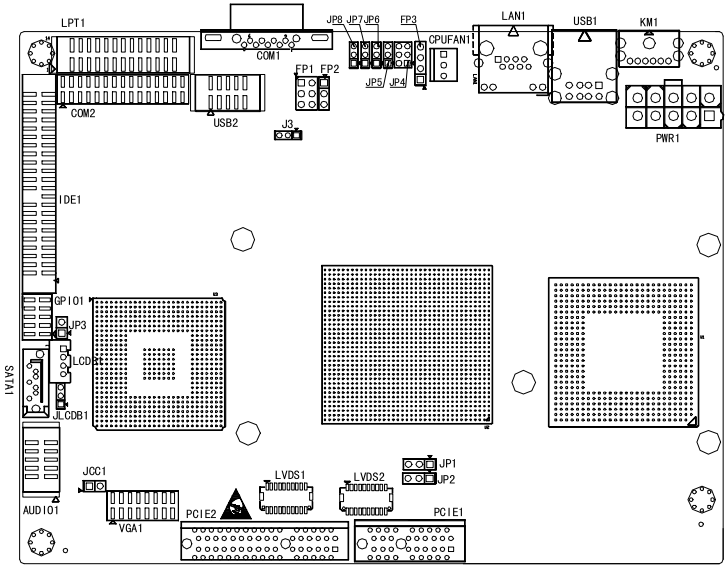
Motherboard Installation

Product Outline

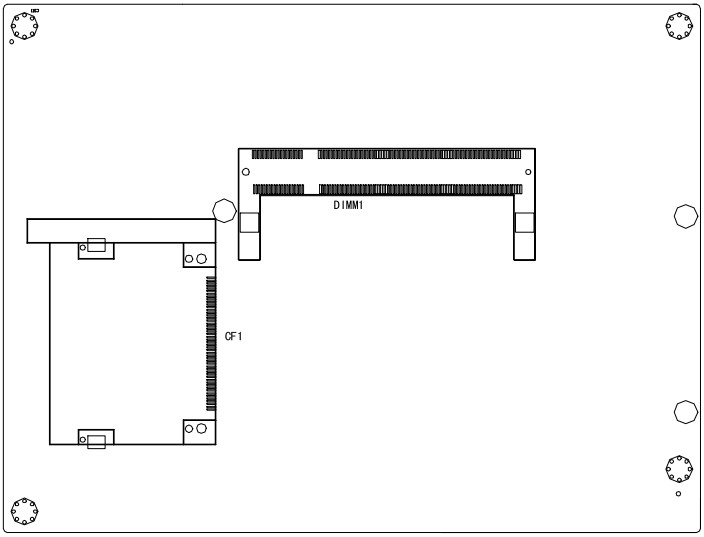


Unit: mm

Interface Locations



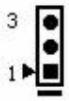
Front View



Rear View

Jumper Function Setup

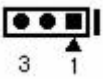
1. **JLCDB1: LCD Backlight Voltage Selection**



JLCDB1

Setup	Function
Pin 1-2 Short	+12V
Pin 2-3 Short	+5V

2. **JP1, JP2: System Bus Frequency Selection**



JP1/JP2

JP1	JP2	System Bus FSB Frequency
1-2 Short	2-3 Short	400MHz（Default）
2-3 Short	2-3 Short	533MHz
1-2 Short	1-2 Short	Inefficient Option
2-3 Short	1-2 Short	Inefficient Option

Note：the jumpers cannot used for ultra-frequency setting，please setup the FSB based on the CPU type.

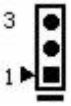
3. **JP3: CF Card Master/Slave Selection**

JP3

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

4. **COM1 Mode Selection**

JP4



JP5～JP8

Setup	Mode		
	RS-232	RS-422	RS-485
JP4	1-2 Short	5-6 Short	3-4 Short
JP5	1-2 Short	2-3 Short	2-3 Short
JP6	1-2 Short	2-3 Short	2-3 Short
JP7	1-2 Short	2-3 Short	2-3 Short
JP8	1-2 Short	2-3 Short	2-3 Short

5. **JCC1: Clear/Keep CMOS Setting**

JCC1is 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 JCC1solder pad; (3) Turn on the computer; (4) Press DEL to enter BIOS setup when starting the computer, load optimized defaults; (5) Save and exit.

JCC1

Setup	Function
Open	Normal (Default)
Instant Short	Clear the contents of CMOS, all BIOS setting will restore to factory default values.

6. **LCD Backlight Control**

LCDB1

Pin	Signal Name
1	LCD Backlight Power (Controlled by JLCD1)
2	GND
3	Backlight Enabled
4	Backlight Control

Installing System Memory

The board is equipped with one DDRⅡ (Double Data Rate) DIMM (Dual Inline Memory Modules) 200-Pin memory slots (identified as DIMM1 in figure and on the back of the motherboard).

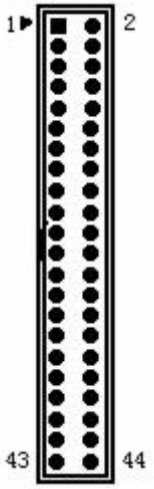
Pay attention as follows during installation:

- Aim the gaps of DIMM memory bank and DIMM slot, and then press properly to connect them.
- The memory compliant with Intel DDRⅡ 400/533 specification is available. The memory capability is up to 1GB.
- It is recommended to use the memory with SPD in order to guarantee stable operation.

IDE Interface

The board provides a set of 44-pin IDE interface (IDE1). Pay attention as follows when installing the IDE device:

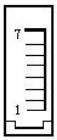
- IDE1 interface could be connected with two IDE devices: one is Master and the other is Slave. The way of connection is to connect the master device to the end of the cable while connect the slave device to the middle of the cable. (The first pin of the IDE cable is red.)



IDE1

Pin		Signal	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		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
41		+5V	42	+5V
43		GND	44	GND

In addition, the motherboard provides one SATA interface:

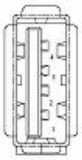


SATA1

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

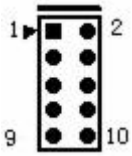
USB Interface

The board provides two USB interfaces, USB1 includes port 1 and port 2, USB2 is a standard 2x5 interface, which could educe two standard USB sockets. The table below shows the definition of USB interface:



USB1

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



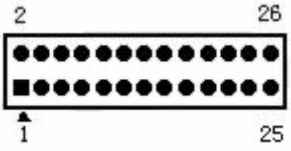
USB2

Pin	Signal Name	Pin	Signal Name
1	+5VUSB1	2	+5VUSB2
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NC	10	GND_CHASSIS

Parallel Port and Serial Port

1. Parallel Port

Standard 26-pin parallel port, it could be used to connect with peripheral equipment with parallel interface according to requirement.

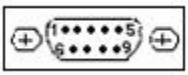


LPT1

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

2. Serial Port

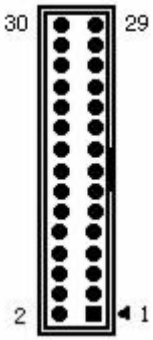
COM1 is a 9-pin D-SUB port, which could select RS232/RS422 or RS485 operation mode via jumper. COM2 is a 2x15pin port. These ports could be used to connect with mouse, modem and digital camera with standard RS-232 interface. Their pin definitions are as follows:



COM1

Pin	Signal Name		
	RS-232	RS-422	RS-485
1	DCD1	TX-	DATA-
2	RXD1	TX+	DATA+
3	TXD1	RX+	NC
4	DTR1	RX-	NC
5	GND	GND	GND
6	DSR1	RTS-	NC
7	RTS1	RTS+	NC
8	CTS1	CTS+	NC
9	RI1	CTS-	NC

Pin definitions of COM2 are as follows:

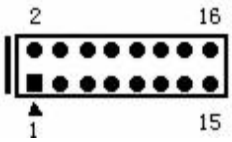


COM2

Signal Name	Pin	Pin	Signal Name
DCD2	1	2	RXD2
TXD2	3	4	DTR2
GND	5	6	DSR2
RTS2	7	8	CTS2
RI2	9	10	NC
DCD3	11	12	RXD3
TXD3	13	14	DTR3
GND	15	16	DSR3
RTS3	17	18	CTS3
RI3	19	20	NC
DCD4	21	22	RXD4
TXD4	23	24	DTR4
GND	25	26	DSR4
RTS4	27	28	CTS4
RI4	29	30	NC

Video Interface

1. 16Pin (Socket) VGA Interface

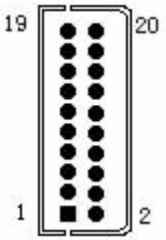


VGA1

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	CRT_5V	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	NC

Note: Pin 13 can be used as connecting-in contact for display detection.

2. LVDS Output Interface



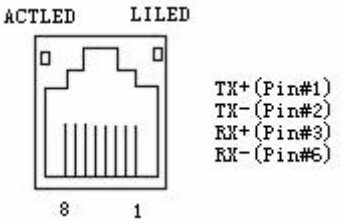
LVDS1/LVDS2

Pin	Signal Name	Pin	Signal Name
1	DATA0+	2	DATA0-
3	GND	4	GND
5	DATA1+	6	DATA1-
7	GND	8	GND
9	DATA2+	10	DATA2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	NC	18	NC
19	VDD	20	VDD

LAN Port

LAN1 is the 10/100Mbps Ethernet port on motherboard. Below is its pin arrangement and relevant input socket. ACTLED and LILED are the two status indicators on both sides of the Ethernet port, which indicate the LAN activity status and the LAN speed status respectively. Please refer to the following description for each LED:

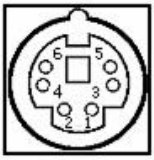
TX+, TX-: Positive/Negative Data Sending Signal	RX+, RX-: Positive/Negative Data Receiving Signal
ACTLED: LAN Activity Indicator	LILED: LAN Linked Indicator



ACTLED (Green)	Indicating Status	LINKLED (Yellow)	Indicating Status
Blink	Data Transmitting	On	Linked
Off	Inefficient Network Link	Off	Unlinked

Keyboard and Mouse Interface

KM1 is a keyboard and mouse combined 6-pin Mini DIN socket; using the 1 to 2 PS/2 keyboard mouse cable equipped with motherboard could realizing using keyboard and mouse simultaneously.

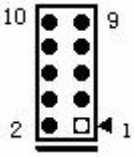


KM1

Pin	Signal Name	Pin	Signal Name
1	Keyboard Data	4	+5V
2	Mouse Data	5	Keyboard Clock
3	GND	6	Mouse Clock

Audio Function

By using the cable attached on the motherboard, Line_Out could be connected with earphone or loudspeaker with more suitable power. Line_In is used to record the sound from tape unit or other sound source or broadcast it via Line_Out. Mic is used to connect with microphone to input sound.



AUDIO1

Pin	Signal Name	Pin	Signal Name
1	Line_Out Right	2	Line_Out Left
3	GND	4	GND
5	Line_in Right	6	Line_in Left
7	GND	8	GND
9	Mic Phone in	10	Mic Phone Ref

CF Card

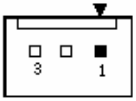
Compact Flash card is a high-speed storage which is small in size and convenient to use. Its storage capacity varies with the card in use, such as 64M, 128M, and 256M etc. CF card could only be inserted in one direction.

Pin	Signal Name	Pin	Signal Name
1	GND	26	NC
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	IDECS0	32	IDECS1
8	GND	33	NC
9	GND	34	IDEIOR
10	GND	35	IDEIOW
11	GND	36	VCC3V
12	GND	37	IDEINTR
13	VCC3V	38	VCC3V
14	GND	39	GND
15	GND	40	NC
16	GND	41	IDERST
17	GND	42	IDEIORDY
18	IDESA2	43	NC
19	IDESA1	44	VCC3V
20	IDESA0	45	HDDLED1
21	Data 0	46	NC
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16	49	Data 10
25	NC	50	GND

Fan Interface

The computer provides one standard fan socket CPUFAN1. Pay attention as follows when using the fans socket:

- Please confirm that the fan cable complies with the socket cable. Power cable (usually red) is in the middle position. In addition, please confirm the earth cable (usually black) and fan rev output impulse signal cable (other colors). Some fans have no rev detecting, which will destroy the CPU card. It is recommended to use a fan with rev speed detection.
- Adjust the fan's airflow to the direction of heat venting.

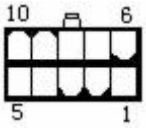


CPUFAN1

Pin	Signal Name
1	GND
2	+12V
3	Rev Impulse

Power Interface

ATX power interface is 2x5PIN, and its pin definitions are as follows:

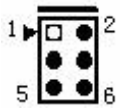


PWR1

Signal Name	Pin	Pin	Signal Name
+5VSB	6	1	PS-ON
+5V	7	2	GND
+5V	8	3	GND
-12V	9	4	+12V
GND	10	5	+3.3V

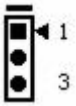
Face Plate Interface

FP1, FP2 and FP3 are used to connect to the functional buttons or indicators set on the front panel of the motherboard.



FP1

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



FP2

Pin	Signal Name
1	Power LED +
2	NC
3	GND

FP3

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

PCIE Interface

A. PCIE1: PCIE X1 Interface

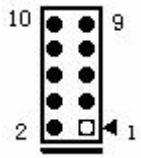
Pin	Signal Name	Pin	Signal Name
B1	VCC12	A1	NC
B2	VCC12	A2	VCC12
B3	NC	A3	VCC12
B4	GND	A4	GND
B5	SMB_CLK_	A5	NC
B6	SMB_DATA	A6	NC
B7	GND	A7	NC
B8	VCC3_3V	A8	NC
B9	NC	A9	VCC3_3
B10	VCC3_3SB	A10	VCC3_3
B11	PCIE_WAKE	A11	PCIE_RST
B12	NC	A12	GND
B13	GND	A13	CLK_PCIE1P
B14	PCIE_TP0	A14	CLK_PCIE1N
B15	PCIE_TN0	A15	GND
B16	GND	A16	PCIE_RP0
B17	NC	A17	PCIE_RN0
B18	GND	A18	GND

B. PCIE2: PCIE X4 interface

Pin	Signal Name	Pin	Signal Name
B1	VCC12	A1	NC
B2	VCC12	A2	VCC12
B3	NC	A3	VCC12
B4	GND	A4	GND
B5	SMB_CLK_	A5	NC
B6	SMB_DATA	A6	NC
B7	GND	A7	NC
B8	VCC3_3V	A8	NC
B9	NC	A9	VCC3_3
B10	VCC3_3SB	A10	VCC3_3
B11	PCIE_WAKE	A11	PCIE_RST
B12	NC	A12	GND
B13	GND	A13	CLK_PCIE0P
B14	PCIE_TXP0	A14	CLK_PCIE0N
B15	PCIE_TXN0	A15	GND
B16	GND	A16	PCIE_RXP0
B17	NC	A17	PCIE_RXN0
B18	GND	A18	GND
B19	PCIE_TXP1	A19	NC
B20	PCIE_TXN1	A20	GND
B21	GND	A21	PCIE_RXP1
B22	GND	A22	PCIE_RXN1
B23	PCIE_TXP2	A23	GND
B24	PCIE_TXN2	A24	GND
B25	GND	A25	PCIE_RXP2
B26	GND	A26	PCIE_RXN2
B27	PCIE_TXN3	A27	GND
B28	PCIE_TXP3	A28	GND
B29	GND	A29	PCIE_RXP3
B30	NC	A30	PCIE_RXN3
B31	NC	A31	GND
B32	GND	A32	NC

Digital I/O Interface

Digital I/O is 2x5PIN interface and its pin definitions are as follows:



GPIO1

Pin	Signal Name	Pin	Signal Name
1	GPIO16	2	GPI29
3	GPIO19	4	GPI31
5	GPIO27	6	GPI41
7	GPIO28	8	GPIO24
9	VCC3V	10	GND

Example for south bridge gpio setup (reference only):

1、 Enable gpio

2、 Get the base address of gpio

3、 Set the defined functional pin as gpio mode

4、 Set the defined pin as input output mode

e.g. gpio32~gpio35 are used as input, gpio36~gpio39 are used as output.

```
;; enable gpio
mov dx,0CF8h            ;CF8 is PCI configuration index port
mov eax,8000F84Ch       ;BUS:0 DEV:1F FUN:0 REG:4C (Dword Reg)
out dx,eax              ;
add dx,4                ;CFC is PCI configuration data port
in eax,dx               ;read 0cfch to ax
or eax,10h;bit4,0=disable,1=enable
out dx,eax
                        ;;;1, read GPIO base address
mov dx, 0CF8h           ;PCI configuration index port
mov  eax, 8000F848h     ;BUS:0 DEV:1F FUN:0 REG:48(Dword Reg)
                        ;south bridge configuration space reg 0x48-49
```

```
                    save gpio base address
Out dx, eax          ;
Add dx, 4            ;PCI configuration data port
In ax, dx            ;read 0cfch to ax
And ax, 0FFF0h       ;mask bit0, ax gpio base address saved in ax
xchg   dx, ax        ;save the base address to dx
                     ;;;2, set the defined functional pin to be gpio
                     mode
Add dl,30h           ;base+offset30h, GPIO Use Select 2 Register
In eax,dx            ;get the current register value to eax
Or al, 0ffh          ;set the lower 8-bit to be 1 and defined as GPIO
                     ;;bit[8:0] corresponding with gpio[39:32],
                     ;0 = Signal used as native function.
                     ;1 = Signal used as a GPIO.
Out dx，al           ;write the set value back to the register
;;;set the defined pin to be input output mode
Add dl, 34h          ;base+ GPIO Input/Output Select 2 Register
                     ;0 = Signal used as output
                     ;1 = Signal used as input
In eax, dx           ;get the current register value to eax
                     ;
Or   al, 0fh         ;;bit[4:0] set as 1, gpio[35:32] is used as input pin
And al, 0fh          ;;bit[8:5] set as 0, gpio[39:36] is used as output pin
Out dx, al           ; write the set value back to the register
```

Chapter 4

BIOS Setup

For more information about EC4-1713CLDNA (B) BIOS setup, please refer to our *AMI BIOS Setup Guide*.

Appendix

Watchdog Programming Guide

EC4-1713CLDNA (B)-PPC includes a programmable watchdog timer (WDT) up to 255 levels and time by minute or second. Watchdog timer overtime event can be programmed to reset system or generate shielding interrupts. (The interrupt here can not be shared and can not be the same as interrupt of other devices within the system).

The following describes WDT program in C language; please refer to the following demonstration code:

```
//Super I/O Watchdog
#define pm_base    0x0a00
#define WRITEREG(reg,val) {tmp_reg=pm_base+reg;
outportb(tmp_reg,val);}
//1.Initial Watchdog device
short SIOWTD_Setup(short irq)
/* irq=3,4,5,6,7,9,12,0:disable interrupt,0xff:reset*/
{
    //check parameters
    //if(irq!=0xff && (irq<3 || irq>7) &&  irq!=9  &&  irq!=12  &&
irq!=0)
    //      return -1;
    SIOWTD_Disable();
    //start programming Watchdog

    //Set Watchdog Event
```

```
        if(irq==0xff) //WatchDog cause System Reset
        {
                WRITEREG(0x47,0x0c)

        }
        else //Watchdog cause System Interrupt
        {
                irq=irq<<4;
                WRITEREG(0x47,0x80)
                WRITEREG(0x67,irq)
        }
        //end programming watchdog

    return 0;
}
//2.start Watchdog to count
short SIOWTD_Enable(short time,short unit)
/*unit=0:second,=1:minutes */
{
        if(time<1 || time>255) return -1;
        if(unit<0 || unit>1)  return -1;
        //start programming watchdog

        //select Watchdog Timer clock
        switch(unit)
        {
        case 0:
```

```
            WRITEREG(0x65,0x80) //secondes
            break;
        case 1:
            WRITEREG(0x65,0) //minutes
            break;
        }
        WRITEREG(0x66,time) //set timeout value
        //end programming watchdog

        return 0;
}
//3.Disable the Watchdog
short SIOWTD_Disable()
{
        //start programming watchdog

        WRITEREG(0x66,0) //set timeout value=0
        //end programming watchdog

        return 0;
}
```

I/O Address Map

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

Address	Device Description
000h - 01Fh	DMA Controller
020h - 021h	Programmable Interrupt Controller
024h – 025h	Programmable Interrupt Controller
028h – 029h	Programmable Interrupt Controller
02Dh – 02Dh	Programmable Interrupt Controller
02Eh – 02Fh	LPC Super I/O SCH3114
030h – 031h	Programmable Interrupt Controller
034h – 035h	Programmable Interrupt Controller
038h – 039h	Programmable Interrupt Controller
03Ch – 03Dh	Programmable Interrupt Controller
040h - 043h	Timer/Counter (8254)
04Eh – 04Fh	LPC Super I/O
050h – 053h	Timer/Counter
060h	Micro-controller on LPC Bus
061h	NMI Interrupt Controller
062h	Micro-controller on LPC Bus
064h	Micro-controller on LPC Bus
066h	Micro-controller on LPC Bus
070h	NMI and RTC Controller Reserved
071h	RTC Controller
072h	NMI and RTC Controller
073h	RTC Controller
074h	NMI and RTC Controller
075h	RTC Controller
076h	NMI and RTC Controller

077h	RTC Controller
080h	DMA Controller, LPC or PCI
081h - 083h	DMA Controller
084h - 086h	DMA Controller, LPC or PCI
087h	DMA Controller
088h	DMA Controller, LPC or PCI
089h – 08Bh	DMA Controller
08Ch – 08Eh	DMA Controller, LPC or PCI
08Fh	DMA Controller
090h – 091h	DMA Controller
092h	Reset Generator
093h – 09Fh	DMA Controller
0A0h – 0A1h	Programmable Interrupt Controller
0A4h – 0A5h	Programmable Interrupt Controller
0A8h – 0A9h	Programmable Interrupt Controller
0ACh – 0ADh	Programmable Interrupt Controller
0B0h – 0B1h	Programmable Interrupt Controller
0B2h – 0B3h	Power Management
0B4h – 0B5h	Programmable Interrupt Controller
0B8h – 0B9h	Programmable Interrupt Controller
0BCh – 0BDh	Programmable Interrupt Controller
0C0h – 0D1h	DMA Controller
0D2h – 0DDh	DMA Controller Reserved
0DEh – 0DFh	DMA Controller
0F0h	PCI and Host Controller Cancelled (FERR#/IGNNE#/ Interrupt Controller)
170h – 177h	IDE Controller, SATA Controller or PCI
1F0h – 1F7h	IDE Controller, SATA Controller or PCI
376h	IDE Controller, SATA Controller or PCI
4D0h – 4D1h	Interrupt Controller
CF9h	Reset Generator

IRQ Assignment Table

There are 15 interrupt sources in the system. Some are occupied by the system device. Only the ones which are not occupied can be distributed. The ISA devices claim to engross the interrupt .Only the plug and play ISA devices can be distributed by the BIOS or the OS. And several PCI devices 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 Keyboard or Microsoft Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Intel(R) 82801FBM USB Universal Host Controller -24C4
IRQ5	ACPI IRQ Holder for PCI IRQ Steering
IRQ6	Reserved
IRQ7	Parallel Port #1
IRQ8	System CMOS/ Real Time Clock
IRQ9	SCI IRQ used by ACPI bus
IRQ1	Intel(R) 82801FBM USB Universal Host Controller-24C2
IRQ1	Intel(R) 82915GM Graphics Controller
IRQ1	ACPI IRQ Holder for PCI IRQ Steering
IRQ11	Realtek AC'97 Audio
IRQ1	PS/2 Compatible Mouse Port
IRQ1	Numeric Data Processor
IRQ1	Intel(R) 82801FBM Ultra ATA Storage Controller-24CB
IRQ1	Slave IDE

For more information, please visit our website: **http://www.evoc.com**.

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. 为避免人体被电击或产品被损坏，在每次对板卡进行拔插、重新装配或配置前，须先关闭交流电源或将交流电源线从电源插座中拔掉；
3. 在需对产品进行搬动时，务必先将交流电源线从电源插座中拔掉；
4. 当产品需增加／减少板卡时，务必先拔掉交流电源；
5. 当需连接或拔除任何信号线前，须确定所有的电源线事先已被拔掉；
6. 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；
7. 如果要进行升级或拆装等动作，须在静电放电工作台上完成所有操作，因为有些精密器件对静电放电（ESD）很敏感；
8. 如果没有静电放电工作台，可通过以下方法降低 ESD 可能造成的危害：

    h) 戴上一条防静电腕带并与相应产品的金属部分相连；

    i) 在触摸产品部件前，先触摸相应产品机箱上的金属壳；

    j) 当插拔部件时，身体最好与产品的金属机箱保持接触，以释放静电；

k) 避免不必要的走动；

l) 拿产品部件（尤其是板卡）时仅拿住边缘；

m) 将产品部件置于一个接地的无静电的操作平台上。如果可能的话，使用一块导电泡沫垫（非部件的包装材料）；

n) 不要让部件在操作平台上滑动。

9. 用十字螺丝刀进行操作，最好是强力螺丝刀（带磁性，避免螺丝遗留在机箱内）。要注意的是，一定不要将工具或零件遗漏在机箱内；

10. 保证系统良好的散热与通风。

目 录

第一章

产品介绍

简介

PPC-1507 是一款 15″ LCD 工业级平板电脑。整机配置 15″ 高亮度 LCD 液晶显示屏，集成最新低功耗主板，内置超薄光驱、2.5″ 80G SATA 硬盘。整机外置三个串口(其中一个可选 RS-232/RS-422/RS-485 工作模式)，一个并口，两个USB2.0高速接口，一个 Intel 10M/100Mbps 网络接口，一个 AC’97 Audio 接口，一个键盘/鼠标接口,看门狗定时器。可扩展至 1G DDR2 笔记本 200Pin 内存,电阻式触摸屏(或钢化玻璃)；并具有待机节能模式。

先进的结构设计，系统安装灵活方便。安装方式兼容面板型、VESA 标准支撑臂等。机箱上装有散热风扇，散热性能良好，产品结构紧凑坚固，减振、抗冲击性能良好，工作可靠。

PPC-1507 是一款高性价比的工业级平板电脑，可广泛应用于电力、制造业、金融、交通监控等各领域的通讯、控制终端。

订购信息

型 号	描　述
PPC-1507	15 寸 LCD 平板电脑 板载低功耗 Celeron M 1G（0Cache），内存 512M 80G SATA 硬盘带 PCI-E 扩展，带钢化玻璃保护
PPC-1507-01	15 寸 LCD 平板电脑 板载低功耗 Pentium M 1.4G（0Cache），内存 512M 80G SATA 硬盘带 PCI-E 扩展，带钢化玻璃保护
PPC-1507-02	15 寸 LCD 平板电脑 板载低功耗 Pentium M 2G（0Cache），内存 1G 80G SATA 硬盘带 PCI-E 扩展，带钢化玻璃保护
PPC-1507T	15 寸 LCD 平板电脑 板载低功耗 Celeron M 1G（0Cache），内存 512M 80G SATA 硬盘带 PCI-E 扩展，带触摸屏
PPC-1507T-01	15 寸 LCD 平板电脑 板载低功耗 Pentium M 1.4G（0Cache），内存 512M 80G SATA 硬盘带 PCI-E 扩展，带触摸屏
PPC-1507T-02	15 寸 LCD 平板电脑 板载低功耗 Pentium M 2G（0Cache），内存 1G 80G SATA 硬盘带 PCI-E 扩展，带触摸屏

产品配置

- 主板：低功耗工业级主板(见上表)
- 电源：220W ATX 电源
- 硬盘：80G SATA 硬盘
- 光驱：24X 超薄光驱
- LCD 屏：15″ 高亮度 VGA 接口 LCD 液晶显示屏
- 触摸屏：RS232 接口触摸屏（见上表中配置）
- PCI-E 扩展槽：PCI-E 转接卡(带 X1 X4 槽各一)
- SDD：CF 卡(可选)
- 开关：ATX 电源开关

注：随机出厂配置可能与上述配置有差异，以实际装箱单为准。

LCD 屏介绍

尺寸：15″ TFT LCD;

接口：LVDS;

分辨率：1024*768;

亮度：≥300cd/m2，且可调，不均匀性≤1.5:1;

对比度：≥400:1 ，且可调 ;

彩色深度：≥262144 Colors;

响应时间：≤8ms。

触摸屏介绍

触摸屏是一款电阻式 15″触摸屏，尺寸与 LCD 屏相适配。

电源介绍

PPC-1507 工业级平板电脑选用的电源是一款 220W ATX 工业电源，有稳定性强、可靠、工作时间长以及电性能稳定等优点。

该款电源具有过负载过电压双重保护，漏电流小，性能稳定。电磁兼容及安全性能满足工业 PC 电源相应的国家标准（GB4943、GB9254、GB/T17618）。

主要功能指标(主板介绍)

微处理器

按订购信息表配置

芯片组

Intel 82915GM+ICH6M (82801FBM)芯片组。

系统存储器

提供一条 200PIN SO-DIMM 内存插槽，支持 DDRⅡ400/533 内存，最大内存容量达 1GB。

网络功能

板上集成了一个 10/100Mbps 以太网控制器，为您提供高速稳定的网络平台选择。

IDE 功能

一个 ATA100/66/33 通道，支持 2 个 IDE 设备。

一个串行 ATA 接口，数据传送速率达 1.5Gb/s(最小 150MB/s)。

音频功能

板上集成一个标准的 AC’97 音效芯片，提供优质的声音效果。

USB 功能

提供两个 USB2.0 高速接口，使嵌入式单板的海量移动存储成为可能。

警语：1) 务必使用合格的 USB 设备，并确认其接地良好。接地不良会损坏系统；2) 任何时候，当需要用手触摸 USB 设备时，请先用双手触摸机箱将身体上的静电释放；3) 当需要带电拔出 USB 设备时，务必确认 USB 设备处于待机状态（不工作）。

PCIE 功能

一个 PCIE X1 接口,

一个 PCIE X4 接口。

BIOS

AMI 新内核的 PnP BIOS。

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

I/O 功能

- 一个高速并口,SPP/EPP/ECP 方式
- 整机外置三个 RS-232 COM 口,其中一个(COM1)可选 RS-232/ RS-422/RS-485
- 键盘/鼠标插座

显示功能

Intel 82915GM 显示芯片，采用 Intel 第 3 代图形核心技术，支持双管道多接口显示：CRT，LVDS。

图形核心频率

- ✓ 2D 显示核心频率：133 或 190/200MHZ，随 CPU/内存配置而不同
- ✓ 3D 处理核心频率：133,160/166 或 190/200MHz，随 CPU/内存配置而不同
- ✓ Intel Smart 2D 显示技术
- ✓ Intel 双频率图形技术
- ✓ 动态显示存储器技术 DVMT 3.0

3D 图形引擎

- ✓ 支持 DirectX 9.0
- ✓ 支持 OpernGL 1.5 和 2.0
- ✓ 支持区域处理

模拟 CRT 数模转换接口

- ✓ 最高数模转换频率达 400MHz
- ✓ 24 位 RAMDAC
- ✓ 最大分辨率：2048x1536

数字 LVDS 输出接口

- ✓ 支持单通道 LVDS 接口，符合 ANSI/TIA/EIA－644-2001 规范
- ✓ 支持 25MHz 至 112MHZ 单通道 LVDS LCD 接口：
  单通道 LVDS 18bpp TFT LCD 屏；
- ✓ 支持最大 UXGA 屏尺寸
- ✓ 支持最大 WUXGA 宽屏尺寸

省电特性

通过 BIOS 可将电源开关信号定义为 ATX 电源开关功能或系统睡眠/工作状态转换功能。

其他特性

- 温度监测:CPU 内带一个传感器，用以监测 CPU 的温度。
- ATX 电源供电。
- 符合 ACPI（高级配置和电源接口标准），支持更多的电源管理功能。

主要性能指标

环境与机械尺寸

- 外形尺寸：400.00mm（宽）×300.00mm（高）×90.00mm（厚）
- 工作温度：0℃～50℃
- 相对湿度：Hr=20%～93%，40℃无结露
- 储存温度：-20℃～60℃

电磁兼容性

- 无线电骚扰限值符合 GB9254-1998 标准 B 级
- 抗扰度符合 GB/T 17618-1998 标准的限值

可靠性

- 平均无故障工作时间：MTBF≥50000h
- 平均维修时间：MTTR≤0.5h

安全性

- 满足 GB4943 的基本要求。

环境要求

- 抗振动：5-19Hz/1.0mm 振幅；19-200Hz/1g 加速度
- 抗冲击：10g 加速度，11ms 周期
- 前面板 IP65 等级

运输与贮存要求

- **运输：**

包装好的产品能以任何交通工具,运往任何地点，在长途运输时不得装在敞开的船舱和车厢中，中途转运时不得存放在露天仓库中，在运输过程中不允许和易燃、易爆、易腐蚀的物品同车（或其他运输工具）装运，并且产品不允许经受雨、雪或液体物质的淋袭与机械损坏。

- **贮存:**

产品贮存时应存放在原包装箱内,存放产品的仓库环境温度为－20～＋60℃，相对湿度为 20%～93%.仓库内不允许有各种有害气体、易燃、易爆炸的产品及有腐蚀性的化学物品,并且无强烈的机械振动、冲击和强磁场作用。包装箱应垫离地面至少 10cm，距离墙壁、热源、冷源、窗口或空气入口至少 50cm。

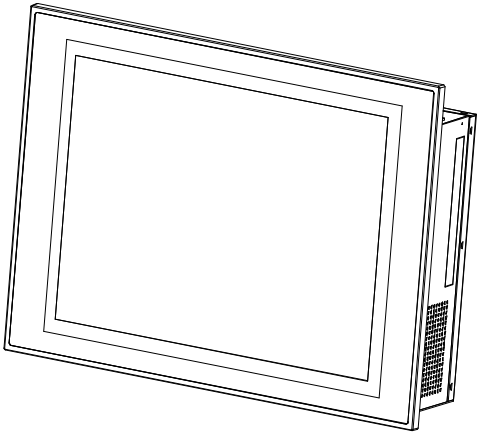
常见故障处理

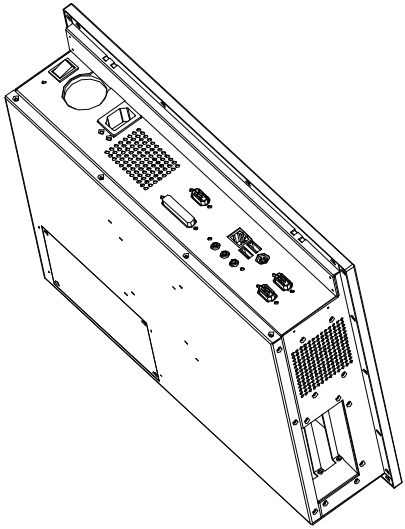
产品的常见故障处理请参见《工业计算机常见故障分析和处理》，在此不多述说。

第二章

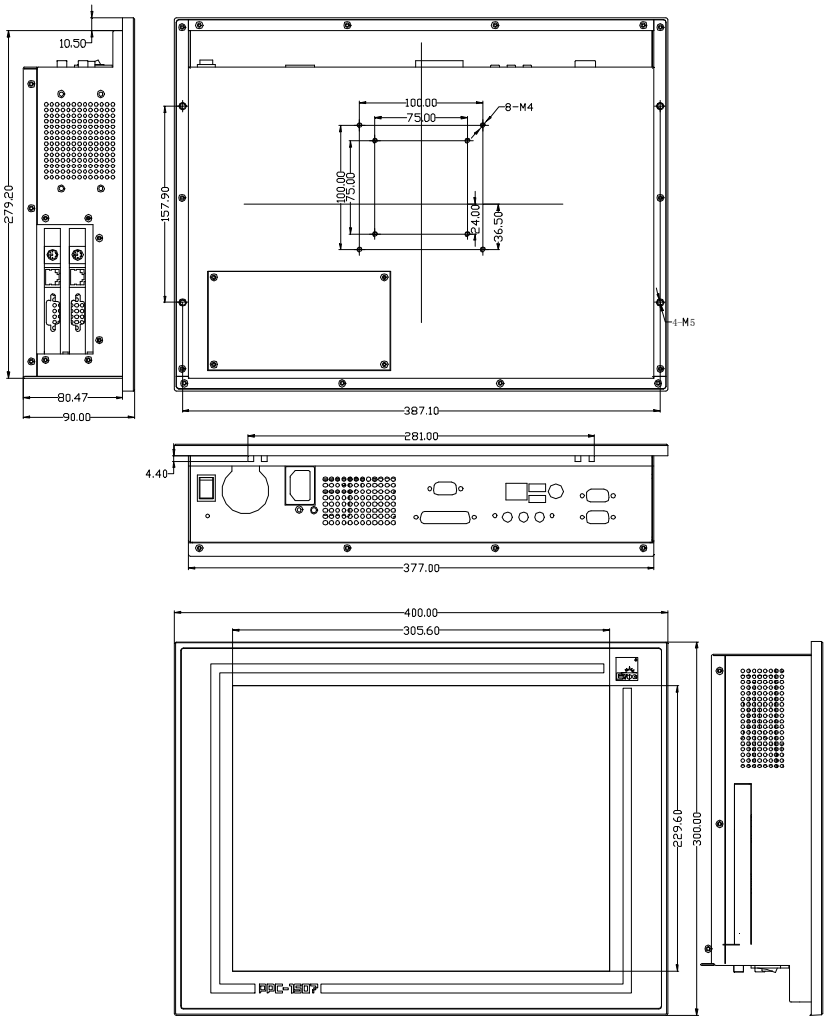
整机安装说明

产品外型图



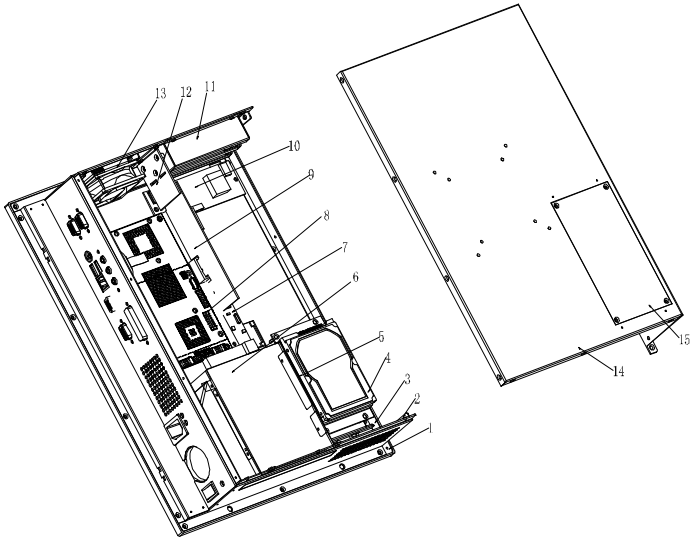


产品尺寸图


10.50
279.20
80.47
90.00
157.90
100.00
75.00
8-M4
100.00
75.00
24.00
36.50
4-M5
387.10
281.00
4.40
377.00
400.00
305.60
229.60
300.00
PPC-1507

单位：mm

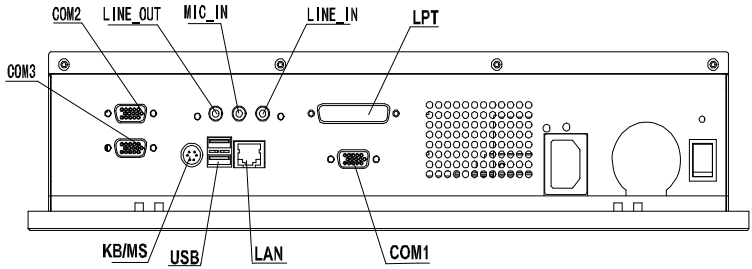
整机装配图



1、接口盖面板组件	2、箱体碰焊	3、液晶屏组件
4、硬盘组件	5、电源	6、光驱组件
7、触摸屏驱动板	8、主板	9、转接板
10、升压板	11、PCI 支架	12、底板支架
13、风扇组件	14、箱盖碰焊	15、硬盘盖

注：（1）拆装 LCD 屏及触摸屏时应非常小心，轻拿轻放，以避免不必要的损坏。

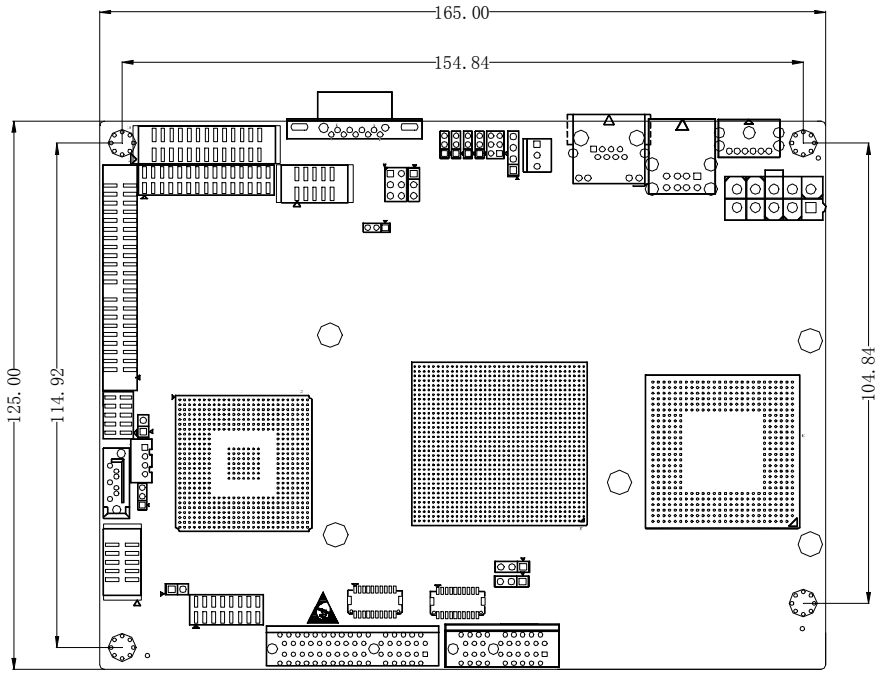
外部 IO 接口图



第三章

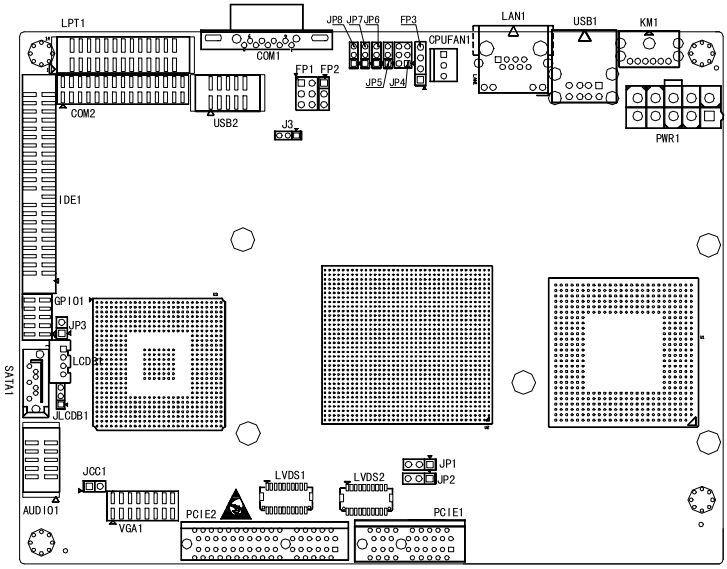
主板安装说明

外型尺寸图

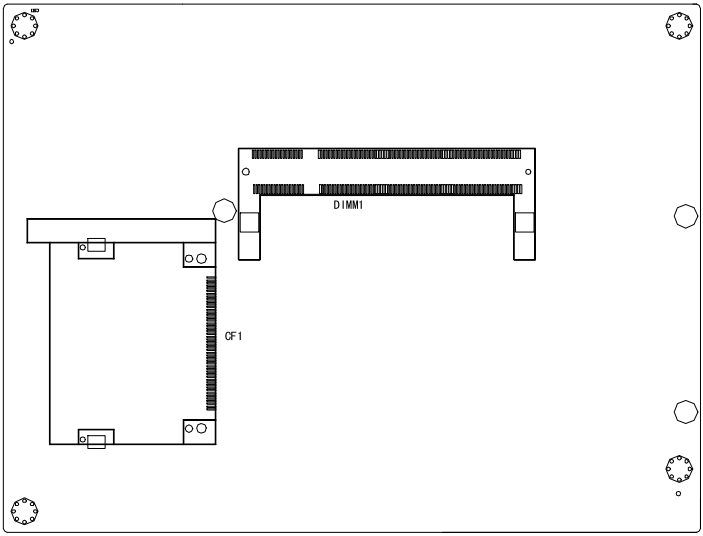


单位：mm

接口位置示意图



正面



背面

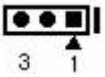
跳线功能设置

1. JLCDB1:LCD背光电压选择

JLCDB1

设置	功能
管脚 1-2 短路	+12V
管脚 2-3 短路	+5V

2. JP1、JP2:系统总线频率选择



JP1/JP2

JP1	JP2	系统总线 FSB 频率
1-2 短路	2-3 短路	400MHz（Default）
2-3 短路	2-3 短路	533MHz
1-2 短路	1-2 短路	无效选项
2-3 短路	1-2 短路	无效选项

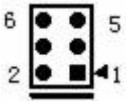
注：此跳线不做超频用途，请根据 CPU 的规格来设定系统总线频率。

3. JP3:CF卡主从选择

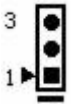
JP3

设置	功能
1-2 短接	Master
1-2 断开	Slave(Default)

4. COM1模式选择



JP4



JP5～JP8

管脚设置	模式选择		
	RS-232	RS-422	RS-485
JP4	1-2 短接	5-6 短接	3-4 短接
JP5	1-2 短接	2-3 短接	2-3 短接
JP6	1-2 短接	2-3 短接	2-3 短接
JP7	1-2 短接	2-3 短接	2-3 短接
JP8	1-2 短接	2-3 短接	2-3 短接

5. JCC1：CMOS内容清除/保持设置

JCC1 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)关计算机，断开电源；(2)瞬间短接 JCC1 焊盘；(3)开计算机；(4)启动时按住

DEL 键进入 BIOS 设置，重载最优缺省值；(5)保存并退出设置。

JCC1

设置	功能
开路	正常工作状态，默认设置
瞬间短路	清除 CMOS 内容,所有 BIOS 设置恢复成出厂值

6. **LCD背光控制**

LCDB1

管脚	信号名称
1	LCD 背光电源（由 JLCD1 控制）
2	GND
3	背光使能
4	背光控制

系统内存安装

本主板提供 1 条 DDR Ⅱ (Double Data Rate) DIMM（Dual Inline Memory Modules）200pin 内存插槽(图示标识为 DIMM1，在主板背面)。

安装内存条时，要注意以下几点：

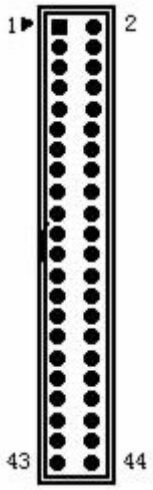
- 安装时，先对准内存 DIMM 条的缺口和 DIMM 插槽的缺口后再用力插到位。
- 可使用符合 Intel DDRⅡ 400/533 规格的 DDRⅡ内存，最大内存容量达 1GB。

最好选择带 SPD（内存自动识别功能）的 DIMM 内存条，以保证内存条工作稳定。

IDE 接口

本主板提供一组 44 针 IDE 接口（IDE1），安装 IDE 设备时，需注意：

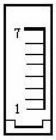
- IDE1 接口可以连接两台 IDE 设备：一个为主设备（Master），一个为从设备（Slave）。设备的连接方法是：主设备接在电缆的末端，从设备接在电缆的中间。(IDE 电缆有红色标示的为第一脚)。



IDE1

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
41	+5V	42	+5V
43	GND	44	GND

另外本主板提供一个串行 SATA 接口：



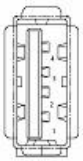
SATA1

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

USB 接口

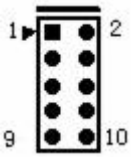
本主板提供两个 USB 接口， USB1 包括端口 1 和端口 2，USB2 为标准的 2X5 接口，可转接出两个标准的 USB 插座。下表给出了 USB 接

口定义：



USB1

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



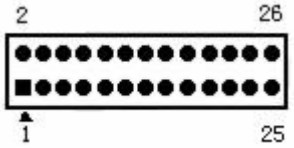
USB2

管脚	信号名称	管脚	信号名称
1	+5VUSB1	2	+5VUSB2
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NC	10	GND_CHASSIS

并口与串口

1. 并口

标准的 26 针并行接口，可依据您的需求用来连接并行接口外设。

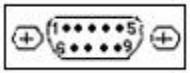


LPT1

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

2. **串口**

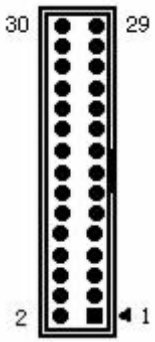
COM1 是一个 9 芯 D-SUB 接口，可以通过跳线选择 RS232/RS422 或 RS485 工作模式。COM2 是 2x15pin 接口。这些接口可以连接具有 RS-232 标准接口的鼠标、调制解调器、数码相机等设备。管脚定义如下：



COM1

管脚	信号名称		
	RS-232	RS-422	RS-485
1	DCD1	TX-	DATA-
2	RXD1	TX+	DATA+
3	TXD1	RX+	NC
4	DTR1	RX-	NC
5	GND	GND	GND
6	DSR1	RTS-	NC
7	RTS1	RTS+	NC
8	CTS1	CTS+	NC
9	RI1	CTS-	NC

COM2 管脚定义如下：

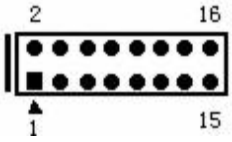


COM2

信号名称	管脚	管脚	信号名称
DCD2	1	2	RXD2
TXD2	3	4	DTR2
GND	5	6	DSR2
RTS2	7	8	CTS2
RI2	9	10	NC
DCD3	11	12	RXD3
TXD3	13	14	DTR3
GND	15	16	DSR3
RTS3	17	18	CTS3
RI3	19	20	NC
DCD4	21	22	RXD4
TXD4	23	24	DTR4
GND	25	26	DSR4
RTS4	27	28	CTS4
RI4	29	30	NC

显示接口

1. 16Pin插针（座）VGA接口

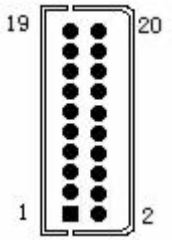


VGA1

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	CRT_5V	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	NC

注：第13脚可以作为显示器接入检测点。

2. LVDS输出接口



LVDS1/LVDS2

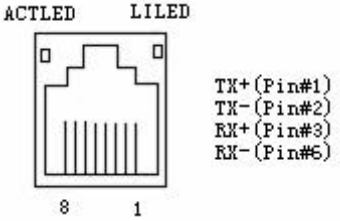
管脚	信号名称	管脚	信号名称
1	DATA0+	2	DATA0-
3	GND	4	GND
5	DATA1+	6	DATA1-
7	GND	8	GND
9	DATA2+	10	DATA2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	NC	18	NC
19	VDD	20	VDD

网络接口

此接口(LAN1)是主板上 10/100Mbps 以太网接口。以下给出了它的管脚安排和相应的输入插座。ACTLED 和 LILED 是以太网接口两边的绿色和黄色 LED，他们显示着 LAN 的活动和传输速率。请参考以下每一个 LED 的状态描述：

TX+,TX-：正/负发送数据信号。　　RX+,RX-：正/负接收数据信号。

ACTLED：网络活动状态灯。　　LILED：网络链路状态灯。



ACTLED（绿灯）	指示状态	LINKLED（黄灯）	指示状态
闪烁	正在收发数据	亮	已链接
灭	网络链路无效	灭	无连接

键盘与鼠标接口

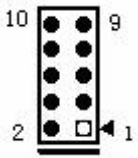
KM1 是一个键盘和鼠标合用的 6 脚 Mini DIN 插座，使用随主板配置的一转二 PS/2 键盘鼠标电缆可直接同时使用键盘和鼠标。

KM1

管脚	信号名称	管脚	信号名称
1	键盘数据	4	+5V
2	鼠标数据	5	键盘时钟
3	地	6	鼠标时钟

音频功能

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



AUDIO1

管脚	信号名称	管脚	信号名称
1	Line_Out Right	2	Line_Out Left
3	GND	4	GND
5	Line_in Right	6	Line_in Left
7	GND	8	GND
9	Mic Phone in	10	Mic Phone Ref

CF 卡

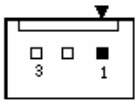
Compact Flash 卡是一种快速存储器，体积很小，使用方便，存储量随使用的卡变化，如 64M,128M,256M 等。CF 卡插入时只能以一个方向插入。

管脚	信号名称	管脚	信号名称
1	GND	26	NC
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	IDECS0	32	IDECS1
8	GND	33	NC
9	GND	34	IDEIOR
10	GND	35	IDEIOW
11	GND	36	VCC3V
12	GND	37	IDEINTR
13	VCC3V	38	VCC3V
14	GND	39	GND
15	GND	40	NC
16	GND	41	IDERST
17	GND	42	IDEIORDY
18	IDESA2	43	NC
19	IDESA1	44	VCC3V
20	IDESA0	45	HDDLED1
21	Data 0	46	NC
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16	49	Data 10
25	NC	50	GND

风扇接口

本 CPU 卡提供一个标准风扇插座 CPUFAN1（CPU 风扇）。使用风扇插座时要注意以下两点：

- 请确认风扇接线和本插座的接线是否相符。电源线（通常为红色）在中间位置。另外就是地线（通常为黑色）和风扇转速输出脉冲信号线（其它颜色）。有些风扇没有转速检测，会损坏 CPU 卡，建议使用带转速检测风扇。
- 将风扇气流调整成能将热量排出的方向。

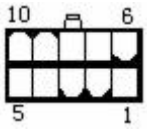


CPUFAN1

管脚	信号名称
1	地
2	+12V
3	转速脉冲

电源接口

ATX 电源接口为 2x5PIN,管脚定义如下：

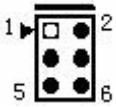


PWR1

信号名称	管脚	管脚	信号名称
+5VSB	6	1	PS-ON
+5V	7	2	GND
+5V	8	3	GND
-12V	9	4	+12V
GND	10	5	+3.3V

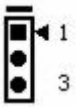
面板接口

FP1，FP2，FP3 用于连接至机箱前面板上所设的功能按钮或指示灯。



FP1

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+



FP2

管脚	信号名称
1	Power LED +
2	NC
3	GND

FP3

管脚	信号名称	管脚	信号名称
1	Speaker out	3	GND
2	NC	4	+5V

PCIE 接口

A. PCIE1：PCIE X1 接口

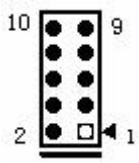
管脚	信号名称	管脚	信号名称
B1	VCC12	A1	NC
B2	VCC12	A2	VCC12
B3	NC	A3	VCC12
B4	GND	A4	GND
B5	SMB_CLK_	A5	NC
B6	SMB_DATA	A6	NC
B7	GND	A7	NC
B8	VCC3_3V	A8	NC
B9	NC	A9	VCC3_3
B10	VCC3_3SB	A10	VCC3_3
B11	PCIE_WAKE	A11	PCIE_RST
B12	NC	A12	GND
B13	GND	A13	CLK_PCIE1P
B14	PCIE_TP0	A14	CLK_PCIE1N
B15	PCIE_TN0	A15	GND
B16	GND	A16	PCIE_RP0
B17	NC	A17	PCIE_RN0
B18	GND	A18	GND

B. PCIE2：PCIE X4 接口

管脚	信号名称	管脚	信号名称
B1	VCC12	A1	NC
B2	VCC12	A2	VCC12
B3	NC	A3	VCC12
B4	GND	A4	GND
B5	SMB_CLK_	A5	NC
B6	SMB_DATA	A6	NC
B7	GND	A7	NC
B8	VCC3_3V	A8	NC
B9	NC	A9	VCC3_3
B10	VCC3_3SB	A10	VCC3_3
B11	PCIE_WAKE	A11	PCIE_RST
B12	NC	A12	GND
B13	GND	A13	CLK_PCIE0P
B14	PCIE_TXP0	A14	CLK_PCIE0N
B15	PCIE_TXN0	A15	GND
B16	GND	A16	PCIE_RXP0
B17	NC	A17	PCIE_RXN0
B18	GND	A18	GND
B19	PCIE_TXP1	A19	NC
B20	PCIE_TXN1	A20	GND
B21	GND	A21	PCIE_RXP1
B22	GND	A22	PCIE_RXN1
B23	PCIE_TXP2	A23	GND
B24	PCIE_TXN2	A24	GND
B25	GND	A25	PCIE_RXP2
B26	GND	A26	PCIE_RXN2
B27	PCIE_TXN3	A27	GND
B28	PCIE_TXP3	A28	GND
B29	GND	A29	PCIE_RXP3
B30	NC	A30	PCIE_RXN3
B31	NC	A31	GND
B32	GND	A32	NC

数字 I/O 接口

数字 I/O 为 2x5PIN 接口管脚定义如下：



GPIO1

管脚	信号名称	管脚	信号名称
1	GPIO16	2	GPI29
3	GPIO19	4	GPI31
5	GPIO27	6	GPI41
7	GPIO28	8	GPIO24
9	VCC3V	10	GND

南桥 gpio 设置的方法举例(只供参考)：

1、 使能 gpio

2、 取得 gpio 的基地址

3、 设置被定义的功能脚为 gpio 模式

4、 设置定义的脚为输入输出模式

例：gpio32~gpio35 做输入，gpio36~gpio39 做输出。

```
;;enable gpio
mov dx,0CF8h          ; CF8 is PCI configuration index port
mov eax,8000F84Ch     ; BUS:0 DEV:1F FUN:0 REG:4C(Dword Reg)
out dx,eax             ;
add dx,4                 ; CFC is PCI configuration data port
in eax,dx              ; read 0cfch to ax
or eax,10h;bit4,0=disable,1=enable
out dx,eax
                       ;;; 1,读 GPIO 基地址
mov dx, 0CF8h         ; PCI configuration index port
mov  eax, 8000F848h   ; BUS:0 DEV:1F FUN:0 REG:48(Dword Reg)
                       ; 南桥配置空间 reg 0x48-49 保存 gpio 基地
址。
```

```
Out dx, eax             ;
Add dx, 4                 ; PCI configuration data port
In ax, dx               ; read 0cfch to ax
And ax, 0FFF0h        ; mask bit0，ax 中保存的是 gpio 基地址
xchg       dx, ax          ; 将基地址保存到dx
                       ;;; 2，设置被定义的功能脚为 gpio 模式
Add dl,30h            ;base+offset30h, GPIO Use Select 2 Register
In eax,dx                 ; 取当前寄存器的值到 eax
Or al，0ffh             ; 将低 8 位设置为 1，定义为 GPIO
                       ;; bit[8:0] 对应 gpio[39:32],
                       ; 0 = Signal used as native function.
                            ; 1 = Signal used as a GPIO.
Out dx，al            ; 将设置好的值写回寄存器
;;; 设置定义的脚为输入输出模式
Add dl，34h           ; base+ GPIO Input/Output Select 2 Register
                       ; 0 = Signal used as output
                       ; 1 = Signal used as input
In eax,dx               ; 取当前寄存器的值到 eax
                       ;
Or  al，0fh           ;; bit[4:0] 设置为 1，gpio[35:32]做为输入
脚
And al，0fh           ;; bit[8:5] 设置为 0，gpio[39:36]做为输出
脚
Out dx，al            ; 将设置好的值写回寄存器
```

第四章

BIOS 功能简介

EC4-1713CLDNA(B)主板 BIOS 相关功能简介请参照我公司的《AMI BIOS 设置指南》。

附录

Watchdog 编程指引

EC4-1713CLDNA(B)-PPC 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(注：此处使用的中断不支持共享，不能与系统中其它设备的中断相同)。

以下用C语言形式描述了WDT的编程方法,请参看以下示范代码：

```
//Super I/O Watchdog
#define pm_base  0x0a00
#define        WRITEREG(reg,val)        {tmp_reg=pm_base+reg;
outportb(tmp_reg,val);}
//1.Initial Watchdog device
short SIOWTD_Setup(short irq)
/* irq=3,4,5,6,7,9,12,0:disable interrupt,0xff:reset*/
{
    //check parameters
    //if(irq!=0xff && (irq<3 || irq>7) &&   irq!=9        &&
irq!=12 && irq!=0)
    //   return -1;
    SIOWTD_Disable();
    //start programming Watchdog

    //Set Watchdog Event
    if(irq==0xff) //WatchDog cause System Reset
```

```
    {
        WRITEREG(0x47,0x0c)

    }
    else //Watchdog cause System Interrupt
    {
        irq=irq<<4;
        WRITEREG(0x47,0x80)
        WRITEREG(0x67,irq)
    }
    //end programming watchdog

  return 0;
}
//2.start Watchdog to count
short SIOWTD_Enable(short time,short unit)
/*unit=0:second,=1:minutes */
{
    if(time<1 || time>255) return -1;
    if(unit<0 || unit>1)    return -1;
    //start programming watchdog

    //select Watchdog Timer clock
    switch(unit)
    {
    case 0:
        WRITEREG(0x65,0x80) //secondes
```

```
        break;
    case 1:
        WRITEREG(0x65,0) //minutes
        break;
    }
    WRITEREG(0x66,time) //set timeout value
    //end programming watchdog

    return 0;
}
//3.Disable the Watchdog
short SIOWTD_Disable()
{
    //start programming watchdog

    WRITEREG(0x66,0) //set timeout value=0
    //end programming watchdog

    return 0;
}
```

I/O 口地址映射表

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

地址	设备描述
000h - 01Fh	DMA 控制器
020h - 021h	可编程中断控制器
024h - 025h	可编程中断控制器
028h - 029h	可编程中断控制器
02Dh - 02Dh	可编程中断控制器
02Eh - 02Fh	LPC Super I/O SCH3114
030h - 031h	可编程中断控制器
034h - 035h	可编程中断控制器
038h - 039h	可编程中断控制器
03Ch - 03Dh	可编程中断控制器
040h - 043h	定时器/计时器（8254）
04Eh - 04Fh	LPC Super I/O
050h - 053h	定时器/计时器
060h	位于 LPC 总线上的微控制器
061h	NMI 中断控制器
062h	位于 LPC 总线上的微控制器
064h	位于 LPC 总线上的微控制器
066h	位于 LPC 总线上的微控制器
070h	NMI 和 RTC 控制器保留
071h	RTC 控制器
072h	NMI 和 RTC 控制器
073h	RTC 控制器
074h	NMI 和 RTC 控制器
075h	RTC 控制器
076h	NMI 和 RTC 控制器

077h	RTC 控制器
080h	DMA 控制器，LPC 或 PCI
081h - 083h	DMA 控制器
084h - 086h	DMA 控制器，LPC 或 PCI
087h	DMA 控制器
088h	DMA 控制器，LPC 或 PCI
089h - 08Bh	DMA 控制器
08Ch - 08Eh	DMA 控制器，LPC 或 PCI
08Fh	DMA 控制器
090h - 091h	DMA 控制器
092h	复位产生器
093h - 09Fh	DMA 控制器
0A0h - 0A1h	可编程中断控制器
0A4h - 0A5h	可编程中断控制器
0A8h - 0A9h	可编程中断控制器
0ACh - 0ADh	可编程中断控制器
0B0h - 0B1h	可编程中断控制器
0B2h - 0B3h	电源管理
0B4h - 0B5h	可编程中断控制器
0B8h - 0B9h	可编程中断控制器
0BCh - 0BDh	可编程中断控制器
0C0h - 0D1h	DMA 控制器
0D2h - 0DDh	DMA 控制器保留
0DEh - 0DFh	DMA 控制器
0F0h	PCI 和主控制器取消(FERR#/IGNNE#/中断控
170h - 177h	IDE 控制器，SATA 控制器或 PCI
1F0h - 1F7h	IDE 控制器，SATA 控制器或 PCI
376h	IDE 控制器，SATA 控制器或 PCI
4D0h - 4D1h	中断控制器
CF9h	复位产生器

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他设备使用。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。下表给出了本 CPU 卡部分设备的中断分配情况，但没有给出 PCI 设备所占用的中断资源。

级别	功能
IRQ0	系统计时器
IRQ1	标准 101/102 键或 Microsoft 键盘
IRQ2	可编程的中断控制器
IRQ3	串口#2
IRQ4	串口#1
IRQ5	Intel(R) 82801FBM USB Universal Host Controller -24C4
IRQ5	ACPI IRQ Holder for PCI IRQ Steering
IRQ6	保留
IRQ7	并口#1
IRQ8	系统 CMOS/实时时钟
IRQ9	SCI IRQ used by ACPI bus
IRQ10	Intel(R) 82801FBM USB Universal Host Controller-24C2
IRQ10	Intel(R) 82915GM Graphics Controller
IRQ10	ACPI IRQ Holder for PCI IRQ Steering
IRQ11	Realtek AC'97 Audio
IRQ12	PS/2 兼容型鼠标端口
IRQ13	数据数值处理器
IRQ14	Intel(R) 82801FBM Ultra ATA Storage Controller-24CB
IRQ15	从 IDE

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