EC3-1813CLD2NA（B）

基于 Intel Luna Pier 平台 3.5 寸主板

3.5 ″ Motherboard Based on Intel Luna Pier Platform

Version:C00

Copyright Notice

Information offered in this manual is believed to be correct at the time of printing, and is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer. In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of improper installation and/or use, or inability to use the product or documentation.

This user manual is protected by copyright. No part of this manual may be reproduced, stored in any retrieval system, or transmitted, in any form or by any means, mechanical, electronic, photocopied, recorded or otherwise, without the prior written permission from the manufacturer.

Trademarks

EVOC is a registered trademark of EVOC Intelligent Technology Co., Ltd. Other product names mentioned herein are used for identification purposes only and may be trademark and/or registered trademarks of their respective companies.

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

Hotline: 4008809666

Evoc

Safety Instructions

1. Please read this manual carefully before using the product;

2. Leave the board or card in the antistatic bag until you are ready to use it;

3. Touch a grounded metal object (e.g. for 10 seconds) before removing the board or card from the anti-static bag;

4. Before installing or removing a board, wear the ESD gloves or ESD wrist strap; handle the board by its edges only;

5. Before inserting, removing or re-configuring motherboards or expansion cards, first disconnect the computer and peripherals from their power sources to prevent electric shock to human bodies or damage to the product;

6. Remember to disconnect the AC power cord from the socket before removing the board or moving the PC;

7. For PC products, remember to disconnect the computer and peripherals from the power sources before inserting or removing a board;

8. Before connecting or disconnecting any terminal, peripheral or any device, be sure the system is powered off and all the power sources are disconnected;

9. After turning off the computer, wait at least 30 seconds before turning it back on.

Contents

Chapter 1 Product Introduction

Overview

EC3-1813 series are embedded motherboards with low power consumption, which are developed based on Intel® Luna Pier Refresh platform and comply with 3.5″ single-board specification.

The board adopts Intel® Atom™ N455/D425/D525 processor + ICH8M technique solution on-board. It provides one DDR3 SO-DIMM slot and 1GB/2GB DDR3 memory on-board (EC3-1813CLD2NA(B)-N455/D425 provides 1GB memory on-board while EC3-1813CLD2NA(B)-D525 provides 2GB memory on-board); the maximum memory capacity supported by N455/D425 is up to 2GB while that supported by D525 is up to 4GB. It supports VGA, LVDS (18bit) display (Clone or expanded mode); two 10/100/1000Mbps Ethernet controllers; PCI-104 bus expansion; four USB2.0 ports; two SATA connectors; one Type I/II CF connector; one HD Audio connector; four COMs (one supports RS-232/ RS-422/ RS-485); one PS/2 keyboard/mouse connector; one LPT connector; the board adopts 12V single power supply.

Featuring Intel® low power consumption solution and small size design, the product is ideally suitable for the applications in mechanical control, e-police, information station, medical device and instrumentation, etc.

Mechanical Dimensions, Weight and Environment

➢ Dimensions: 146.1mm (L) x 101.6mm (W) x 28mm (H);

➢ Net Weight: 0.19kg ;

➢ Operating Environment:

Temperature: -20°C ~ 60°C;

-20°C ~ 70°C (with fan);

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

➢ Storage Environment:

Temperature: -40°C ~ 80°C;

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

Typical Consumption

Configuration 1:

CPU: Intel Atom N455 1.66GHz 667 on-board;

Memory: Samsung DDR3 1G+ DDR3 1066 1GB ADATA on-board;

+12V@1.08A; +5%/-3%;

Configuration 2:

CPU: Intel Atom D525 1.80GHz 800 on-board;

Memory: Samsung DDR3 2G+ DDR3 1333 1GB Kingston on-board;

+12V@1.21A; +5%/-3%;

Microprocessor

Intel® Atom™ N455 (main frequency: 1.66GHz) or D425/D525 (main frequency: 1.8GHz) CPU on-board; internally integrates memory controller and graphics controller.

Chipset

Intel® N455/D425/D525 +Intel® ICH8M.

System Memory

The maximum memory capacity supported by N455/D425 is up to 2GB. It provides 1GB DDR3 memory on-board and one 204Pin DDR3 memory slot, supporting

667MHz Un-buffered NON-ECC DDR3 memory stick up to 1GB.

The maximum memory capacity supported by D525 is up to 4GB. It provides 2GB DDR3 memory on-board and one 204Pin DDR3 memory slot, supporting 667/800MHz Un-buffered NON-ECC DDR3 memory stick up to 2GB.

Display Function

Integrated by Intel® N455/D425/D525 chip, assigning graphics memory according to requirement and supporting VGA+LVDS dual display function.

EC3-1813CLD2NA(B)-N455: the maximum resolution supported by CRT is up to 1400x1050@60Hz; that supported by LVDS is 1280x800 or 1366x768.

EC3-1813CLD2NA(B)-D525/D425: the maximum resolution supported by CRT is up to 2048x1536@60Hz; that supported by LVDS is 11366x768.

Network Function

Provides two 10/100/1000Mbps LAN ports; LAN1 adopts standard RJ45 connector, supporting Wake-on-LAN function; LAN2 is brought out in 2x7Pin header.

Audio Function

Adopts standard HDA chip, supporting MIC-IN, LINE-IN and LINE-OUT function.

Power Feature

Adopts standard 2x2pin 12V ATX power connector, supporting single 12V power supply.

Expansion Bus

One PCI-104 slot, expandable to 4 x PCI Master.

Watchdog Function

➢ 255 levels, programmable by minute or second;

➢ Supports watchdog timeout interrupt or reset system.

Operating System

➢ Supported OSs: WIN2000, WINXP, WIN7, Linux and WINCE;

On-board IO

➢ Four serial ports: COM1 is brought out in DB9 connector, supporting Modem wake-up function; the remaining three are brought out in 2x5Pin headers; COM2 supports RS-232/RS-422/RS-485 mode while the remaining three ports only support RS-232 mode;

➢ One LPT connector, brought out in 2x13Pin header;

➢ One CF card connector;

➢ Two SATA connectors;

➢ One HD Audio connector, brought out in 2x5Pin header;

➢ Four USB2.0 ports, two of which are brought out in connectors directly while the other two ports are brought out in 2x5Pin headers;

➢ One PS/2 connector, brought out in 2-in-1 connector;

➢ One 8-bit digital IO connector, brought out in 2x5Pin header.

Tips: how to identify the alarms

1. Long "beep" indicates system memory error;

2. Short "beep" indicates to power on the computer.

Chapter 2 Installation

Product Outline
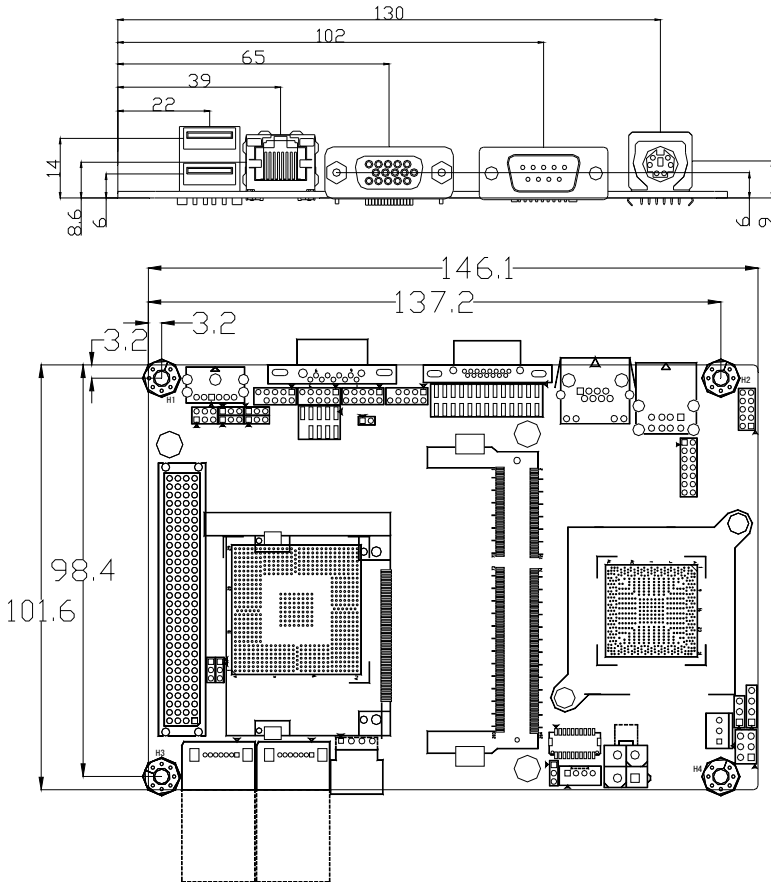
Unit: mm

Warning!

Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use M3x6 GB9074.4-88 screws at H1 ~ H4.

Locations of Connectors
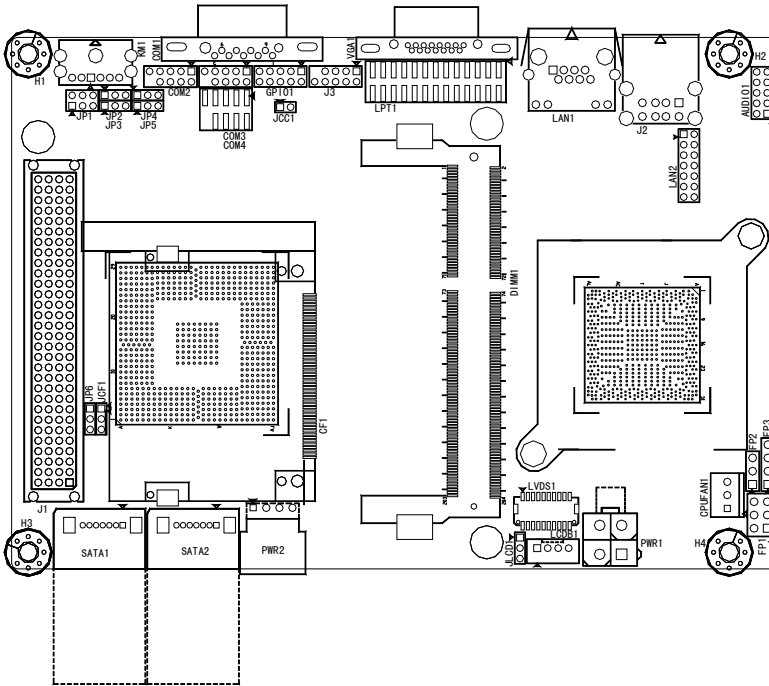
Structure

```
            Pineview
            M/D
VGA                           DDR3      ON Board
DB15                                    X8 1GB/2GB

LVDS   18 Bit single channel  DDR3      SODIMM
CONN

            TDP D525:13W
            N455:5.5W

            DMI X4

BIOS   SPI                     HDA Audio  HDA  AUDIO
            ICH8M
                               2.0 UHCI/EHCI  USB X 4 ports
SATA X 2 PORTS  SATA
                               PCI BUS        PCI-104
TypeI/II   IDE BUS
CF                             PCIeX1  10/100/1000Mbps   LAN1
                                       Lan
8路GPIO  SMBUS
                    TDP 2.4W   PCIeX1  10/100/1000Mbps   LAN2
                                       Lan
            LPC

LPT      Super        COM1&COM3&COM4  RS232
         I/O
                      COM2 RS232/RS422/RS485

KB/MOUSE

         Hardware
         Monitor
```

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

1. Observe the letter beside the socket: the first pin is usually marked with "1" or bold lines or triangular symbols;

2. Observe the solder pad on the back; the square pad is the first pin.

Jumper Setting

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

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

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

JCC1

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

The board provides two voltage options, 3.3V and 5V. Only when the selected LCD voltage is in accord with the LCD screen operating voltage in use, can the LCD screen operate normally. Please set as follows:

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

JLCD1

3. Select CF Card Operating Voltage (Pitch: 2.0mm)

The board provides two voltage options, 3.3V and 5V. Only when the selected CF card voltage is in accord with the CF card operating voltage in use, can the system operate stably. Please set as follows:
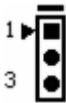
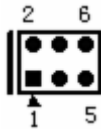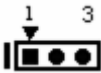| Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V(Default)

JCF1

Note: this option is set to comply with different CF cards; as for the CF card without specified operating voltage, please choose the CF card voltage according to actual usage.

4.   Choose Mode for COM2 (Pitch: 2.0mm)

Pin Setting	Mode Selection		
	RS-232 (Default)	RS-422	RS-485
JP1	1-2	5-6	3-4
JP2	1-2	2-3	2-3
JP3	1-2	2-3	2-3
JP4	1-2	2-3	2-3
JP5	1-2	2-3	2-3

JP1

JP2 ~ JP5

5.   Choose the VIO Voltage of PCI-104 (Pitch: 2.0mm)

Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V

JP6
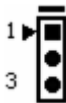
Note: The VIO of PCI-104 supplies power for the bus signal of the expansion device; the default setting is unset. Please choose the VIO voltage according to the expansion device to be connected. The operating voltage of the expanded PCI devices shall be the same.

Display Connector

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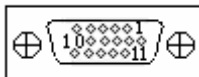
Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

VGA1

2) **Single-channel 18-bit LVDS Connector**
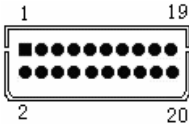
LVDS1
(Pitch: 1.0mm)

Pin	Signal Name	Pin	Signal Name
1	LVDS_D0+	2	LVDS_D0-
3	GND	4	GND
5	LVDS_D1+	6	LVDS_D1-
7	GND	8	GND
9	LVDS_D2+	10	LVDS_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	NC	18	NC
19	VDD	20	VDD

Note: the LVDS socket model adopted by the board is DF20G-20DP-1V; the corresponding terminal model is DF20A-20DF-1C.

LVDS Backlight Control Connector

The board provides one 1x4Pin LCD backlight control connector (Pitch: 2.0mm); the pin definitions are as follows:
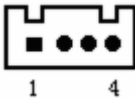
LCDB1(Pitch: 2.0mm)

Pin	Signal Name
1	VCC_LCDBKLT
2	LCD_BKLTCTL
3	LCD_BKLTEN
4	GND

Note:

VCC_LCDBKLT---Backlight Power (The current is limited below 1A);

LCD_BKLTCTL---Backlight Control (The signal is output as PWM signal via North Bridge directly; the voltage amplitude is between 0V-3.3V while the duty cycle is between 0% ~ 100%);

LCD_BKLTEN ---Backlight Enable, Active High. (The signal is output as CMOS output via North Bridge directly; the voltage amplitude is between 0V-3.3V).

Audio Connector

The board provides one 2x5Pin AUDIO pin header (Pitch: 2.0mm).
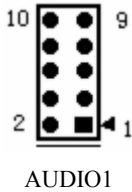
AUDIO1

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_L	10	MIC_R

Serial Port

The board provides one super-slim DB9 serial port socket and three 2x5Pin serial port pin headers (Pitch: 2.0mm). COM2 supports RS-232/RS-422/RS-485 mode while the other three serial ports support RS-232 mode.
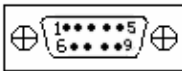
COM1
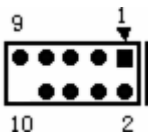
COM2 ~ COM4

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

Note: the data transmission direction is controlled automatically at RS-485 mode.

LPT Connector

The board provides one 2x13Pin LPT connector (Pitch: 2.00mm); the pin definitions are as follows:
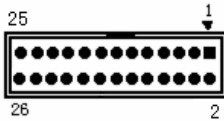
LPT1

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

SATA Connector

The board provides two standard vertical SATA sockets.
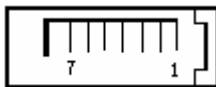
SATA1/SATA2

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

Hot-swap of SATA Hard Disk

Notes for hot-swap of SATA hard disk:

1. The hard disk shall support SATA 2.0 and use 15-pin SATA hard disk power connector.

2. The driver of chipset shall support the hot-swap of SATA hard disk.

3. Hot-swap of SATA hard disk with the operating system is forbidden when system is powered-on.
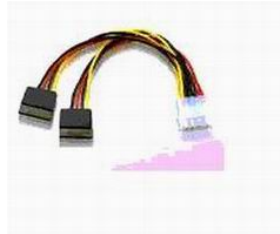
SATA Data Cable   SATA Power Cable

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

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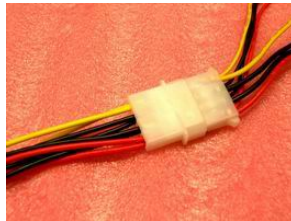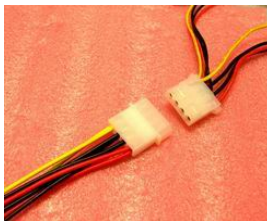
Step 1: Please plug the 1 x 4 pin SATA power connector (white) into the power adapter.

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

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

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

Hot Unplug

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

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

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

LAN Port

1. The board provides one standard 10/100/1000Mbps RJ45 port.

ACTLED   LILED

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

8   1
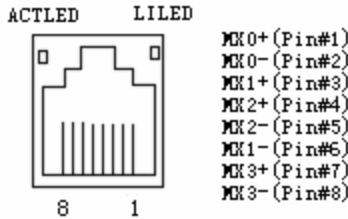
LAN1

ACTLED (Green)	LAN Activity Status Indicator		LILED (Dual-Color: O/G)	LAN Speed Indicator
			Green	1000Mbps
Blink	Data being transmitted		Orange	100Mbps
Off	No data being transmitted		Off	10Mbps

2. The board provides one 2x7Pin 10/100/1000Mbps LAN port, which shall be fixed with the chassis by conversion cable before connecting with peripherals. The pin definitions are as follows:
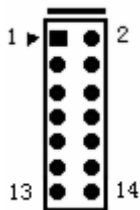
LAN2
(Pitch: 2.0mm)

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

USB Port

1. The board provides one dual-layer 90-degree A Type USB port with shielding.

J2

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

2. The board provides one 2x5Pin (Pin9 is NC) USB port (Pitch: 2.0mm).
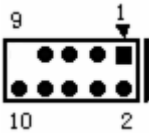
J3

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

2-in-1 Keyboard/Mouse Connector

The board provides one 2-in-1 keyboard/mouse socket.
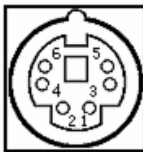
KM1

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

GPIO Connector

The board provides one 2x5Pin GPIO pin header (Pitch: 2.0mm).
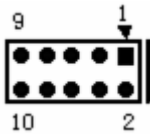
Pin	Signal Name	Pin	Signal Name
1	GPIO1	2	GPIO5
3	GPIO2	4	GPIO6
5	GPIO3	6	GPIO7
7	GPIO4	8	GPIO8
9	GND	10	NC

GPIO1

Note: the pins of GPIO are bi-direction signals; the default status is input and the voltage range for input and output signals are between 0-5V.

Status Control Connector on Front Panel

1) ATX Power Switch and HDD Indicator Connector (Pitch: 2.54mm)

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

FP1

2) Power Indicator Connector (Pitch: 2.54mm)

Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

FP2

3) Loudspeaker Output Connector (Pitch: 2.54mm)

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

FP3

Power Connector

1. The board provides one 2x2pin 12V ATX power connector (Pitch: 4.2mm); the pin definitions are as follows:
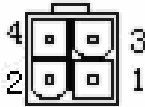
Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

PWR1

2. SATA Power Connector (Pitch: 2.5mm)
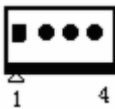
Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

PWR2

CPU Fan Connector

The board provides one 1x3Pin CPU fan connector (Pitch: 2.54mm).

Pin	Signal Name
1	GND
2	+12V
3	FAN_IO

CPUFAN1

Note: FAN_IO: fan speed impulse output.

CF Connector

The board provides one standard CF card socket (CF1, on the rear of the board).

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-104 Bus Expansion Connector

The board provides one standard PCI-104 bus expansion connector (Pitch: 2.0mm).
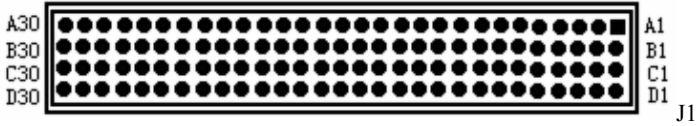
Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	KEY	B1	NC	C1	+5V	D1	AD0
A2	VIO	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	C/BE0#	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VIO	C6	AD10	D6	NC
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	C/BE1#	C8	AD15	D8	+3.3V
A9	SERR#	B9	GND	C9	NC	D9	PAR
A10	GND	B10	PERR#	C10	+3.3V	D10	NC
A11	STOP#	B11	+3.3V	C11	PLOCK#	D11	GND
A12	+3.3V	B12	TRDY#	C12	GND	D12	DEVSEL#
A13	FRAME#	B13	GND	C13	IRDY#	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	C/BE2#
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	C/BE3#	C19	VIO	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0#	B23	GND	C23	REQ1#	D23	VIO
A24	GND	B24	REQ2#	C24	+5V	D24	GNT0#
A25	GNT1#	B25	VIO	C25	GNT2#	D25	GND
A26	+5V	B26	CLK0	C26	GND	D26	CLK1
A27	CLK2	B27	+5V	C27	CLK3	D27	GND
A28	GND	B28	PIRQD#	C28	+5V	D28	RESET#
A29	+12V	B29	PIRQA#	C29	PIRQB#	D29	PIRQC#
A30	-12V	B30	REQ3#	C30	GNT3#	D30	GND

Configuration instructions for VGA + LVDS dual display output, take XP system as an example:

Display the Second Display via Clone Mode

1. Install the latest Chipset and VGA drivers into the operating system and connect with the two displays; right click the "Graphics Property" on the desktop to enable "Intel Graphics Media Accelerator Driver" control software and the following interface will appear. Click "multi-screen display", a set of options will appear on the right; choose "Operating Mode" and then "Dual display in clone mode" in the drop down list:

2. Set the models of the primary display and the secondary display in "Primary Display" and "Secondary" successively.

3. After that, click "Apply" and then the two displays will adjust the desktop. The primary display will show the following information:

4.   Click "OK" and the dual display clone mode is set.

Display the Second Display via Extended Mode

1.   Install the latest Chipset and VGA drivers into the operating system and connect with the two displays; right click the "Graphics Property" on the desktop to enable "Intel Graphics Media Accelerator Driver" control software and the following interface will appear. Click "multi-screen display", a set of options will appear on the right; choose "Operating Mode" and then "Extended desktop" in the drop down list:

2. Set the models of the primary display and the secondary display in "Primary Display" and "Secondary" successively.

3. After that, click "Apply" and then the two displays will adjust the desktop. The primary display will show the following information:

Click "OK" and the dual display extended mode is set.

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.

Correct BIOS settings make system more stable and reliable and also improve the overall performance of the system. Inappropriate or wrong BIOS settings reduce the performance of system, make system unstable and even unable to work normally.

BIOS Parameter Setup

Prompt message for BIOS setting may appear once the system is powered on and the computer booted. At that time (invalid at other time), press the key specified in the prompt message (usually <Del>) to enter into BIOS setting.

If the BIOS setting in CMOS is destroyed, system will ask you to enter BIOS setting or select certain default value.

All the setup values modified by BIOS are saved in the CMOS storage of the system. The CMOS storage is powered by battery; unless clearing CMOS is executed, the settings would not be lost even when the power supply is cut off.

Note! BIOS setting will influence the computer performance directly. Wrong settings may damage computer or even prevent boot up. After clearing CMOS, use the internal default value of BIOS to restore the normal operation of system.

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

Basic Function Setting for BIOS

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

BIOS SETUP UTILITY	
System Overview	←→ Select Screen ↑↓ Select Item
Processor Type : Intel(R) Atom™ CPU D525 @ 1.80GHz Speed :1800MHz System Memory Size :2039MB System Time [00:47:55] System Date [Wed 01/02/2002]	+ - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

◆   **Main**

➢   **System Time**

Choose this option and set the current time by < + > / < - >, which is displayed

in the format of hour/minute/second. Reasonable range for each option is: Hour

(00-23), Minute (00-59), Second (00-59).

➢   **System Date**

Choose this option and set the current date by < + > / < - >, which is displayed

in the format of month/date/year. Reasonable range for each option is: Month

(Jan.-Dec.), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

◆ **Advanced**

BIOS SETUP UTILITY	
Advanced Settings	Configure CPU
WARNING: Setting wrong values in below sections may cause system to malfunction ▶CPU Configuration ▶IDE Configuration ▶Super I/O 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
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **CPU Configuration**

BIOS SETUP UTILITY	
Configure advanced CPU settings	
Brand String:	
Intel(R) Atom™ CPU D525 @ 1.80GHz	
Frequency; :1.80GHz	
FSB Speed; :800MHz	←→ Select Screen
Cache L1; :48 KB	↑↓ Select Item + - Change Field
Cache L2; :1024KB	Tab Select Field F1 General Help
Ratio Actual Value :9	F10 Save and Exit
Hyper Threading Technology [Enabled]	ESC Exit
Intel(R) SpeedStep(tm)tech [Enabled]	
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

● **Hyper Threading Technology**

Control switch for Intel Hyper Threading Technology function.

● **Intel(R) SpeedStep(tm) tech**

Control switch for Intel SpeedStep tech function.

➢ **IDE Configuration**

BIOS SETUP UTILITY		
IDE Configuration		
ATA/IDE Configuration	[Enhanced]	
Configure SATA as	[IDE]	
Legacy IDE Channels	[SATA Pri, PATA Sec]	←→ Select Screen
▶ Primary IDE Master	:[Not Detected]	↑↓ Select Item
▶ Primary IDE Slave	:[Not Detected]	+ - Change Field
▶ Secondary IDE Master	:[Not Detected]	Tab Select Field
▶ Secondary IDE Slave	:[Not Detected]	F1 General Help
▶ Third IDE Master	:[Not Detected]	F10 Save and Exit
▶ Third IDE Slave	:[Not Detected]	ESC Exit
▶ AHCI Port0 [Not Detected]		
▶ AHCI Port1 [Not Detected]		
▶ AHCI Port2 [Not Detected]		
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

● **ATA/IDE Configuration**

This option is used to configure the operating mode of ATA; there are two options for this item: Compatible and Enhanced.

- **Configure SATA as**

  SATA controller type selection, it is corresponding with the options of IDE, RAID and AHCI. Only when ATA/IDE Configuration is under Enhanced mode, are RAID and AHCI supported.

  RAID and AHCI function require supports from both hardware chip and OS.

- **Legacy IDE Channels**

  Configure the IDE channel type under Compatible mode; it is corresponding with the options of SATA Only, SATA Pri, PATA Sec and PATA Only.

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

  *Type

  Not Installed: IDE device cannot be detected by system;

  AUTO: automatic detection of IDE parameters when powering on;

  CD/DVD: used for ATAPI CDROM;

  ARMD: used for various analog IDE devices.

  *LBA/Large Mode

  Used to set whether to support LBA mode or not.

  *Block(Multi-sector Transfer)

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

  *PIO Mode

  Used for PIO mode setting.

  *DMA Mode

  Used for DMA mode setting.

  *S.M.A.R.T

  Used to set whether to enable S.M.A.R.T function and it is only effective for the hard disk supporting this function.

  *32Bit Data Transfer

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

- **AHCI Port0 ~ 2**

  Configuration menu for AHCI port, it is displayed only when the SATA controller is configured to AHCI or RAID.

  *SATA Port0 ~ 2

  Auto: automatic detection of SATA devices when powering on;

  Not Installed: disable the port and detection.

  *S.M.A.R.T

  Used to set whether to enable S.M.A.R.T function and it is only effective for the hard disk supporting this function.

➢ **Super IO Configuration**

BIOS SETUP UTILITY		
Configure SCH311X Super IO Chipset		Allows BIOS to Enable or Disable Floppy Controller.
OnBoard Floppy Controller	[Enabled]	
Serial Port1 Address	[3F8]	
Serial Port1 IRQ	[IRQ4]	
Serial Port2 Address	[2F8]	
Serial Port2 IRQ	[IRQ4]	
Serial Port3 Address	[3E8]	
Serial Port3 IRQ	[IRQ3]	
Serial Port4 Address	[2E8]	
Serial Port4 IRQ	[IRQ3]	
Parallel Port	[378]	
Parallel Port	[Normal]	
Parallel Port	[IRQ7]	
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

- **Onboard Floppy Controller**

  Used to enable the floppy driver controller.

- **Serial Port 1-4 Address**

  Set the addresses of serial port 1-4 on motherboard, the options are: Disabled, 3F8, 3E8, 2F8 and 2E8.

- **Serial Port 1-4 IRQ**

  Set the IRQs of serial port 1-4 on motherboard, the options are: IRQ3, IRQ4, IRQ10 and IRQ11.

➢ **Hardware Health Configuration**

BIOS SETUP UTILITY		
Hardware Health Configuration		Enables Hardware Health Monitoring Device
CPU Temperature	: 49°C/120°F	
System Temperature	: 38°C/100°F	
CPUFAN1	:5690RPM	
Vcore	: 1.164 V	←→ Select Screen
V3.3	: 3.273 V	↑↓ Select Item
		+ - Change Field
V5.0	: 5.048 V	Tab Select Field
V12.0	: 11.687 V	F1 General Help
VBAT	: 3.245 V	F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

- **System Temperature**

  Current system temperature, it is monitored by thermal resistor on motherboard.

- **CPU Temperature**

  Current CPU temperature, it is monitored by temperature sensors on motherboard.

- **CPUFAN1**

  Current speed of CPUFAN1.

● **Vcore**

CPU core voltage;

● **V3.3/ V5.0/V12.0/VBAT**

Turn on/off power to output voltage;

➢ **USB Configuration**

BIOS SETUP UTILITY	
USB Configuration	Enables USB host controllers.
USB Devices Enabled :	
1 Keyboard, 1 Drive	
USB Function [4 USB Ports] USB 2.0 Controller [Enabled] Legacy USB Support [Auto] ►USB Mass Storage Device Configuration	←→ Select Screen ↑↓ Select Item + - Change Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc..	

● **USB Function**

This option is used to set the number of the USB controllers, i.e., to confirm how many USB controllers are supported. One controller usually has two USB connectors.

● **USB 2.0 Controller**

This option is used to set whether to support USB 2.0 controller.

● **Legacy USB Support**

This option is used to support legacy USB devices (keyboard, mouse and storage device, etc.); when this option is set to Enabled, the USB device could be used even if under OS that doesn't support USB, such as DOS.

● **USB Mass Storage Device Configuration**

This option is used configure the USB mass storage device, including reset delay setting and enumeration type.

➢ **Power Management Configuration**

BIOS SETUP UTILITY		
Power Management Configuration		←→ Select Screen
ACPI APIC Support [Enabled]		↑↓ Select Item
Restore on AC Power Loss [Last state]		+ - Change Field
Resume on RTC Alarm [Disabled]		F1 General Help
		F10 Save and Exit
		ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

● **ACPI APIC Support**

This option is used to enable or disable APIC under ACPI OS.

● **Restore on AC Power Loss**

This option could set the system status when the computer is re-electrified after powered off under AC. "Power Off" is to make the system at power off status; "Power On" is to power on the system automatically; "Last State" is to recover the status before powering off.

● **Resume on RTC Alarm**

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

➢ **Clock Generator Configuration**

BIOS SETUP UTILITY	
Configure Clock Generator	←→ Select Screen
Spread Spectrum Control [Enabled]	↑↓ Select Item
	+ - Change Field
Auto PCI Clock [Enabled]	F1 General Help
	F10 Save and Exit
	ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

● **Spread Spectrum Control**

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

● **Auto PCI Clock**

This option is used to detect the devices on PCI slot automatically. If there are

no devices in the slot, please disable the clock signal on that slot.

◆ **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]	←→ Select Screen
Initiate Graphic Adapter [PCI/IGD]	↑↓ Select Item
Boot Display Device [CRT+LVDS]	Enter Go to Sub Screen
Flat Panel Type [800X600/S/18/G104S]	F1 General Help
UserDefine Panel Type [Disabled]	F10 Save and Exit
	ESC Exit
SouthBridge Configuration	
Onboard Audio Controller [Enabled]	
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **DRAM Frequency**

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

➢ **Configure DRAM Timing by SPD**

BIOS configures the time sequence of the SDRAM according to the contents of the SPD chip. Most of the memory module has one small chip to save the time sequence and capacity of the memory, i.e. the SPD chip.

➢ **Boots Graphic Adapter**

This option is used to specify the boot-up priority of the video device type.

➢ **Boot Display Device**

This option is used to select the default display device when booting.

➢ **Flat Panel Type**

This option is used to select the resolution of the Flat Panel. With the option User Define, users may configure the flat panel type according to user define.

➢ **UserDefine Panel Type**

This option is used for the resolution of user-defined Panel.

➢ **Onboard Audio Controller**

Select whether to enable the audio card controller.

◆ **PCIPnP**

BIOS SETUP UTILITY		
Advanced PCI/PnP Settings		
WARNING: Setting wrong values in below sections may cause system to malfunction.		
IRQ3	[Available]	←→ Select Screen
IRQ4	[Available]	↑↓ Select Item
IRQ5	[Available]	+ - Change Field
IRQ7	[Available]	F1 General Help
IRQ9	[Available]	F10 Save and Exit
IRQ10	[Available]	ESC Exit
IRQ11	[Available]	
IRQ14	[Available]	
IRQ15	[Available]	
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

➢ **IRQ3 ~ 15**

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

◆ **Boot**

BIOS SETUP UTILITY		
Boot Settings		←→ Select Screen
Quick Boot	[Enabled]	↑↓ Select Item
Quiet Boot	[Disabled]	Enter Go to Sub Screen
Waite For 'F1' If Error	[Enabled]	F1 General Help
Boot Device Priority		F10 Save and Exit
		ESC Exit
Boot from Embedded WinCE	[No]	
1st Boot Device	[Network:B01 D00 ReaLtek PXE]	
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

➢ **Quick Boot**

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

➢ **Quiet Boot**

Configure whether to display the content of OEM LOGO.

➢ **Wait For 'F1' If Error**

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

➢ **1st ~ 4th Boot Device**

Configure the priority of the boot sequence for devices when the system boots.

◆ **Security**

BIOS SETUP UTILITY		
Security Settings		Install or Change the password
Supervisor Password	:Not Installed	←→ Select Screen
User Password	:Not Installed	↑↓ Select Item
Change Supervisor Password		Enter Change
		F1 General Help
Change User Password		F10 Save and Exit
Clear MBR Virus Function	[Disable]	ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.		

➢ **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.

➢ **Clear MBR Virus Function**

Set the function to clear MBR virus.

Disabled: disable the protective function for MBR virus.

Manual: when MBR virus is detected in the storage device, whether to prompt the users to clear the virus.

Quiet: when MBR virus is detected in the storage device, delete the virus directly.

◆ **Exit**

BIOS SETUP UTILITY	
Exit Options Save Changes and Exit Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults	Exit system setup after saving the changes. ←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.61 (c)Copyright 1985-2006, American Megatrends, Inc.	

➢ **Save Changes and Exit**

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

➢ **Discard Changes and Exit**

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

➢ **Discard Changes**

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

➢ **Load Optimal Defaults**

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

➢ **Load Failsafe Defaults**

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

System Resource Managed by BIOS under X86 Platform

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

◆ **DMA**

Level	Function
DMA0	DRAM Refresh
DMA1	Unassigned
DMA2	Unassigned
DMA3	Unassigned (sometimes used for hard disk)
DMA4	Used for DMAC cascade
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ **APIC**

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; while some others can have up to 28 interrupt sources, such as motherboard supporting PCI-X. However, relevant OS are required to enable that function, and currently, only the OS above Windows 2000 could support that function.

◆ **IO Port Address**

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

Address	Device Description
000h - 00Fh	DMA Controller #1
010h - 01Fh	Carrier Resource
020h - 021h	Programmable Interrupt Controller #1
022h - 03Fh	Carrier Resource
040h - 043h	System Timer
044h - 05Fh	Carrier Resource
060h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
061h	System speaker
062h – 063h	Carrier Resource
064h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
065h - 06Fh	Carrier Resource
070h - 071h	Real Time Clock, NMI
072h – 07Fh	Carrier Resource
080h	Carrier Resource
081h - 083h	DMA Controller #2
084h - 086h	Carrier Resource
087h	DMA Controller #3
088h	Carrier Resource
089h - 08Bh	DMA Controller #4
08Ch - 08Eh	Carrier Resource
08Fh	DMA Controller #5
090h - 09Fh	Carrier Resource
0A0h - 0A1h	Programmable Interrupt Controller #2
0A2h – 0BFh	Carrier Resource
0C0h - 0DFh	DMA Controller #6

0E0h - 0EFh	Carrier Resource
0F0h - 0FFh	Numeric Data Processor
1F0h - 1F7h	Primary IDE
274h – 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2E8h – 2EFh	COM4
2F8h – 2FFh	COM2
3B0h – 3BBh	Intel(R) Graphics Media Accelerator 3150
3C0h – 3DFh	Intel(R) Graphics Media Accelerator 3150
3E8h – 3EFh	COM3
3F0h - 3F5h	Standard Floppy Disk Controller
3F6h	Primary IDE(dual FIFO)
3F7h-3F7h	Standard Floppy Disk Controller
3F8h - 3FFh	COM1
400h - 41Fh	Intel(R) ICH8 Family) SMBus Controller – 283E
4D0h –4D1h	Carrier Resource
500h –53Fh	Carrier Resource
800h - 87Fh	Carrier Resource
A79h	ISAPNP Read Data Port
A80h-AFFh	Carrier Resource
0D00h-FFFFh	PCI bus

◆ **IRQ Assignment Table**

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be assigned to other devices. ISA device requests exclusive use of its interrupt. Only the plug and play ISA devices can be assigned by the BIOS or the OS. And several PCI devices share one interrupt,

which is assigned by BIOS or OS. Interrupt assignment of some devices of X86 platform is shown in the table below, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	Standard 101/102 Key or Microsoft Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	COM3/ COM4
IRQ4	COM1/ COM2
IRQ5	Reserved
IRQ6	Reserved for Floppy Drive Controller
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	Numeric Data Processor
IRQ14	Primary IDE
IRQ15	Reserved

Chapter 4 Installing the Drivers

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

Appendix

BPI Overview

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

Features of the BPI include:

1、 Platform Irrelevant

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

2、 Security and High Reliability

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

3、 Flexible Configuration

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

4、 Easy Maintenance

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

5、 Low Cost

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

Troubleshooting and Solutions

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

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