PEB-2710VL & 2730VL Series

Embedded System Board

User's Manual

P/N: B8981270 Version 1.1

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your PEB-2710VL/2730VL system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and flash disk to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides you a few useful tips to quickly get your PEB-2710VL/2730VL running with no failure. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane/riser card setup, BIOS setting, and OS diagnostics.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : http://www.portwell.com.tw

EC Declaration of Conformity
(To Be Added)

For the following equipment:

Product Name:

Model Name:

Trade Name:

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The equipment was evaluated and passed the test, the following standards were applied :

EMC :	EN 55022	(1994/A1:1995 Class A)
	EN 50082-2	(1991)
	EN 61000-4-2	(1995)
	EN 61000-4-3	(1996)
	EN 61000-4-4	(1995)
	EN 61000-3-2	(1995)
	EN 61000-3-3	(1995)

The following manufacturer is responsible for this declaration :

Portwell, Inc.
(Company Name)

3F, No.88, Sec.1, Nei-Hu Rd., Taipei, Taiwan
(Company Address)

Taipei		
Place	Date	Legal Signature of Authorized Person

Chapter 1
System Overview

1.1 Introduction

PEB-2710VL & PEB-2730VL series are the first 3.5" embedded board based on the new Intel Embedded Compact Extended (**ECX**) initiative. Portwell developed board with the Intel proof-of-concept based on Intel® 915GM chipset enabling us to accelerate our development cycle. With combination of Low-Voltage Intel® Pentium® M or Ultra Low Voltage Intel® Celeron M processor and the Intel® 915GM chipset, it delivers the highest level of performance at the lowest possible voltage. This form factor could help to meet the application requirement of in-car infotainment systems, medical equipment and interactive client, including POS and KIOSK.

The Intel ECX form factor is highly integrated with rich I/O connections and interfaces to meet the expansion needs of particular applications. In addition, it fits into a standard DIN slot for vehicle infotainment within the space-constrained environment. Since its relatively small size enables a 75 percent space reduction compared to a micro-ATX board. The thermal constraint is also an issue. Power by the low-power characteristic of the Intel® Celeron® M processor, PEB-2730VL provides a fan-less thermal solution for the Intel ECX form factor helps to eliminate noise and reliability issues. While incorporating the Intel® 915GM Express chipset with 533 MHz front-side bus, it delivers an L2 cache of 2 MB and consists Intel® GMA 900 that is an optimized integrated graphic solution. It features a low-power design and supports up to 1GB of DDR2 400/533 MHz system memory optimizing the high-density and high-performance in the embedded computing market.

Portwell provides tiny platform ARTO-50 with stylish design and modular carrier frame for ECX form factor. ARTO-50 opens new solution opportunities for the embedded market where space and power consumption are challenging factor. This enables user enjoying the high-performance and low-power platform needed by Telematics, medical, digital signage and slim sized interactive client. ARTO-50 also can run multimedia graphic applications with dual independent display capability through PMIO expansion interface. This platform can also support Intel® Pentium® M and Intel® Celeron® M processor based on ECX form factor for PEB-2710VL and PEB-2730VL. This ECX form factor solution has become increasingly important in the embedded environment.

Notice for users of PEB-2730VL:

You can find PEB-2730VL manual and CD-Title in this package, please just ignore multimedia related driver/utility/setting instruction. Other jumper settings and connectors should be referred as for PEB-2730VL.

1.2 Check List

The PEB-2730VL package should cover the following basic items

- ✓ One PEB-2730VL single board computer
- ✓ One Installation Resources CD-Title
- ✓ One booklet of PEB-2730VL manual
- ✓ ATX Power cable
- ✓ PS/2 Keyboard/Mouse cable
- ✓ 44 pin IDE cable
- ✓ SATA cable

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

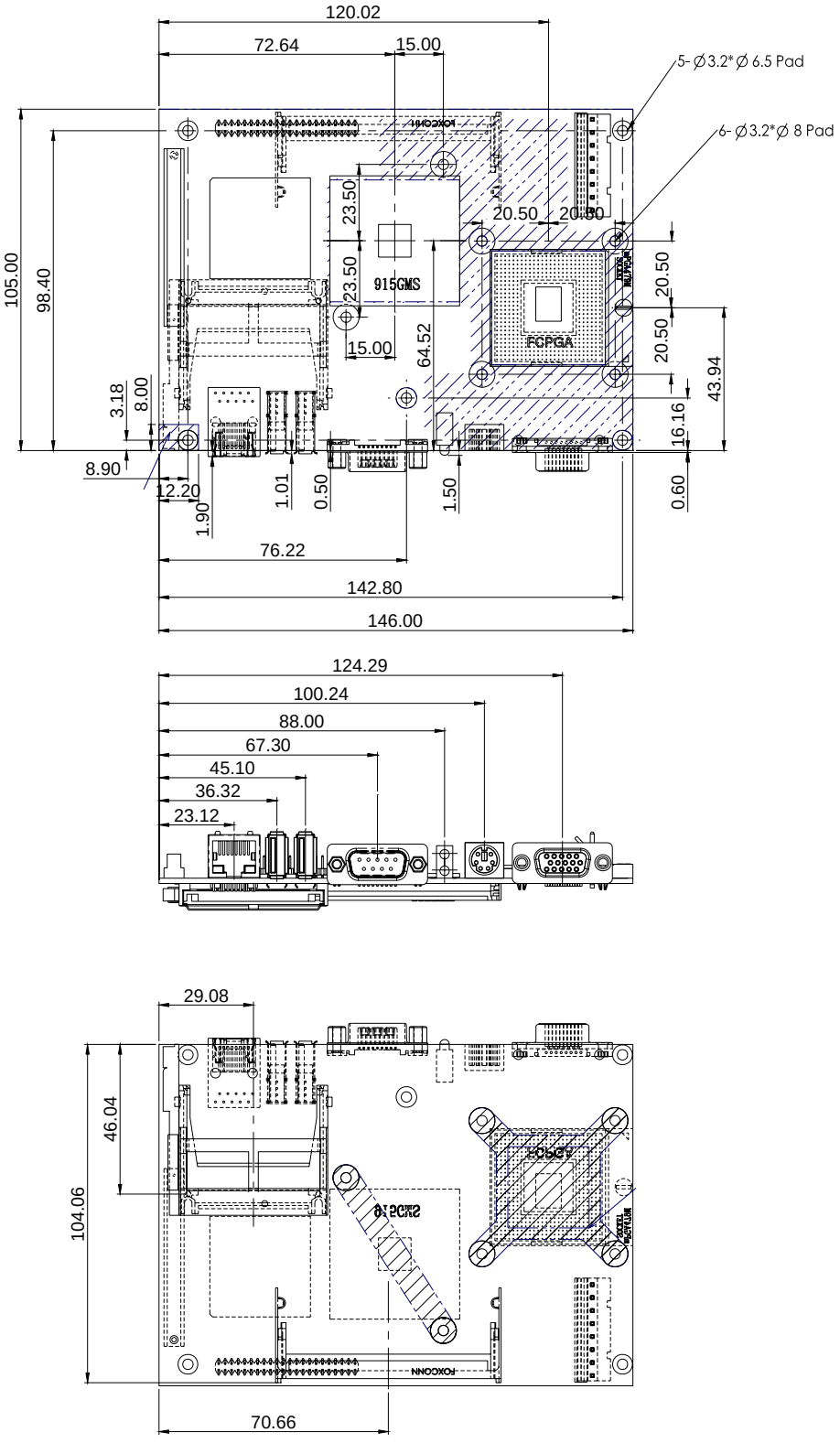
- **Main processor**
  PEB-2710VL
  - uFC-PGA 479 Intel Pentium M & Celeron M Processor (Dothan & Banias)
  - Up to 2.0GHz with 2M L2 cache

  PEB-2730VL series
  - UL Intel® Pentium®-M 1.4 GHz Dothan Processor (PEB-2730VL)
  - FSB: 400MHz
  - ULV Intel® Celeron®-M 1.0GHz Banias Processor (PEB-2730VL-1G)
  - FSB: 400MHz
- **BIOS**
  Phoenix (Award) system BIOS with 512KB Flash ROM with easy upgrade function ACPI, DMI, Green function and Plug and Play Compatible
- **Main Memory**
  One SO-DIMM sockets support DDR-II 400/533 up to 1GB.
- **L2 Cache Memory**
  - 2 MB in Intel® Pentium®-M Dothan Processor
  - 512 KB in Intel® Celeron®-M Banias Processor
- **Chipset**
  Intel 915GM GMCH and ICH6 chipset

- **PCI IDE Interface**
  Support one enhanced IDE ports and 2 SATA port up to 2 HDD devices or CD-ROM support with PIO mode 4 ultra DMA/33/66/100 and Bus aster features.
  One 2.0 mm pitch 44pin IDE connector for primary IDE channel share with Compact Flash Socket.
  2 SATA port supports 2 SATA interface device.
- **Serial Ports**
  Support 1 high-speed compatible UARTs with 16-byte T/R FIFOs
- **IR Interface**
  Support one 6-pin 2.0mm pitch header for serial Standard Infrared wireless communication
- **Parallel Port**
  N/A
- **USB Interface**
  Support four USB ports for high-speed I/O peripheral devices, Two on board, and other by 2.54 mm pitch pin header
- **PS/2 Mouse and Keyboard Interface**
  Support one PS/2 mouse/keyboard connection through IO Cable separation and ATX Power Control Interface
- **Auxiliary I/O Interfaces**
  System reset switch, Power button switch and HDD/Power active LED, etc.
- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset or non-maskable interrupt (NMI)
- **On-board VGA**
  - Support 18 bits dual channel LVDS (1400X1050 18bit 2ch) interface
- **On-board Ethernet LAN**
  Support one Intel 82562EZ 10/100 Ether Net controller to support RJ-45 connector.
- **High driving GPIO**
  Support 4 high driving capabilities for GPIO (4 GPI or 4 GPO)
- **Cooling Fans**
  Support one 3-pin header for CPU/System
- **System Monitoring Feature**
  Monitor CPU temperature, system temperature and major power sources, etc.

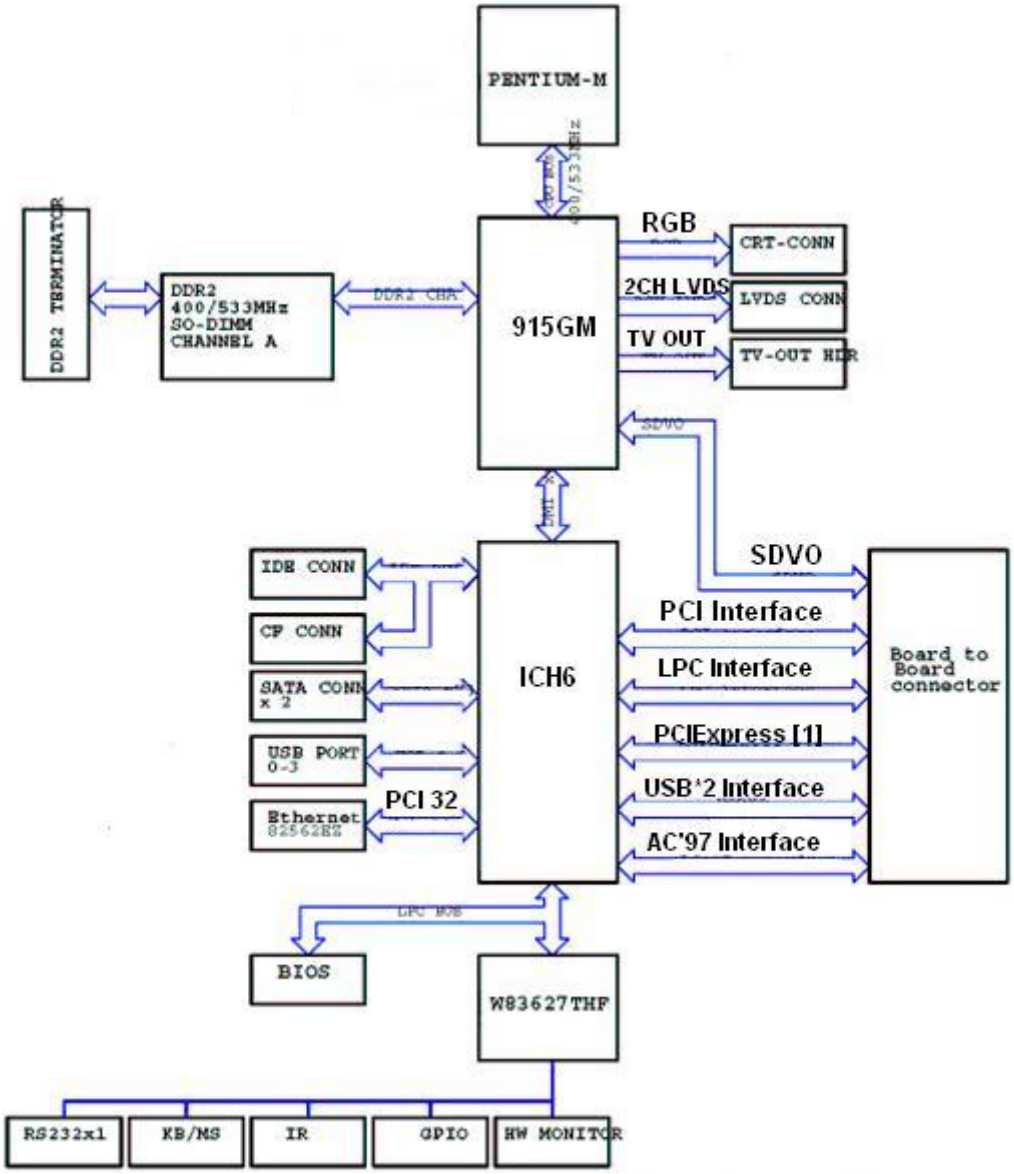
- **Outline Dimension (L X W):**
  105mm (4.0″) X 146mm (5.7″)
- **Power Requirements:**
  - +12V @ 3.0A
  - +5V @ 2.2A
  - Test configuration:
    - CPU: Intel Pentium-M Dothan 1.73G/533MHz FSB/2MB L2 Cache
    - Memory: DDR2 256MBx1
    - HDD: Seagate-ST340015A
    - OS: Microsoft Windows 2000 professional + SP4
    - Test Programs: Multimedia Content Creation Winstone 2004 for testing CPU Loading
    - Connected Fans: Only CPU fan connected
    - Run Time: 30 minutes
- **Operating Temperature:**
  -5°C ~ 60°C (23°F ~ 140°F)
- **Storage Temperature:**
  -20°C ~ 80°C
- **Relative Humidity:**
  0% ~ 95%, non-condensing

1.3.1 Mechanical Drawing



1.4 System Architecture

The most up-to-date system architecture of PEB-2710VL & 2730VL series includes two main Intel chips, Intel 915GM chipset supports Intel LV Pentium-M Dothan and ULV Celeron M Banias processor, DDRII 400/533 MHz-SDRAM, 2D/3D graphic display, and its ICH6 supports PCI & PCI-express bus interface, APM, ACPI compliant power management, USB port, SMBus communication, Ultra DMA/33/66/100 IDE Master and SATA. W83627HF (I/O Controller) is responsible for PS/2 Keyboard/Mouse, UARTs with RS-232, Hardware Monitor, Watch Dog Timer, GPIO and Infrared interface.



PEB-2730VL System Block Diagram

Chapter 2
Hardware Configuration

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

For users to customize PEB-2710VL/2730VL's features. In the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 for the Jumper locations.

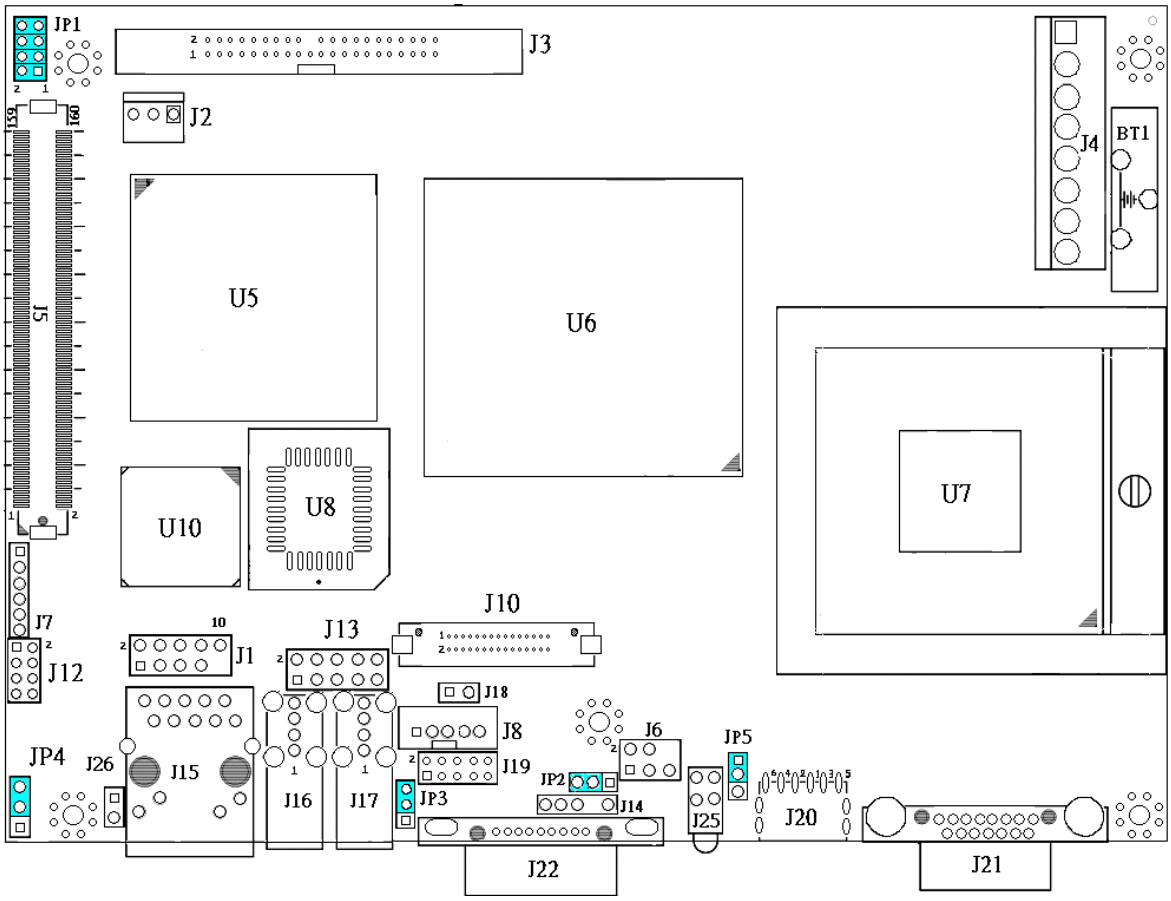


Figure 2-1 PEB-2710VL/2730VL Jumper and Connector Locations

The jumper settings are schematically depicted in this manual as follows:

JP1 : LVDS panel type setting

Pin No.	Signal Description	
1-2 Short	Reserved	
3-4 Short	Reserved	
1-2,3-4 Short	Reserved	
5-6 Short	Reserved	
1-2,5-6 Short	Reserved	
3-4,5-6 Short	Reserved	
7-8 Short	1400x1050 18bit dual channel	
5-6,7-8 Short	1024x768 18bit single channel	
1-2,5-6,7-8 Short	800x600 18bit single channel	
3-4,5-6,7-8 Short	640x480 18bit single channel	
1-2,3-4,5-6,7-8 open	Reversed	
1-2,3-4,5-6,7-8 Short	Setup by BIOS ★	

JP2 : LVDS Panel VDD Power Input Selection

Pin No.	Signal Description
1-2 Short	+3.3V ★
2-3 Short	+5V

Note :
Wrong voltage selection may damage the LVDS panel.
Please survey LVDS panel's VDD before setup this jumper setting.

JP3 : LVDS Panel Back light Enable Signal Level Selection

Pin No.	Signal Description
1-2 Short	+3.3V
2-3 Short	+5V ★

Note :
Wrong voltage selection may damage the LVDS panel's back light inverter.
Please survey inverter's maximum allow input level before setup this jumper setting.

JP4 : RTC CMOS Clear Jumper Setting

JP4	Signal Description
1-2 Short	Clear CMOS Enable
2-3 Short	Clear CMOS Disable ★

JP5 : Power Source for CPU VCCA selection

Pin No.	Signal Description
1-2	+1.5V for DOTHAN ★
2-3	+1.8V for BANIAS

2.2 Connector Allocation

I/O peripheral devices are connected to the interface connectors (Figure 2-2)

Connector Function List

Connector	Function	Remark
J1	LPC Debug Port Header	
J2	FAN Connector	
J3	44-pin Hard Disk Connector	
J4	ATX Power Connector	
J5	Board-to-Board Connector	
J6	TV OUT Header	
J7	IrDA Header	
J8	LVDS Panel Inverter's Power Connector	
J10	LVDS Panel Interface Connector	
J12	Front Panel Header	
J13	USB Port3&Port4 Header	
J14	SMBUS Interface Header	
J15	LAN Connector	
J16	USB Port1 Connector	
J17	USB Port2 Connector	
J18	Temperature Sense Header	
J19	8 bit GPIO Header	
J20	PS/2 KB & MS Connector	
J21	CRT Connector	
J22	COM Port Connector	
J25	Power & HDD LED Header	
J26	LAN Active LED Header	

Pin Assignments of Connectors

J1 : LPC Debug Port Header

Pin No.	Signal Description	Pin No.	Signal Description
1	LAD0	2	+3.3V
3	LAD1	4	PLT_RST#
5	LAD2	6	LFRAME#
7	LAD3	8	LPC_PCID
		10	GND

J2 : FAN connector

Pin No.	Signal Description
1	GND
2	+12V
3	Fan Input

J3 : 44-pin Hard Disk Connector

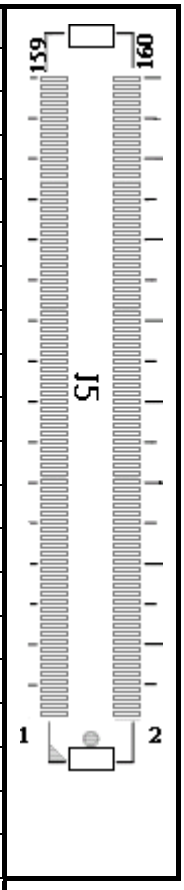
Pin No.	Signal Description	Pin No.	Signal Description
1	R_PLT_RST#	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	GND	20	N/C
21	PDDREQ	22	GND
23	PDIOW#	24	GND
25	PDIOR#	26	GND
27	PDIORDY	28	GND
29	PDDACK#	30	GND
31	IRQ14#	32	N/C
33	PDA1	34	GND
35	PDA0	36	PDA2
37	PDCS#1	38	PDCS#3
39	IDEACT#	40	GND
41	+5V	42	+5V
43	GND	44	N/C

J4 : ATX Power Connector

Pin No.	Signal Description
1	+5V
2	+5V
3	+5VSB
4	+12V
5	PS-ON
6	GND
7	GND
8	GND

J5 :Board-to-Board Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	SDVOB_RED	2	SDVOB_INT
3	SDVOB_RED#	4	SDVOB_INT#
5	GND	6	GND
7	SDVOB_BLUE	8	SDVOB_GREEN
9	SDVOB_BLUE#	10	SDVOB_GREEN#
11	GND	12	GND
13	SDVO_FLDSTAL	14	SDVOB_CLK
15	SDVO_FLDSTAL#	16	SDVOB_CLK#
17	GND	18	GND
19	BKLCTL2	20	SDVO_CTRL_CLK
21	PCIE_WAKE#	22	SDVO_CTRL_DATA
23	GND	24	GND
25	PCIE_TXP0	26	PCIE_RXP0
27	PCIE_TXN0	28	PCIE_RXN0
29	+12V	30	GND
31	GND	32	GND
33	+12V	34	CLK_100M_PCIE0
35	+12V	36	CLK_100M_PCIE0#
37	+12V	38	PWR_PSON#
39	SIO_RI	40	5VSB
41	LPC_FRAME#	42	LPC_AD0
43	LPC_DRQ1#	44	LPC_AD1
45	GND	46	LPC_AD2
47	LPC_33M	48	LPC_AD3
49	+3.3V	50	INT_SERIRQ
51	GND	52	GND
53	INTB#_PCI	54	SMB_DATA
55	INTD#_PCI	56	SMB_CLK



57	REQ2#_PCI	58	INTA#_PCI/GND
59	CLK_33M_PCI	60	CLK_48M_SIO
61	GND	62	+3.3V
63	REQ1#_PCI	64	CLK_33M_PCI1
65	+5V	66	GND
67	GNT1#_PCI	68	INTC#_PCI
69	AD31_PCI	70	GNT2#_PCI
71	GND	72	GND
73	AD29_PCI	74	RST#_PCI
75	AD27_PCI	76	+5V
77	AD25_PCI	78	PCI_PME#
79	C/BE#3_PCI	80	AD30_PCI
81	AD23_PCI	82	AD28_PCI
83	+3.3V	84	AD26_PCI
85	AD21_PCI	86	AD24_PCI
87	AD19_PCI	88	AD22_PCI
89	+3.3V	90	GND
91	AD17_PCI	92	AD20_PCI
93	C/BE#2_PCI	94	GND
95	IRDY#_PCI	96	AD18_PCI
97	DEVSEL#_PCI	98	AD16_PCI
99	GND	100	+3.3V
101	PREE#_PCI	102	FRAME#_PCI
103	+3.3V	104	TRDY#_PCI
105	SERR#_PCI	106	STOP#_PCI
107	C/BE#1_PCI	108	PAR_PCI
109	GND	110	GND
111	AD14_PCI	112	AD15_PCI
113	AD12_PCI	114	AD13_PCI
115	AD10_PCI	116	AD11_PCI
117	GND	118	+3.3V
119	AD8_PCI	120	AD9_PCI
121	AD7_PCI	122	C/BE#0_PCI
123	+3.3V	124	+3.3V
125	AD5_PCI	126	AD6_PCI
127	AD3_PCI	128	AD4_PCI
129	GND	130	GND
131	AD1_PCI	132	AD2_PCI
133	+5V	134	AD0_PCI
135	+5V	136	+5V
137	I/O_PME#	138	LAN_WAKE1
139	3VSB	140	3VSB
141	USBOC#	142	GND
143	USBP2P	144	USBP3P

145	USBP2N	146	USBP3N
147	+5V	148	+5V
149	GND	150	GND
151	AC97_SDIN0	152	AC97_SDIN1
153	AC97_SDOUT	154	AC97_SDIN2
155	AC97_BITCLK	156	AC97_SYNC
157	AC97_RST#	158	5VSB
159	GND	160	5VSB
161	GND	162	GND

J6 : TV OUT Header

Pin No.	Signal Description	Pin No.	Signal Description
1	GND	2	L_TVDAC_A
3	L_TVDAC_B	4	L_TVDAC_C
5	GND		

Note :
L_TVDAC_A: COMPOSITE (AV VIDEO)
L_TVDAC_B: S-VIDEO LUMINANCE
L_TVDAC_C: S-VIDEO CHROMINANCE

J7 : IrDA Header

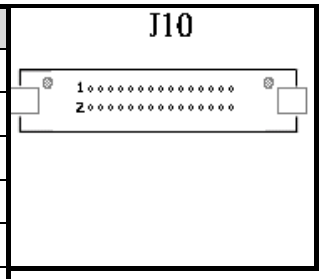
Pin No.	Signal Description
1	+5V
2	5VSB
3	IRRX
4	GND
5	IRTX
6	N/C

J8 : LVDS Panel Back Light Inverter Power Connector

Pin No.	Signal Description
1	+5V
2	GND
3	+12V
4	GND
5	BACKLIGH_EN

J10 : LVDS Panel Interface Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	LVDSA_DATA0+	2	LVDSA_DATA0-
3	LVDSA_DATA1+	4	LVDSA_DATA1-
5	LVDSA_DATA2+	6	LVDSA_DATA2-
7	N/C	8	N/C
9	LVDSA_CLKP	10	LVDSA_CLKN
11	LVDSB_DATA0+	12	LVDSB_DATA0-
13	LVDSB_DATA1+	14	LVDSB_DATA1-
15	LVDSB_DATA2+	16	LVDSB_DATA2-
17	N/C	18	N/C
19	LVDSB_CLKP	20	LVDSB_CLKN
21	N/C	22	N/C
23	GND	24	N/C
25	GND	26	GND
27	VDD_LVDS	28	VDD_LVDS
29	N/C	30	VDD_LVDS



J12 : Front Panel Header

Pin No.	Signal Description	Pin No.	Signal Description
1	POWER_LED+	2	POWER_LED-
3	HDD_LED+	4	HDD_LED-
5	GND	6	PWR_ON_SW#
7	RESET	8	GND

J13 : USB Port3&Port4 Header

Pin No.	Signal Description	Pin No.	Signal Description
1	N/C	2	USB Power
3	USB_G5	4	USBD4N
5	USBD5P	6	USBD4P
7	USBD5N	8	USB_G4
9	USB Power	10	N/C

J14 : SMBUS Interface Header

Pin No.	Signal Description
1	SMB_CLK
3	GND
4	SMB_DATA
5	+5V

J15 : LAN Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	MDIP2	2	MDIP0
3	MDIN0	4	L_AVDD25
5	MDIN2	6	MDIP3
7	GND	8	MDIP1
9	MDIN1	10	MDIN3
11	RJ_ACT#	12	RJ_LINK#
13	L_100#	14	L_1000#/ACT#

J16&J17 : USB Port1&Port2 Connector

Pin No.	Signal Description
1	USBV0
2	USBD0N
3	USBD0P
4	USB GND

J18 : Temperature Sense Header

Pin No.	Signal Description
1	T_Sense +
2	T_Sense -

J19 : 8 bit GPIO Header

Pin No.	Signal Description	Pin No.	Signal Description
1	LPC_GP10	2	LPC_GP14
3	LPC_GP11	4	LPC_GP15
5	LPC_GP12	6	LPC_GP16
7	LPC_GP13	8	LPC_GP17
9	GND	10	+5V

J20 : PS/2 KB & MS Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	L_KDAT	2	L_MDAT
3	GND	4	PS2_VCC
5	L_KCLK	6	L_MCLK

J21 : CRT Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	RED	2	GREEN
3	BLUE	4	MON2PU
5	GND	6	GND
7	GND	8	GND
9	N/C	10	GND
11	MONOPU	12	5VDDCDA
13	HSYNC	14	VSYNC
15	5VDDCCL		

J22 : COM Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	DCD#1	2	RXD#1
3	TXD#1	4	DTR#1
5	GND	6	DSR#1
7	RTS#1	8	CTS#1
9	RI#1		

J25 : Power & HDD LED Header

Pin No.	Signal Description	Pin No.	Signal Description
1	+5V	2	GND
3	+3.3V	4	HDD_LED

J26 : LAN Active LED Header

Pin No.	Signal Description
1	RJ_LINK#
2	RJ_ACT#

Chapter 3
System Installation

This chapter could be provided you with instructions to set up your system. The additional information is enclosed to help you for setting up onboard PCI device and handle WDT operation in software programming.

3.1 Intel® Pentium® M or Celeron® M processor

Configuring System Bus

PEB-2710VL uses scalable 479 pin socket type for Intel® Pentium® M or Celeron® M (Banias & Dothen) processor. PEB-2730VL-1G onboard uses Intel® ULV Celeron® M 1.0GHz processor; PEB-2730VL uses onboard uses Intel® LV Pentium® M 1.4GHz processor.

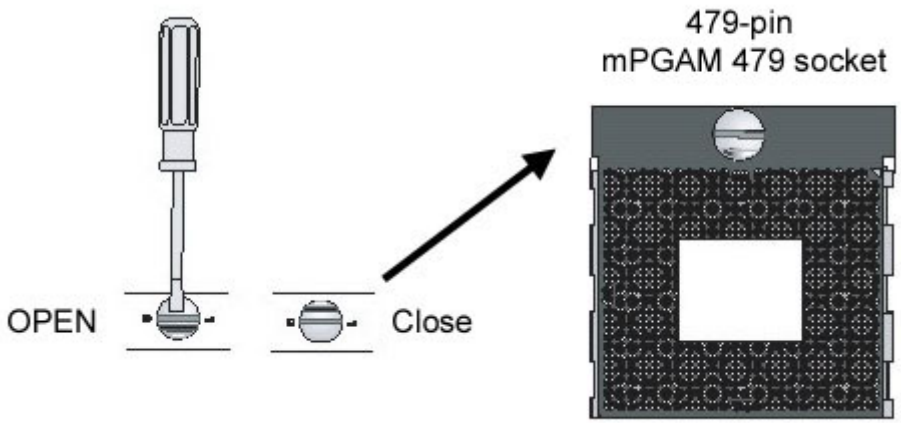
Intel® Pentium® M processor introduction；A new microprocessor is designed from the ground up for mobility, with a mobile-optimized chipset. Intel® mobile processor innovative designed the techniques which allowed faster execution of instructions at lower power.

Installing uFC-PGA 479M CPU (PEB-2710VL)

1) Lifting the handling lever of CPU socket outwards and upwards to the other end.

2) Aligning the processor pins with pinholes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.

3) Push down the lever to lock processor chip into the socket once CPU fits.



To un-install the current processor, use a screwdriver to disengage (open) the socket actuator, as shown in Figure 1 below. The socket actuator should open after only a half turn or so, and you should then be able to remove the processor with your fingers.

Configuring System Bus

PEB-2710VL/2730VL Series will automatically detect the CPU used. CPU speed of Intel Pentium M can be detected automatically.

JP5 : Power Source for CPU VCCA selection

Pin No.	Signal Description
1-2	+1.5V for DOTHAN ★
2-3	+1.8V for BANIAS

3.2 Main Memory

PEB-2710VL/2730VL Series provide 200-pin SODIMM sockets support 1.8V DDR2-SDRAM as on-board main memory. The maximum memory size can be up to 1GB. It would be able to Auto detecting memory clock according to BIOS CMOS settings.

3.3 Installing the Single Board Computer

To install your PEB-2710VL/2730VL Series into standard chassis or proprietary environment, you need to perform the following:

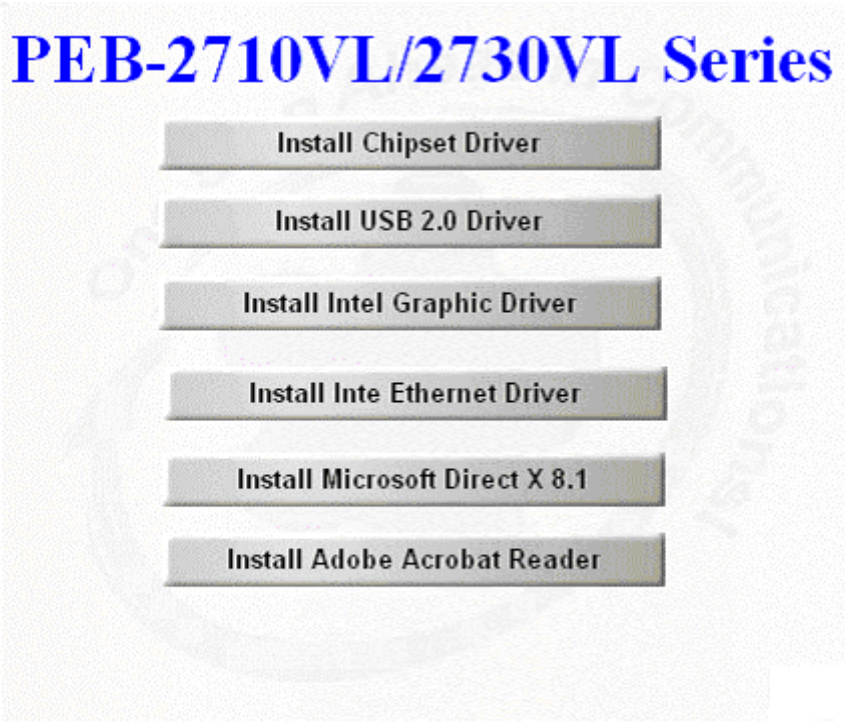
Step 1: Check all jumpers setting on proper position

Step 2: Install and configure CPU and memory module on right position

Step 3: Place PEB-2710VL/2730VL Series into the dedicated position in your system

Step 4: Attach cables to existing peripheral devices and secure it

Note:
Please refer to section 3-3-1 to 3-3-3 to install INF/VGA/LAN drivers.



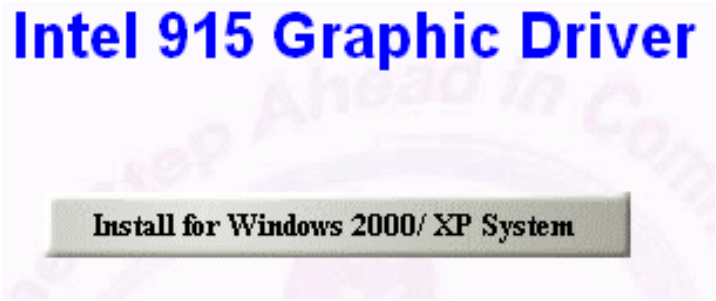
3.3.1 Chipset Component Driver

The chipset on PEB-2710VL/2730VL Series is a new architecture technology that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000/XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PEB-2710VL/2730VL Series CD-title. OS needs to modify according to OS that supported by Intel® 915GM & ICH6.

3.3.2 Intel Integrated Graphics GMCH Chip

Using GMCH High performance graphic integrated chipset is aimed to gain an outstanding graphic performance. Shared 64 accompany it to 160MB system DDR II-SO-DRAM with Total Graphics Memory. This combination makes PEB-2710VL/2730VL Series an excellent piece of multimedia hardware.

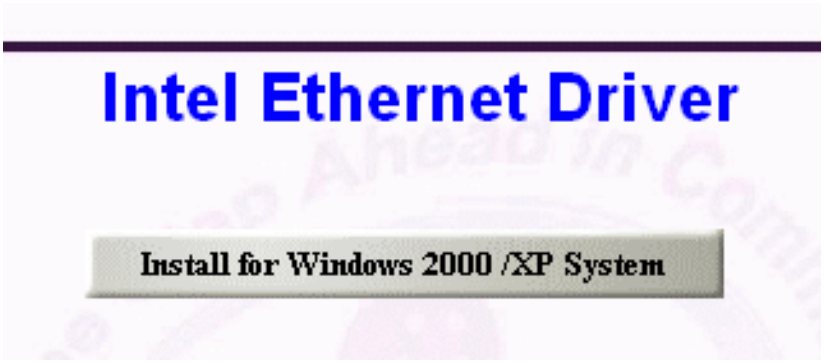
Please find Intel 915 Graphic driver in the PEB-2710VL/2730VL Series CD-title. Drivers support Windows 2000 / XP.



3.3.3 On-board Gigabit Ethernet Controller

Drivers Support

Please find Intel 82562EZ driver in / Ethernet directory of PEB-2710VL/2730VL Series CD-title. The drivers support Windows 2000 / XP.



3.4 Clear CMOS Operation

Following the below table of indication to set how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

JP4 : RTC CMOS Clear Jumper Setting

Pin No.	Process Selection
1-2	Clear CMOS Enable
2-3	Clear CMOS Disable ★

Note: The "* " mark for default setting

To correctly operate CMOS Clear function, users must turn off the system, move JP4 jumper to short pin 1 and 2. To clear CMOS contents, please turn the power back on and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP4 back to 2-3 position (Clear CMOS Disabled) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load BIOS default setting.

3.5 WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

The PEB-2710VL/2730VL series allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset or to non-maskable interrupt (NMI), when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process.

A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset or NMI signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately.

To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627THG data sheet.

There are two PnP I/O port addresses that can be used to configure WDT,

1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)

2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);
// Assign Pin 89 to be a WDTO
outp(0x002E, 0x2B);
outp(0x002F, inp(0x002F) & 0xEF);
// Select Logic Device 8

outp(0x002E, 0x07);
outp(0x002F, 0x08);
// Active Logic Device 8
outp(0x002E, 0x30);
outp(0x002F, 0x01);
// Select Count Mode
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | (Count-mode Register & 0x08));
// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register);
// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);
// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

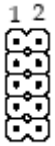
Definitions of Variables:

Value of Count-mode Register:
1) 0x00 -- Count down in seconds (Bit3=0)
2) 0x08 -- Count down in minutes (Bit3=1)
Value of Time-out Value Register:
1) 0x00 -- Time-out Disable
2) 0x01~0xFF -- Value for counting down

3.6 GPIO

The PEB-2710VL/2730VL series provide 8 programmable high driving GPIO that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

J19 : GPIO Connector from Super I/O



PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO Port10	2	GPIO Port14
3	GPIO Port11	4	GPIO Port15
5	GPIO Port12	6	GPIO Port16
7	GPIO Port13	8	GPIO Port17
9	Ground	10	+5V

```
#include <stdio.h>
#include<dos.h>

int main(void)
{
 int x,outdata,indata;
 printf( 〝Now output data to GPIO Port…〞 );
 // Enter the extended function mode
 outport(0x2e,0x87);
 outport(0x2e,0x87);
// GPIO multiplexed pin selection
 outport(0x2e,0x2a);
 outport(0x2f,0xff);                    //GP10-GP14 enable

// Enable GPIO port1
 outport(0x2e,0x30);
 outport(0x2f,0xff);                    //Enable GPIO function


// Select the logical device
 outport(0x2e,0x07);
 outport(0x2f,0x07);                    // Device 7
```

```
// GP10-GP17 I/O select
printf( "\nSet Port10 To Port17 input or output :" );
scanf( "%x" ,&x);
outport(0x2e,0xf0);
printf( "\n x= %x" ,x);
outport(0x2f,x);                    //GP10-GP17 output

printf( "\n Set output data :" );
scanf( "%x" ,&x);
// set GP10-GP13 Output data
outport(0x2e,0xf1);
outport(0x2f,x);


indata=inport(0x2f);
printf( "\n Get the Port input data = %x \n" ,indata);

printf( "Enter to test Port LED…\n" );
getch();
printf( "LED test Now…" );
outdata=0x01;
for(x=0;x<20;x++)
   {
   printf( "." );
   outport(0x2e,0xf1);
   outport(0x2f,outdata);
   delay(300);
   outport(0x2e,0xf1);
   outdata=outdata<<1;
   if (outdata==0x10)outdata=0x01;
   }

   //Exit the extended function mode
   outport(0x2e,0xaa);


   return 0;
}
```

Chapter 4
BIOS Setup Information

PEB-2710VL/PEB-2730VL series is equipped with the Phoenix (AWARD) BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PEB-2710VL/PEB-2730VL series communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter PEB-2710VL/PEB-2730VL series AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ PC Health Status	▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type …	

Note:
It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

■ **Screen shot**

Phoenix - AwardBIOS CMOS Setup Utility Standard CMOS Features		
Date: (mm:dd:yy) Time: (hh,mm,ss)	Wed, May 24 2006 10:21:13	Item Help
▶ IDE Channel 0 Master ▶ IDE Channel 0 Slave ▶ IDE Channel 1 Master ▶ IDE Channel 1 Slave	[ST3120827AS] [None] [Maxtor 91021U2] [CD-540E]	Menu Level ▶ Change the day, month, year and century
Video	[EVG/VGA]	
Base Memory Extended Memory Total Memory	640K 1039360K 1040384K	
↑↓→←Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults		

Note:
BIOS Default Setting On-Chip Serial ATA is Auto Mode.

■ **Menu Selections**

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Channel 0 /1 Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 /1 Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as Hard disk drive or CDROM drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 0 Master

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Master	[Auto]	Menu Level ▶
Access Mode	[Auto]	
Capacity	120GB	To atuo-detect the HDD's size, head … on this channel
Cylinder	57461	
Head	16	
Precomp	0	
Landing Zone	57460	
Sector	255	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 1 Master

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 1 Master	[Auto]	
Access Mode	[Auto]	Menu Level ►
Capacity	10246MB	To atuo-detect the HDD's size, head … on this channel
Cylinder	19852	
Head	16	
Precomp	0	
Landing Zone	19851	
Sector	63	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

■ **Menu Selections**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE!
Access Mode	CHS, LBA Large , Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

■ **Screen shot**

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

▶ CPU Feature	[Press Enter]	Item Help
▶ Hard Disk Boot Priority	[Press Enter]	
Virus Warning	[Disabled]	
CPU L1 & L2 Cache	[Enabled]	Menu Level ▶
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[Disabled]	
Boot Other Device	[Enabled]	
Boot up NumLock Status	[On]	
Gate A20 Option	[Normal]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	Enabled	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Small Logo(EPA) Show	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
CPU Feature

Delay Prior to Thermal	[16 Min]	Item Help
Thermal Management	[Thermal Monitor 1]	
X TM2 Bus Ratio	14X (PEB-2730VL)	Menu Level ▶
X TM2 Bus VID	0.700V (PEB-2730VL)	
X TM2 Bus Ratio	15X (PEB-2710VL)	
X TM2 Bus VID	0.892V (PEB-2710VL)	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Delay Prior to Thermal

The choice: 4 Min, 8 Min, 16 Min, and 32 Min.

Thermal Management

Thermal Monitor 1 (On die throttling); Thermal Monitor 2 (Ratio & VID transition)

The choice: Thermal Monitor 1, Thermal Monitor 2.

Phoenix- AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. ch0 M. : ST380817AS 2. ch1 M. : Maxtor 91021U2 3. Bootable add-in Cards	Item Help Menu Level ▶ Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Hard Disk Boot Priority

Select Hard Disk Boot Device Priority. Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

Bootable add-in Cards	Could be Bootable by mini-PCI expansion of the daughter board on.

Virus Warning

Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 Cache/L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable Cache
Disabled	Disable Cache

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

Select your boot device priority.

The choice: Hard Disk, CDROM, USB-FDD, USB-ZIP, USB-CDROM, and Disabled.

Boot Other Device

Select your boot device priority.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal – a pin in the keyboard controller controls Gate A20.

The choice: Normal, Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller – When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled, Disabled.

Typematic Rate (Chars/sec)

The rate at which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic delay (Msec)

The delay before keystrokes begins to repeat.

The choice: 250, 500, 750, and 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

APIC Mode

Setting to Enabled can cause instabilities. Once the operating system is installed, such as Windows XP in my case, this setting cannot be changed without reinstalling the operating system, regardless of whether the initial setting is Disabled or Enabled. The purpose of setting it to Enabled is to extend the number of IRQ's, which sounds like a real risky proposition. I'm not surprised to see the conclusion reached at APIC: Benefit or Trouble. The number of IRQ's should be fine without being extended, anyway.

The choice: Enabled, Disabled.

MPS Version Control For OS

Not changeable with APIC Mode set to disabled.

The choice: 1.1, 1.4.

OS Select For DRAM > 64MB

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Small Logo (EPA) Show

The choice: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel 915GM chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM (DDR II SO-DIMM) and the external cache. It also coordinates communications between the conventional PCI buses. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

(PEB-2730VL series)

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	[By SPD]	Item Help
X CAS Latency Time	4	
X DRAM RAS# to CAS# Delay	3	Menu Level ▶
X DRAM RAS# Precharge	3	
X Precharge delay (tRAS)	9	
X System Memory Frequency	400MHZ	
SLP_S4# Assertion Width	[4 to 5 Sec.]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Enabled]	
▶ PCI Express Root Port Func	[Press Enter]	
** VGA Setting **		
On-Chip Frame Buffer Size	[8MB]	
DVMT Mode	[DVMT]	
DVMT /FIXED Memory Size	[128MB]	
Boot Display	[CRT]	
Panel Scaling	[Auto]	
Panel Type	[640X480 18bit 1ch]	
TV Standard	[Off]	
Video Connector	[Automatic]	
TV Format	[Auto]	
FWH Write Protection	[Disabled]	
BootBlock Protection	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

(PEB-2710VL)

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	[By SPD]	Item Help
X CAS Latency Time	4	
X DRAM RAS# to CAS# Delay	4	Menu Level ▶
X DRAM RAS# Precharge	4	
X Precharge delay (tRAS)	12	
X System Memory Frequency	533MHZ	
SLP_S4# Assertion Width	[4 to 5 Sec.]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Enabled]	
▶ PCI Express Root Port Func	[Press Enter]	
** VGA Setting **		
On-Chip Frame Buffer Size	[8MB]	
DVMT Mode	[DVMT]	
DVMT /FIXED Memory Size	[128MB]	
Boot Display	[CRT]	
Panel Scaling	[Auto]	
Panel Type	[640X480 18bit 1ch]	
TV Standard	[Off]	
Video Connector	[Automatic]	
TV Format	[Auto]	
FWH Write Protection	[Disabled]	
BootBlock Protection	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

DRAM Timing Selectable

This option provides DIMM plug-and-play support by serial presence detect (SPD) mechanism via the system management bus (SMBUS) interface.

The choice: Manual, By SPD.

CAS Latency Time

This option controls the number of SCLKs between the time a read command is sampled by the DRAMs and the time the GMCH samples correspondent data from the DRAMs.

The choice: 3, 4, 5 and Auto.

DRAM RAS# to CAS# Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to auto.

The choice: 2, 3, 4, 5 and Auto.

DRAM RAS# Precharge

This option controls the number of SCLKs for RAS# precharge. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. It is set to auto normally.

The choice: 2, 3, 4, 5 and Auto.

Precharge delay (tRAS)

The choice: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and Auto.

System Memory Frequency

Users are recommended to use Auto for memory frequency selection.

The choice: 333MHz, 400MHz, 533MHz and Auto.

SLP_S4# Assertion Width

The choice: 4 to 5 Sec., 3to 4 Sec, 2 to 3 Sec., 1 to 2 Sec.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video BIOS Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. Select "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
PCI Express Root Port Func

PCI Express Port 1	[Auto]	Item Help
PCI Express Port 2	[Auto]	
PCI-E Compliancy Mode	[V1.0a]	Menu Level ▶

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

PCI Express Port 1 / Port 2

The choice: Auto, Enabled, Disabled.

PCI-E Compliancy Mode

The choice: V1.0 / V1.0a.

On-Chip Frame Buffer Size

The choice: 1MB, 8MB.

DVMT Mode

The choice: DVMT, FIXED and BOTH.

DVMT /FIXED Memory Size

The choice: 64MB, 128MB.

Boot Display

The choice: CRT, LVDS, CRT+LVDS, TV, and CRT+TV.

Panel Scaling

The choice: Auto, On, Off.

Panel Type

The choice: 640X480 18bit 1ch, 800X600 18bit 1ch, 1024X768 18bit 1ch, and 1400X1050 18bit 2ch.

TV Standard

The choice: Off, NTSC, PAL, and SECAM.

Video Connector

The choice: Automatic, Composite, and Component, Both.

TV Format

The choice: Auto, NTSC_M, NTSC_M_J, NTSC_433, NTSC_N, PAL_B, PAL_G, PAL_D, PAL_H, PAL_I, PAL_M, PAL_N, PAL_60, SECAM_L, SECAM_L1, SECAM_B, SECAM_D, SECAM_G, SECAM_H, SECAM_K, SECAM_K1.

FWH Write Protection

The choice: Enabled, Disabled.

BootBlock Protection

The choice: Enabled, Disabled.

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

▶ OnChip IDE Device	[Press Enter]	Item Help
▶ Onboard Device	[Press Enter]	
▶ Super IO Device	[Press Enter]	Menu Level ▶
x Onboard Serial Port 3	Disabled	
x Serial Port 3 Use IRQ	IRQ10	
x Onboard Serial Port 4	Disabled	
x Serial Port 4 Use IRQ	IRQ11	
x Onboard Serial Port 5	Disabled	
x Serial Port 5 Use IRQ	IRQ3	
x Onboard Serial Port 6	Disabled	
x Serial Port 6 Use IRQ	IRQ4	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help
IDE DMA transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	Menu Level ▶
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
*** On-Chip Serial ATA Setting ***		
On-Chip Serial ATA	[Auto]	
X PATA IDE Mode	Primary	
SATA Port	P1, P3 is Secondary	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

IDE HDD Block Mode

If you're IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

IDE DMA transfer access

The choice: Enabled, Disabled.

On-Chip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If you're hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

On-Chip Serial ATA

Disabled	Disabled SATA Controller.
Auto	Auto arrange by BIOS.
SATA Only	SATA is operating in legacy mode.

Phoenix- AwardBIOS CMOS Setup Utility
Onboard Device

USB Controller	[Enabled]	Item Help
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Enabled]	Menu Level ►
USB Mouse Support	[Disabled]	
Azalia AC97 Audio Select	[Auto]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled.

USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled.

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choice: Enabled, Disabled.

USB Mouse Support

This item allows you to enabled USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled.

Azalia AC97 Audio Select

Users can disable on board AC97 Audio function.

The choice: Auto, Azalia, AC97 Audio, and Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

Onboard Serial Port 1	[3F8/IRQ4]	Item Help
Onboard Serial Port 2	[3E8/IRQ3]	
UART Mode Select	[IrDA]	Menu Level ▶
RxD, TxD Active	[Hi, Lo]	
IR Transmission Delay	[Enabled]	
UR2 Duplex Mode	[Half]	
Use IR Pins	[IR-Rx2Tx2]	
PWRON After PWR-Fail	[Off]	
Watch Dog Timer Select	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ3, 2E8/IRQ3, Auto.

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores power back
Off	System stays at power –off

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

4.8 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	Enabled	Item Help
ACPI Suspend Type	[S1(POS)]	
X Run VGABIOS if S3 Resume	No	Menu Level ▶
Power Management	[User Define]	
Video Off Method	[DPMS]	
Video Off In Suspend	[Yes]	
Suspend Type	[Stop Grant]	
Suspend Mode	[Disabled]	
HDD Power Down	[Disabled]	
Soft-Off by PWR-BTTN	[Instant-Off]	
Wake-up by On Board LAN	[Enabled]	
Power On by Ring	[Disabled]	
X USB KB Wake-Up From S3	Disabled	
Resume by Alarm	[Disabled]	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 :0	
** Reload Global Timer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD,COM,LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1(POS), S3(STR).

Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allow you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Suspend Type

Two options are available: Stop Grant and PwrOn Suspend.

The choice: Stop Grant, PwrOn Suspend.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, and 15 Min.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Wake-Up by On Board LAN

This option can be enabled to support Wake Up by on-board LAN.

The choice: Disabled, Enabled.

Power On by Ring

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem signal.

The choice: Enabled, Disabled.

USB KB Wake-up From S3

The choice: Enabled, Disabled.

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

Time(hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIRQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system, which allows I/O devices to operate at speeds nearing the speed the CPU itself, uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

Init Display First	Onboard	Item Help
Reset Configuration Data	[Disabled]	Menu Level ►
Resources Controlled By	[Auto(ESCD)]	Default is disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
** PCI Express relative items **		
Maximum Payload Size	[128]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Reset Configuration Data

Default is disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

Enter for more options
IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the plug and play standard whether designed for PCI or ISA bus architecture.

The choice: PCI Device / Reserved.

PCI/VGA Palette Snoop

The choice: Enabled, Disabled.

Maximum Payload Size

Set maximum TLP payload size for the PCI Express devices. The unit is byte.

The choice: 128, 256, 512, 1024, 2048, and 4096.

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp	59℃/138℉	
Current CPU Temperature	68℃/154℉	Menu Level ▶
System Fan Speed	0 RPM	
Vcore	1.08 V (2730VL)	
Vcore	1.44 V (2710VL)	
+1.5V	1.47 V	
+3.3V	3.36 V	
+12V	12.03 V	
+5V	5.02 V	
VBAT (V)	3.32 V	
5VSB (V)	5.02 V	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults s

CPU Warning Temperature

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspends type.

The choices : Disabled, 50℃/122℉, 53℃/127℉, 56℃/133℉, 60℃/140℉, 63℃/145℉, 66℃/151℉, 70℃/158℉.

4.11 Frequency/Voltage Control

■ **Screen shot**

Phoenix – AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

Auto Detect PCI CLK	[Disabled]	Item Help
Spread Spectrum	[Disabled]	Menu Level ▶

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults s

Auto Detect PCI CLK

The choice: Enabled/Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The choice: Enabled/Disabled.

4.12 Default Menu

Selecting "Defaults" from the main menu shows you two options, which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

Set Supervisor Password : can enter and change the options of the setup menus.

Set User Password : just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.14 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? N

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get PEB-2710VL/2730VL running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

Power Connection

The ATX power connector isn't like mostly ATX standard connectors, there won't have 10x2 connector but 8 pins connector (J4 +5V and +12V power connector). Please connect ATX power connector from power supply to 20pins to 8 pins converter cable as (figure 5-1) and then plug it to J4 (figure 5-2).

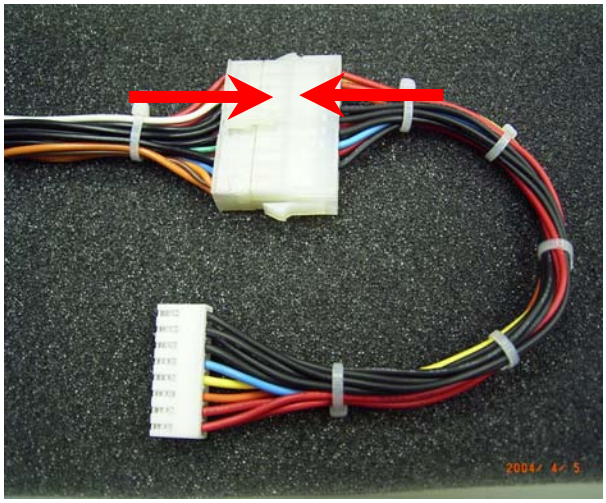


Figure 5-1

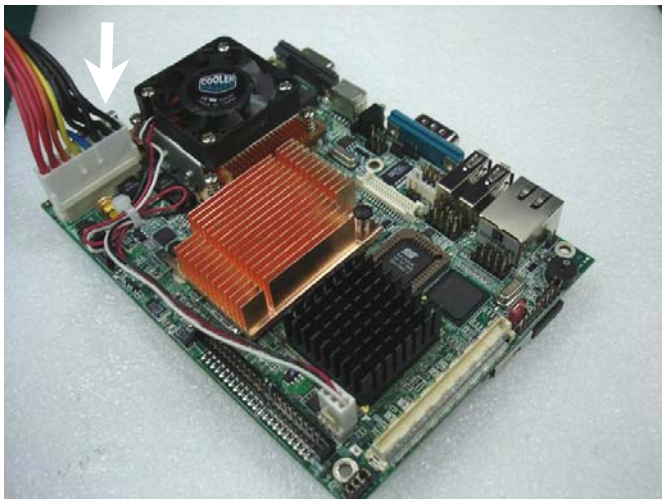


Figure 5-2

CPU Jumper Setting

Although CPU Jumper setting table is on Chapter 2, it is still possible that this setting will be neglected. Therefore, please double-check this setting before powering on system. Otherwise, PEB-2710VL/2730VL won't be able to boot up properly.

JP5 : Power Source for CPU VCCA Selection

JP5	Function
1-2 short	CPU type Dothan ★
2-3 short	CPU type BANIAS

5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the device cables required before turning power on. The CPU, CPU fan, CPU fan power cable, 200-pin DDR SDRAM, keyboard, mouse, IDE hard disk, VGA connector, device power cables and ATX power cable are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

If encounter boot failure, enter the BIOS setup program to load "Fail-Save defaults" and change configuration accordingly.

Loading the Default Optimal Setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper Disable Operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include COM1/COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4
Disable COM2 serial port to release IRQ #3
Disable PS/2 mouse to release IRQ #12 ,…, etc.

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Counter
IRQ #1	Keyboard
IRQ #2	Unused
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Display Controller
IRQ #5	USB Controller 1.0/1.1
IRQ #5	Network Controller
IRQ #6	Unused
IRQ #7	USB Controller 1.0/1.1
IRQ #8	Real Time Clock
IRQ #9	USB Controller 1.0/1.1
IRQ #9	ACPI Controller
IRQ #10	Network Controller
IRQ #11	USB Controller 1.0/1.1
IRQ #11	SMB Controller
IRQ #12	PS/2 Mouse
IRQ #13	Unused
IRQ #14	IDE Controller
IRQ #15	Unused

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3 FAQ

Q: PEB-2710VL/2730VL just keeps beeping, and nothing has been shown on the screen?

A: Each beep sound pattern represents different definition of error. Therefore, refer to the table as follows. If it doesn't still boot up normal, and you make sure all of jumper setting, and configuration is as default, please try to move JP3 from 2-3 to 1-2, then back to 2-3 in order to clear CMOS. (Please see figure 5-3).

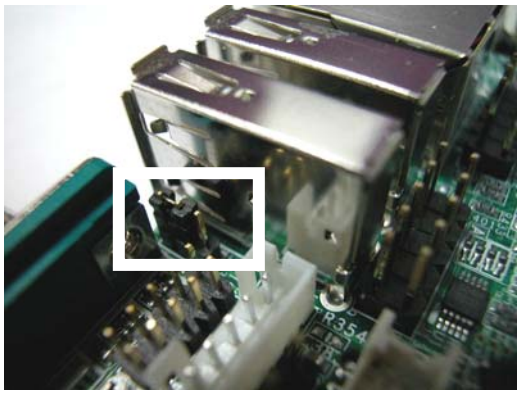


Figure 5-3

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Q: I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is started?

A: You need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, after Microsoft series OS installation successfully, you must install ATA-66/100 driver, then the function can be active.

Q: How can I drive Panel with LVDS interface on PEB-2710VL/2730VL ?

A: First, you need to get the pin assignments of LVDS and Inverter, and then match J10 and J8 pin assignment of PEB-2710VL/2730VL to make a cable. After that, connect Panel, Invert cable to PEB-2710VL/2730VL. Meanwhile, please confirm the Panel resolution type and LVDS VDD Panel Power selection, you can find these data in Panel datasheet. Finally, set correct Panel resolution in BIOS setup.

Q: After installing Compact Flash, why the device on Secondary has been missing?

A: The default setting for Compact Flash at secondary IDE channel is a salve device. Therefore, you might want to check if your missing device is set to the same as default setting of Compact Flash. If it is, please either set up Compact flash as master device or your missing device as master device.

Q: There is a PMIO expansion Interface (J5), what devices can put on and how to use it?

A: PEB-2310 /30 VL can add on extension module interface, just like PB-M1AUM or PB-C1S4G…etc.(See figure 5-4)
PB-M1AUM supports AC97 Audio, Mini PCI and IrDA receiver.
PB-C1S4G support 4×COM ports, RS-232/422/485 and 1x8bit GPIO.
If you need extension module please contact with local distributor or Portwell for Product information and support.

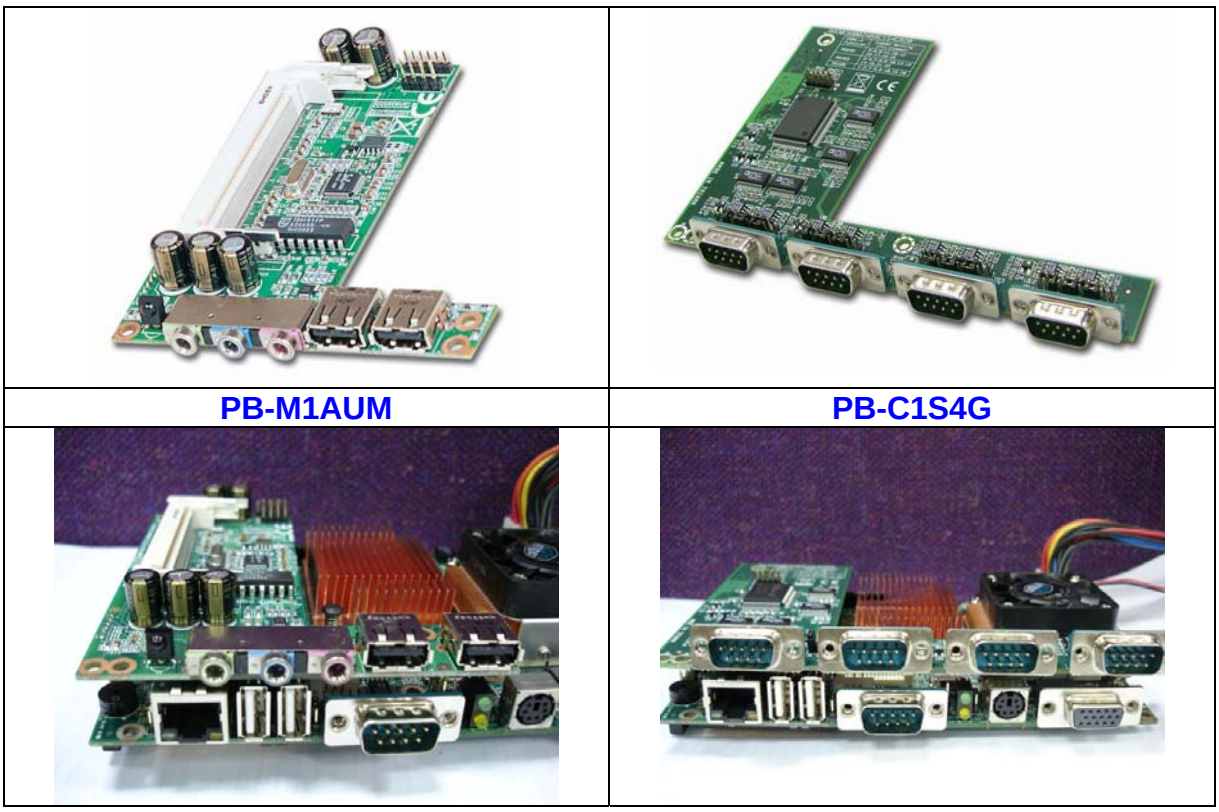


Figure 5-4

Q: I am building the embedded system, but I cannot find embedded driver on Portwell website. Where can I get them?

A: Embedded driver is available on Intel website. The URL of Intel website: http://www.intel.com/design/intarch/software/driver/index.htm. For third party devices, please visit manufacture's website to download embedded drivers. We will post those drivers on our website in the future.

Q: I am a customer of Portwell, where can I get new BIOS to update the EBC?

A: Actually, you can visit Portwell Download center to download new bios and then flash it by yourself.
Portwell Download Center
http://www.portwell.com.tw/download.asp
User name and password is necessary if you can't login and access Portwell Download center, please register it to be the account number.

Note:
If you need additional technical information or support, please visit our technical Web site at http://www.portwell.com.tw or e-mail to tsd@mail.portwell.com.tw or Contact with your sales representative, they will be very delighted to assist you.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

Memory Area	Size	Device Description
0000 – 003F	1K	Interrupt Area
0040 – 004F	0.3K	BIOS Data Area
0050 – 006F	0.5K	System Data
0070 – 0436	15K	DOS
0437 – 0600	7.2K	Program Area
0601 – 9F7F	613K	[Available]
= Conventional memory ends at 639K =		
9FC0 – 9FFF	1K	Extended BIOS Area
A000 – AFFF	64K	VGA Graphics
B000 – B7FF	32K	Unused
B800 – BFFF	32K	VGA Text
C000 – CE7F	58K	Video ROM
CE80 – CFFF	6K	Unused
D800 – D7FF	6K	PXE ROM
D800 - DFFF	58K	Unused
E000 – EFFF	64K	System bios temporary Area
F000 – FFFF	64K	System ROM

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ