NEXCOM

Building the Digital Infrastructure

NEXCOM

PEAK 765VL2 User Manual

Version 1.1

October, 2007

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. Please contact your local supplier for ordering information.
This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Installation Suggestions

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures thatfollow require only a few simple tools, including the following:
A Philips screwdriver
A flat-tipped screwdriver
A grounding strap
An anti-static pad
Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

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Handling Precautions

✠ Always disconnect the unit from the power outlet whenever you are installing or fixing a component inside the chassis.

✠ If possible, always wear a grounded wrist strap when you are installing or fixing a component inside the chassis. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

✠ Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.

✠ Use the correct screws and do not overly tighten them.

✠ Keep the original packaging and static-protective bag in case the unit has to be returned.

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NEXCOM RMA Policy

1.Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 24 months beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

2. RMA (Return Merchandise Authorization)

✠ Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.

✠ Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.

✠ Customers can send back the faulty products with or, without accessories (manuals,cable, etc.) and any unnecessary components from the card, such as CPU and RAM.
If the components were suspected as part of the problems, please note clearly that which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.

✠ Customers are responsible to for the safe packaging of defective products are durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during the transportation, the repair is treated as "Out of Warranty."

✠ 2.5 Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

3. Repair service charges for out of warranty products

NEXCOM will charge for out of warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System level

✠ Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.

✠ Items will be replaced with NEXCOM products if the original one is not able to be repaired. Ex: motherboard, power supply, etc.

✠ Replaced with 3rd party products if needed.

✠ If RMA goods can not be repaired, NEXCOM will return it to customer without any charge.

Board level

✠ Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.

✠ If RMA goods can not be repaired, NEXCOM will return it to customer without any charge.

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RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update.

Nexcom is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2002/95/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How do you recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

For example, PEAK 7220VL2G RoHS version will become PEAK 7220VL2G(LF). All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

For example, PEAK 870VL2, NBP14570, EBC 420 etc. All RoHS compliant model and component manufacturing part numbers will be suffixed "X00"

Manual Revision History

Revision	Date	Description
1.0	July,30, 2007	First Edition
1.1	October,22,2007	Modify USB connector pitch to 2.0mm

Table of Content

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Chapter 1 General Information

Single Board Computer **PEAK 765VL2**

1.1 Product Overview

PEAK 765VL2 is the PICMG 1.0 full-size Single Board Computer (SBC), which support Intel® Core™2 Duo technology. Featuring Intel® Q965 and ICH8 chipsets, the PEAK 765VL2 supports socket LGA775 of Intel® Core 2 Duo/Pentium® 4/Pentium® D/Celeron® D processor with 533/800/1066 MHz FSB.
The Intel® Q965 supports dual channel non-ECC DDR2 533/667/800 MHz memory up to 4 GB maximum with two DIMM slots and an integrated graphics controller.The South Bridge ICH8 manages SATA HDD ports, and parallel port. Furthermore, it supports other versatile I/O ports such as two serial ports, six USB ports and two PCI Express Gigabit LAN ports.

✠ Single Socket LGA775, Supports Intel® Core™ 2 Duo with 533/800/1066 MHz FSB

✠ Intel® Q965 and ICH8 chipset

✠ 2 x 240-pin DIMM, Supports Dual Channel 533/667/800 MHz DDR2

✠ 2 x Intel® 82573L PCI Express Gigabit Ethernet LAN

✠ 4 x SATA, 6 x USB 2.0, 2 x COM Ports

1.2 Block Diagram
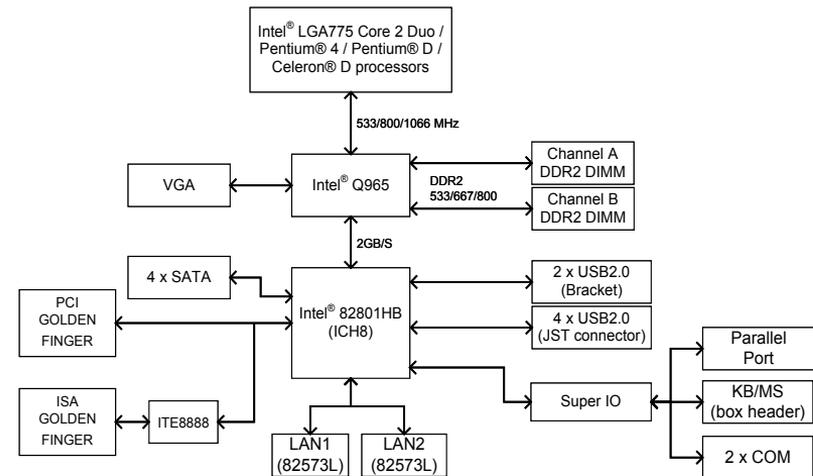
Figure 1.1 : Block Diagram of PEAK765VL2

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1.3 Specifications

CPU Support

✠ Supports Intel® LGA775 Core 2 Duo / Pentium® 4 / Pentium® D / Celeron® D processors

✠ Intel® Embedded Processors List (Intel® Longevity CPU)
Intel® Core™ 2 Duo Processor E6400 & E4300
Intel® Pentium® 4 Processor 651 & 551
Intel® Celeron® D Processor 352 & 341
Intel® Celeron® Processor 440

✠ 533/800/1066 MHz System Bus

Main Memory

✠ 2 x 240-pin DIMM, support Dual channel 533/667/800 MHz SDRAM DDR2 memory up to 4 GB

Chipset

✠ Intel® Q965 Graphics Memory Controller Hub (GMCH)

✠ Intel® 82801HB (ICH8) I/O Controller Hub

BIOS

✠ Award System BIOS

✠ Plug & Play support

✠ 8M-bit flash ROM

On-board LAN

✠ 2 x Intel® 82573L PCI Express Gigabit Ethernet LAN

✠ 2 x RJ45 with LED

✠ Supports Boot From LAN (PXE)

✠ Supports Wake on LAN (When 5Vsb power available, and for LAN 2 only)

Display

✠ Intel® Q965 GMCH Integrated Intel® GMA 3000

✠ Max 256 MB of DVMT for graphics memory

✠ CRT:1 x DB15 VGA connector, Resolution up to 2048 x 1536

I/O Interface

✠ USB 2.0: 6 ports, 2 ports through I/O bracket, 4 ports through 1x6 JST

✠ Serial port: 2 ports, with 2x5 box header(2.0mm) , supports RS232 only

✠ Parallel port: 1 port, with 2x13 box-header(2.0mm)

✠ PS2: 1 x 6-pin JST connector(2.0mm) for KB/ Mouse

✠ Fan: 4-pin wafer for CPU; 3-pin wafer for System; 3-pin wafer for MCH

✠ 2-pin header for SMB; 2-pin header for reset; 2-pin headerfor power on switch

✠ 2-pin header for power LED; 2-pin header for HDD LED

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� On-board buzzer / IrDA (share with COM2)

✖ I/O on bracket
1 x DB15 VGA connector
2 x RJ45 GbE port
2 x USB2.0

Storage

✖ SATA: 4 ports

Watchdog Timer

✖ Watchdog timeout can be programmable by Software from 1 second to 255 seconds

✖ Tolerance 15% under room temperature 25°C

On-board RTC

✖ On-chip RTC with battery backup

✖ 1 x External Li Battery

✖ Torrance less than 2sec (24 hours) under 25˚C

ISA Support

✖ Through PCI to ISA Interface (ITE 8888)

✖ No ISA Master Devices but ISA DMA Devices

✖ Maximize ISA Slot support up to 3 only

System Monitor

✖ 4 voltage (For +3.3V, +5V, +12V, Vcore)

✖ 3 Temperatures (CPU, two external Temperature Sensor)

✖ 3 FANs speed (CPU, System and MCH FANs)

Power Input

✖ Power source from backplane through PCI/ISA Golden Finger

✖ Supports both AT or ATX Power Supplies (Automatically, BIOS default :AT Mode)

✖ When change to ATX, the BIOS default setting is as follow:

POWER -SUPPLY TYPE--> [ATX]
AUTO PWR-FAILURE RESUME -->[ON]

✖ +3.3V is Converted from +5V and not directly from Backplane or Power Supply

✖ +5Vsb (Standby power) is connected from Backplane through 3pins Connectors

✖ 4 Pins +12V Power Input Connector

Dimensions

✖ 338.58 mm (L) x 122 mm (W) (13.3" x 4.8")

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Environment

✠ Board level operating temperature: 0°C to 60°C

✠ Storage temperature: -20°C to 85°C

✠ Relative humidity: 10% to 90% (Non-condensing)
   Non-operating 5%~95%, non-condensing

Certifications

✠ CE approval

✠ FCC Class A

1.4 Ordering Information

PEAK 765VL2 (P/N: 1P0765VL01X0) RoHS Compliant
PICMG 1.0 Full-Size SBC, Intel® Q965 Chipset, Intel® LGA775 Core 2 Duo /
Pentium® 4 / Pentium® D / Celeron® D processors with 533/800/1066 MHz,
Max. 4GB DDR2 DIMM, VGA integrated , 2 x GbE, 4 x SATA Ports

1.5 Packing Materials Checklist

Description	Q'ty
SATA Cable	2
Power Cable	1
COM & Print Cable	1
USB cable	1
PEAK765 CD Driver	1
PEAK765 Quick Reference Guide	1

1.6 Board Layout
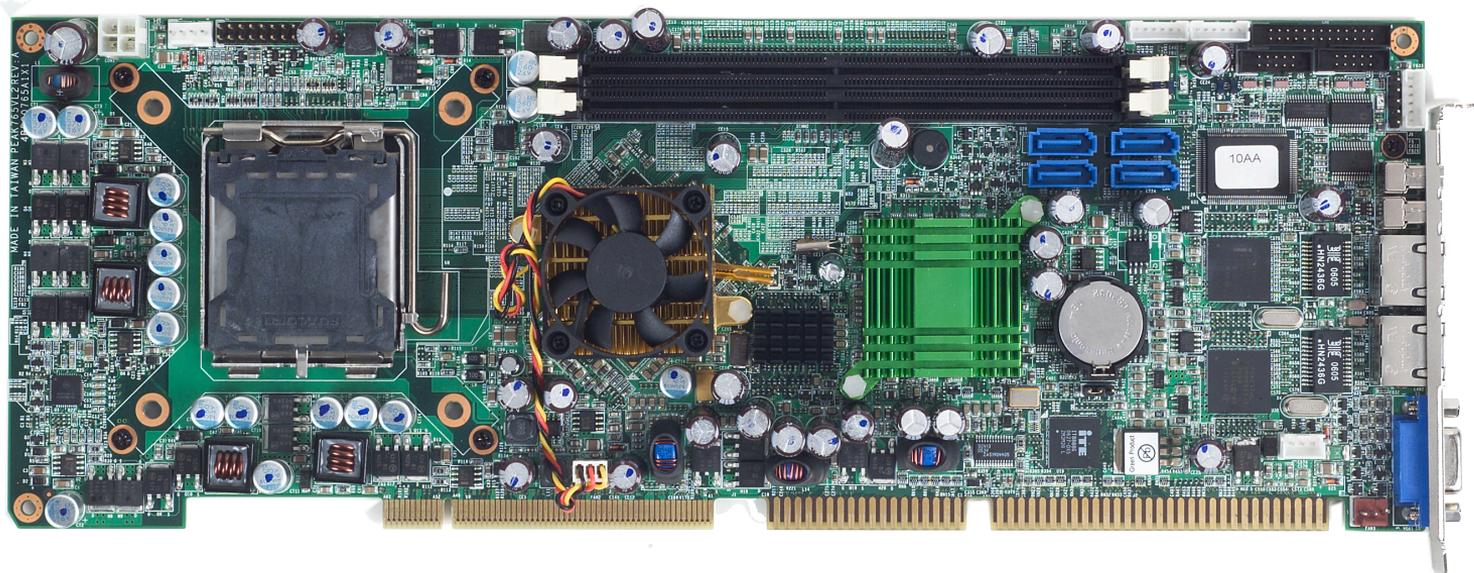
Figure 1.2 Top View ofr the PEAK 765VL2

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1.7 Dimension Drawing
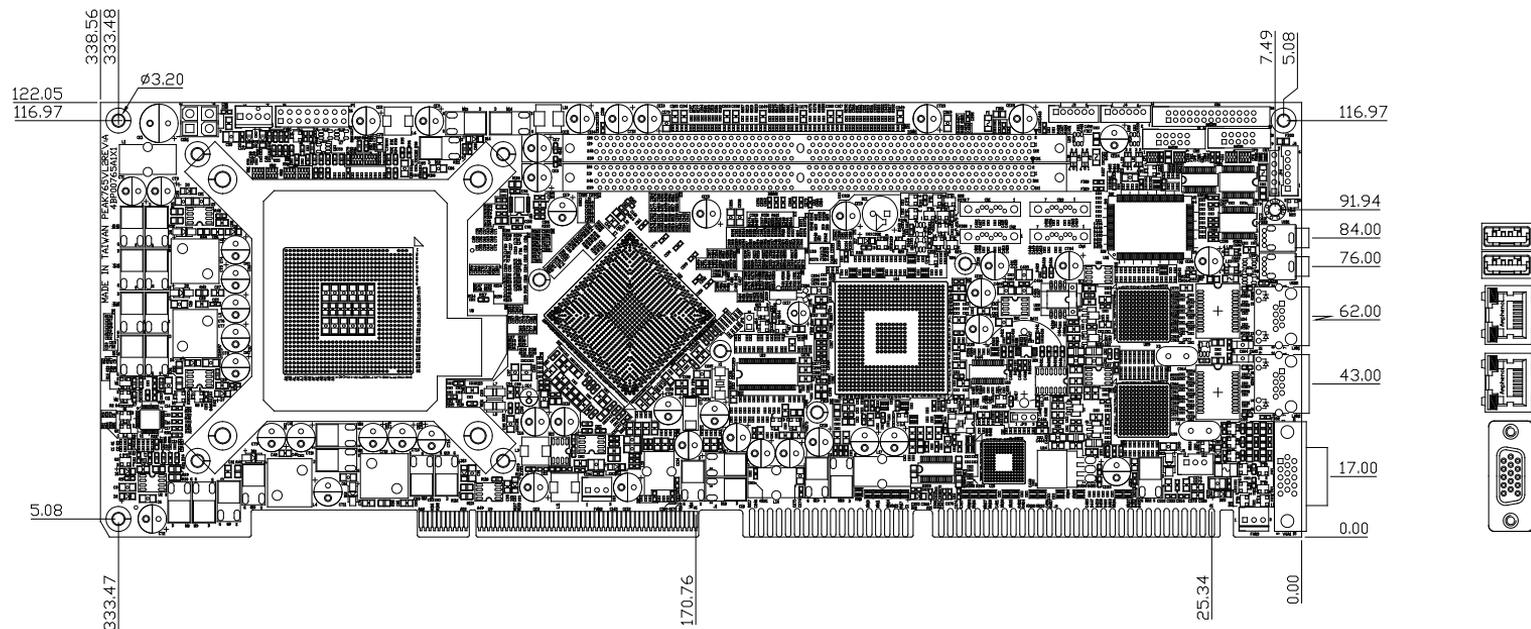
Figure 1.3: Dimension drawing of PEAK 765VL2

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Chapter 2 Jumper Setting

2.1 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations

The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

	Open (Off)	Short (On)

These illustrations show a 3-pin Jumper. Pins 1 and 2 are SHORT.

Table 2.1 Setting Jumpers

2.2 Location of Jumpers
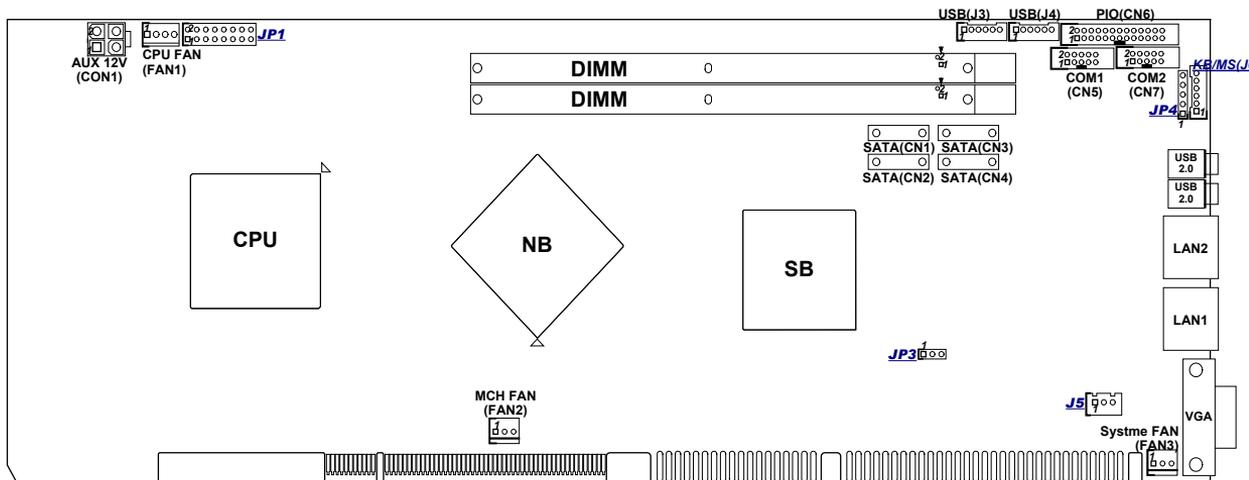
Figure 2-1: Jumper Location of PEAK 765VL2

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2.3 PCI Routing

Chip	Function	IDSEL	Interrupt Routing
ITE8888	PCI to ISA	AD19	
W83627DHG	SUPER I/O	LPC	REQ0

2.4 Description of Jumpers

✠ J3/ J4: USB port 2/3 & 4/5 (1X 6 Pin JST, 2.0mm)
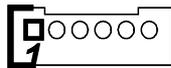
Pin	J3 Description	J4 Description
1	FUSEVCC1	FUSEVCC2
2	P2-	P4-
3	P2+	P4+
4	P3-	P5-
5	P3+	P5+
6	GND	GND

✠ CN6: PIO (2x13 pin box header, 2.0mm)
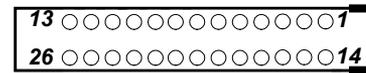
Pin	Description	Pin	Description
1	P_STB#	14	AFD#
2	PIO_D0	15	ERR#
3	PIO_D1	16	INIT#
4	PIO_D2	17	SLIN#
5	PIO_D3	18	P_GND
6	PIO_D4	19	P_GND
7	PIO_D5	20	P_GND
8	PIO_D6	21	P_GND
9	PIO_D7	22	P_GND
10	ACK#	23	P_GND
11	BUSY	24	P_GND
12	PE	25	P_GND
13	SLCT	26	NC

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✠ CN5/ CN7: COM1/COM2 (2x5 pin box header)
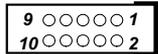
Pin	Description	Pin	Description
1	SIO_DCD_CON	2	SIO_RX_CON
3	SIO_TX_CON	4	SIO_DTR_CON
5	IO_GND	6	SIO_DSR_CON
7	SIO_RTS_CON	8	SIO_CTS_CON
9	SIO_RI_CON	10	NC

✠ J6: Keyboard/Mouse Connector (1x6 pin JST, 2.0mm)

Pin	Description	Pin	Description
1	5V_KB	2	KDAT
3	KCLK	4	MDAT
5	MCLK	6	GND

✠ JP3: CMOS Clear (1x3 pin header, 2.54mm)
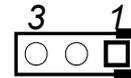
Pin	Description
1	RTCVDD
2	-RTCRST
3	GND

✠ JP2:Temperature Sensing (1x2 pin Thermistor)

Pin	Description
1	SYSTIN
2	CPUD-

✠ JP4: IR connector (1x5 pin header, 2.54mm)

Pin	Description
1	VCC
2	NC
3	SINB
4	GND
5	SOUTB

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✠ J5: PSON (1x3 JST, 2.5mm)

3   1

Pin	Description
1	5VSB
2	GND
3	PSON#

✠ JP1: RTC (2x8 pin header, 2.54mm)

Reset SW
SM Bus
Power LED
HDD LED
Thermal Sensor
External Buzzer
Power SW

2

1
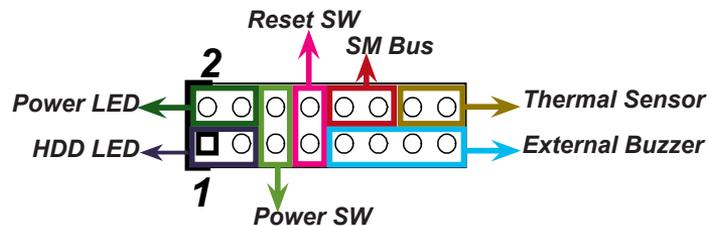
Pin	Description	Pin	Description
1	VCC	2	VCC
3	SATALED#	4	GND
5	GND	6	PUSH_BOT
7	SYS_RST	8	GND
9	CON_BEEP	10	SMBCLK
11	GND	12	SMBDATA
13	GND	14	CPUD
15	VCC	16	AUXTIN

✠ FAN1: CPU0 Fan (4 pin Wafer, 2.54mm)

4   1
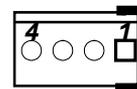
Pin	Description
1	GND
2	+12V_VCORE
3	CPUFANIN0
4	CPUFANOUT0

✠ FAN3: System Fan (3 pin Wafer, 2.54mm)

3   1
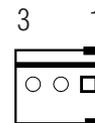
Pin	Description
1	GND
2	+12V
3	SYSFANIN

✠ FAN2: MCH Fan (3 pin Wafer, 2.54mm)

Pin	Description
1	GND
2	+12V
3	CPUFANIN1

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2.5 External connector specification

✠ USB1 connector:
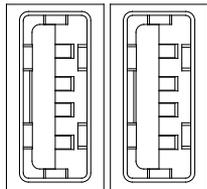
Pin	Description
1	FUSEVCC0
2	P0-
3	P0+
4	USB01_GND
MH1	USB01_GND
MH2	USB01_GND

✠ USB2 connector:

Pin	Description
1	FUSEVCC0
2	P1-
3	P1+
4	USB01_GND
MH1	USB01_GND
MH2	USB01_GND

✠ VGA connector (15pin D-SUB)
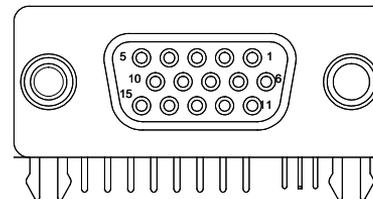
Pin	Description	Pin	Description
1	VGA_R	2	VGA_G
3	VGA_B	4	NC
5	SGND	6	SGND
7	SGND	8	SGND
9	VGA_VCC	10	SGND
11	NC	12	VGADDCDATA
13	GHSYNC	14	GVSYNC
15	VGADDCCLK		
MH1	SGND	MH2	SGND

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✠ LAN1 connector (RJ45+LED)

✠ LAN2 connector (RJ45+LED)

Pin	Description	Pin	Description
1	TXD0P_D	2	TXD0N_D
3	TXD1P_D	4	TXD2P_D
5	TXD2N_D	6	TXD1N_D
7	TXD3P_D	8	TXD3N_D
9	LAN4_LINK#	10	VCC3
11	LAN4_ACTLED#	12	VCC3
MH1	C_GND	MH2	C_GND
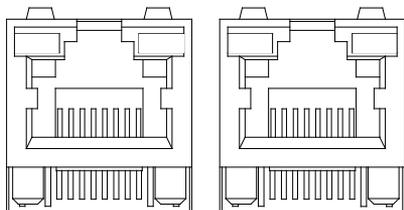
Pin	Description	Pin	Description
1	TXD0P_C	2	TXD0N_C
3	TXD1P_C	4	TXD2P_C
5	TXD2N_C	6	TXD1N_C
7	TXD3P_C	8	TXD3N_C
9	LAN1_LINK#	10	3VSB
11	LAN3_ACTLED#	12	3VSB
MH1	C_GND	MH2	C_GND

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✠ PICMG1.0 gold finger

Pin	Description	Pin	Description
A1	TRST-	B1	-12V
A2	+12V	B2	TCK
A3	TMS	B3	GND
A4	TDI	B4	NC
A5	VCC	B5	VCC
A6	-PIEQA	B6	VCC
A7	-PIEQC	B7	-PIRQB
A8	VCC	B8	-PIRQD
A9	PCI_CK3	B9	-REQ3
A10	VCC	B10	-REQ1_ABT
A11	PCI_CK0_ABT	B11	-GNT3
A12	GND	B12	GND
A13	GND	B13	GND
A14	-GNT1_ABT	B14	PCI_CLK1_ABT
A15	-PCI_RSTSLOT	B15	GND
A16	VCC	B16	PCI_CK2
A17	-GNT0_ABT	B17	GND
A18	GND	B18	-REQ0_ABT
A19	-REQ2	B19	VCC
A20	A_D30	B20	A_D31
A21	NC	B21	A_D29
A22	A_D28	B22	GND

A23	A_D26	B23	A_D27
A24	GND	B24	A_D25
A25	A_D24	B25	NC
A26	-GNT2	B26	-C_BE3
A27	NC	B27	A_D23
A28	A_D22	B28	GND
A29	A_D20	B29	A_D21
A30	GND	B30	A_D19
A31	A_D18	B31	NC
A32	A_D16	B32	A_D17
A33	NC	B33	-C_BE2
A34	-FRAME	B34	GND
A35	GND	B35	-IRDY
A36	-TRDY	B36	NC
A37	GND	B37	-DEVSEL
A38	-STOP	B38	GND
A39	NC	B39	-PLOCK
A40	SMBCLK_PCI	B40	-PERR
A41	SMBDATA_PCI	B41	NC
A42	GND	B42	-SERR
A43	PAR	B43	NC
A44	A_D15	B44	C_BE1
A45	NC	B45	A_D14
A46	A_D13	B46	GND

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A47	A_D11	B47	A_D12		Pin	Description	Pin	Description

A47	A_D11	B47	A_D12
A48	GND	B48	A_D10
A49	A_D9	B49	GND
A50		B50	
A51		B51	
A52	-C_BE0	B52	A_D8
A53	NC	B53	A_D7
A54	A_D6	B54	NC
A55	A_D4	B55	A_D5
A56	GND	B56	A_D3
A57	A_D2	B57	GND
A58	A_D0	B58	A_D1
A59	VCC	B59	VCC
A60	REQ64-	B60	ACK64-
A61	VCC	B61	VCC
A62	VCC	B62	VCC

✠ ISA Golden Finger

Pin	Description	Pin	Description
A1	IOCHK#	B1	GND
A2	SD7	B2	RSTDRY
A3	SD6	B3	VCC
A4	SD5	B4	IRQ9
A5	SD4	B5	-5V
A6	SD3	B6	DRQ2
A7	SD2	B7	-12V
A8	SD1	B8	ZEROWS#
A9	SD0	B9	+12V
A10	IOCHRDY	B10	GND
A11	AEN	B11	SMEMW#
A12	SA19	B12	SMEMR#
A13	SA18	B13	IOW#
A14	SA17	B14	IOR#
A15	SA16	B15	DACK#3
A16	SA15	B16	DRQ3
A17	SA14	B17	DACK#1
A18	SA13	B18	DRQ1
A19	SA12	B19	REFRESH#
A20	SA11	B20	BCK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5

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A24	SA7	B24	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	DACK#2
A27	SA4	B27	TC
A28	SA3	B28	BALE
A29	SA2	B29	VCC
A30	SA1	B30	RISAOSC
A31	SA0	B31	GND

C15	SD12	D15	DRQ7
C16	SD13	D16	VCC
C17	SD14	D17	RMASTER#
C18	SD15	D18	GND

Pin	Description	Pin	Description
C1	SBHE#	D1	MEMCS16#
C2	LA23	D2	IOCS16#
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ15
C7	LA18	D7	IRQ14
C8	LA17	D8	DACK#0
C9	MEMR#	D9	DRQ5
C10	MEMW#	D10	DACK#5
C11	SD8	D11	DRQ5
C12	SD9	D12	DACK#6
C13	SD10	D13	DRQ6
C14	SD11	D14	DACK#7

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Chapter 3 BIOS Setup

Single Board Computer **PEAK 765VL2**

This chapter explains how to use the BIOS Setup program. The current BIOS set-up pictures in the chapter are for reference only, which may change by the BIOS modification in the future. User can download any major updated items or rever-sion from NEXCOM web site http://www.nexcom.com.tw. If any unclear message occurs, please contact NEXCOM customer service representative for help or log onto http://www.nexcom.com.tw/news/newslist.jsp?iid=Online%20Support

3.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven util-ity that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.
With easy-to-use pull down menus, you can configure such items as:

✠ Hard drives, diskette drives, and peripherals

✠ Video display type and display options

✠ Password protection from unauthorized use

✠ Power management features

The settings made in the Setup program intimately affect how the computer performs. Therefore, it is important to understand all the Setup options, and then make appropriate settings.

3.2 When to Run BIOS

The BIOS program should be modified under the following conditions:

✠ Changing of the system configuration

✠ Detecting configuration error by the system and you are prompted to make changes to the Setup program

✠ Resetting the system clock

✠ Redefining the communication ports to prevent any conflicts

✠ Making changes to the Power Management configuration

✠ Changing the password or making other changes to the security setup

Normally, running CMOS setup is needed when the system hardware is not con-sistent with the information contained in the CMOS RAM whenever the CMOS RAM has lost power or the system features need to be changed.

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3.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

✠ If the error occurs before the display device is initialized, a series of beeps will be transmitted.

✠ If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT

PRESS <CTRL+ALT+DEL > KEY

Press the <Del> key or press the <Ctrl>, <Alt>, and <Esc> keys to enter Setup:

3.4 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.
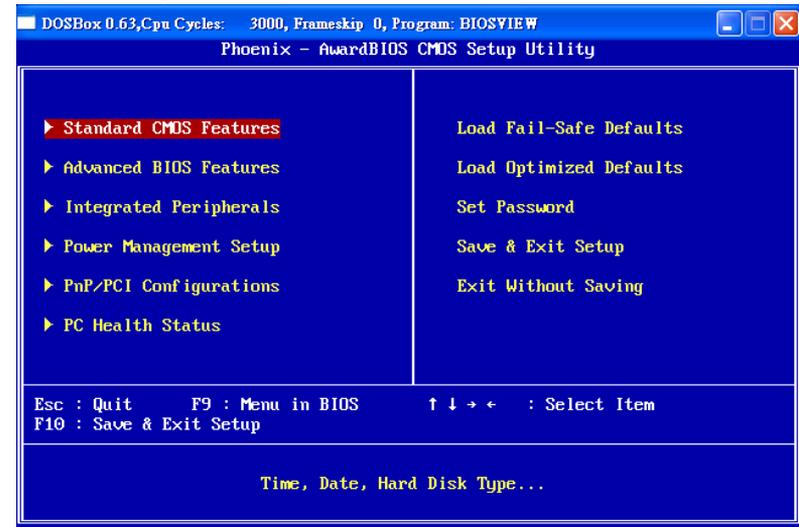
Figure 3-1: Main Menu

✠ Standard CMOS Features

Use this menu for basic system configuration.

✠ Advanced BIOS Features

Use this menu to set the Advanced Features available on the system.

✠ Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

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✠ Power Management Setup

Use this menu to specify your settings for power management.

✠ PnP/PCI Configurations

This entry appears if your system supports Plug and Play and PCI Configuration.

✠ PC Health Status

Displays CPU, System Temperature, Fan Speed, and System
Voltages Value.

✠ Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

✠ Load Optimized Defaults

Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has
designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

✠ Set Password

Enables you to change, set, or disable the supervisor or user
password.

✠ Save & Exit Setup

Saves CMOS value changes to CMOS and exits setup

✠ Exit Without Saving

Ignores all CMOS value changes and exits setup.

3.5 Getting Help

✠ Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

✠ Status Page Setup Menu/Option Page Setup Menu

3.6 Control Keys

The table below lists the keys that help you navigate the setup program.

Up arrow	⬆	Move to previous item
Down arrow	⬇	Move to next item
Left arrow	⬅	Move to the item to the left
Right arrow	➡	Move to the item to the right
Esc key		Main Menu: Quit without saving changes to CMOS Status/Option Page Setup Menus: Exit current page and return to Main Menu.
Enter Key		Select or Accept an Item
PgUp/plus key		Increase the numeric value or make changes
PgDn/minus key		Decrease the numeric value or make changes
F1 key		General help, only for Status Page Setup Menu and Option Page Setup Menu

F2/Shift + F2 key		Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key		Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key		Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key		Load the Setup default value (only for Option Page Setup Menu)
F9 Key		Menu in BIOS
F10 key		Save all the CMOS changes (only for Main Menu)

3.7 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu: **= *Default setting*
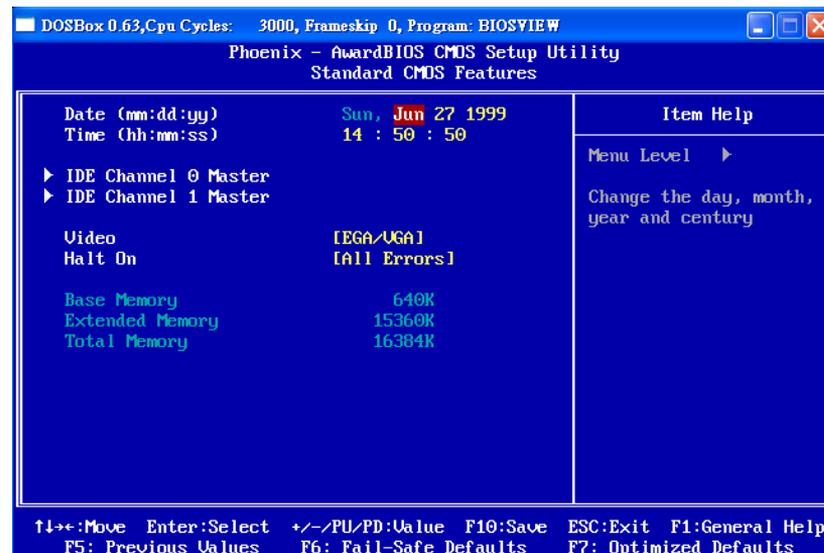
Figure 3-2: Standard CMOS Features

The Standard CMOS Setup utility is used to configure the following features:

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

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Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp or Pg Dn key to increment the setting, or type the desired value into the field.

IDE Channel 0 / 1 Master

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below:

✠ Capacity Approximate hard disk drive capacity

✠ Cylinder Number of cylinders

✠ Head Number of heads

✠ Precomp Write pre-compensation cylinder

✠ Landing Zone Landing zone

✠ Sector Number of sector

Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Video

Set this field to the type of graphics card installed in your system. If you are using a BGA or higher resolution card, choose the EGA/VGA option. The options are:

✠ **EGA/VGA Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA or PGA monitor adapters

✠ CGA40 Color Graphics Adapter, power up in 40 column mode

✠ CGA80 Color Graphics Adapter, power up in 80 column mode

✠ MONO Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error. This setting determines which type of error will cause the system to halt during boot. The options are:

✠ **All Errors: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.

✠ No Errors: The system boot will not stop for any error that may be detected.

✠ All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.

After you have made your selections in the Standard CMOS Setup screen, press <ESC> to go back to the main screen.

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3.8 Advanced BIOS Features

Selecting Advanced BIOS Feature on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items to improve your system performance or set up system features according to your preference, without causing fatal errors to your system. **= *Default setting*
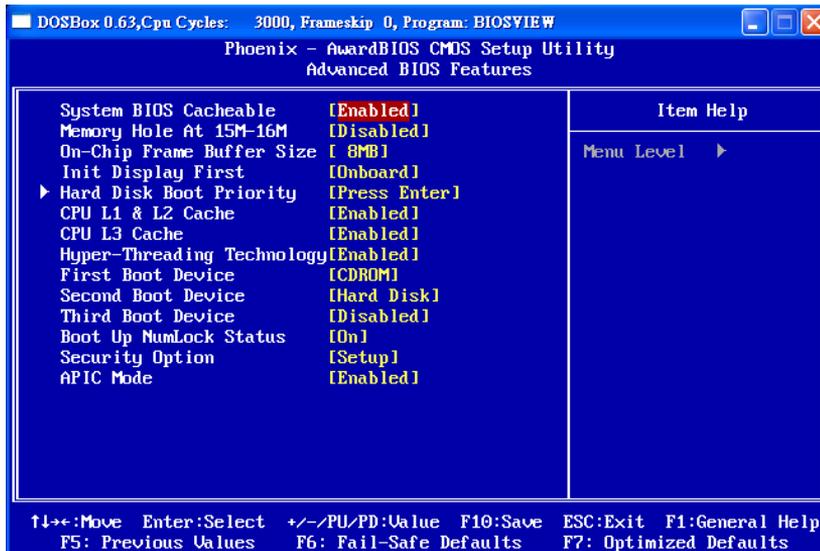
Figure 3-3: Advanced BIOS Features

The following explains the options for each feature:

System BIOS Cachable

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 available choices are **Enabled, Disabled.

Memory Hole At 15M-16M

This setting allows users to enable or disable the 1MB of memory required by some ISA expansion cards.
Enabling this feature will decrease your memory by 1MB and allow the few ISA cards that require this memory to properly work on your computer. However, enabling this feature could also disable all memory above 15MB and cause other significant issues. Recommend to keep this option at the default setting of Disabled.

On-Chip Frame Buffer Size

The On-Chip Frame Buffer Size can be set as 1 or **8MB. This memory is shared with the system memory.

Init Display First

This feature allows you to select whether to boot the system using the onboard AGP graphics card or the PCI graphics card

Hard Disk Boot Priorty

Select Hard Disk Boot device Priority.

CPU L1, L2 and L3 Cache

Cache memory is an additional memory that is much faster than conventional DRAM (system memory).
This BIOS feature is used to enable or disable the processor's Level 1, Level 2 and Level 3 cache. Naturally, the default and recommended setting is Enabled. Note: This field will be available only if your CPU supports this function.

Hyper-Threading Technology

Enable for Windows XP and Linux 2.4.x (OS optimized for Hyper-Threading Technology) and Disable for other OS (OS not optimized for Hyper-Threading Technology).

First/Second/Third Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected. The available choices are: Hard disk, CDROM, USB-FDD, USB-ZIP, USB-CDROM, LAN, and Disabled.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boot. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode. default setting is "ON".

Security Option

Enables you to 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 setup.

APIC Mode

Used to enable or disable the motherboard's APIC (Advanced Programmable Interrupt Controller). The APIC is a new distributed set of devices that make up an interrupt controller.

3.9 Integrated Peripherals

These settings are used to enable or disable integrated peripheral support, and set the various resources they use. If in addition to the standard integrated peripherals (serial and parallel ports, floppy and disk drives, etc.) you have integrated video, sound or other devices, you may find controls for them in this section. **= *Default setting*
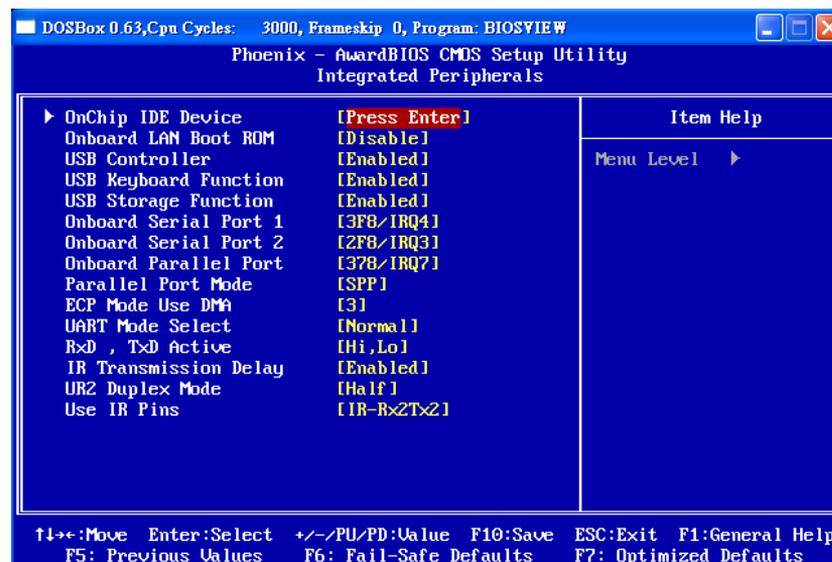
Figure 3-4: Integrated Peripherals

OnChip IDE Device

Select this item to setup the IDE device features. When you select this item, the following menu shows:

✠ IDE HDD Block Mode

If your IDE hard drive supports block mode select Enabled for automatic detec-

tion of the optimal number of block read/writes persector the drive can support.

✠ IDE Primary / Secondary Mater PIO

Let you set a PIO mode (0-4) for 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.

✠ LEGACY Mode Support

Certain OS is not supported under Native mode. Default setting is "Enable"

Onboard LAN Boot ROM

Decide whether to invoke the boot ROM of onboard LAN chip

USB Controller

Select Enabled if your system contains a Universal Serial Bus controller and you have USB peripherals.

USB Keyboard Function

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

USB Storage Function

**Enable or Disable Legacy support of USB Mass storage.

Onboard Serial Ports (1, 2) / Onboard Parallel Port

These features allow you to manually select I/O address and IRQ for serial and parallel port. If you need a particular I/O port or IRQ that's been taken up by these ports, you can manually select an alternative I/ O port or IRQ for it. You can also disable these ports if you do not need to use them. Doing so frees up I/O ports and IRQ. Those resources can then be reallocated for other devices to use.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. There are four options: * SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use **DMA3 or DMA1.

UART Mode Select

Select an operating mode for the serial port.
The choices are:

✠ IrDA: Infrared port compliant with IrDA 1.0 specification

✠ ASKIR: Amplitude shift keyed infrared port)

✠ **Normal: RS-232C serial port

RxD, TxD Active

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

IR Transmission Delay

Default setting is "Enable". If this field is Enabled, transmission of data will be slower but more stable

UR2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

Use IR Pins

There two options: RxD2, TxD2 / **IR-Rx2T2x

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![NEXCOM]

3.10 Power Management Setup

The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

Selecting Power Management Setup on the main program screen displays this menu: *= Default setting*
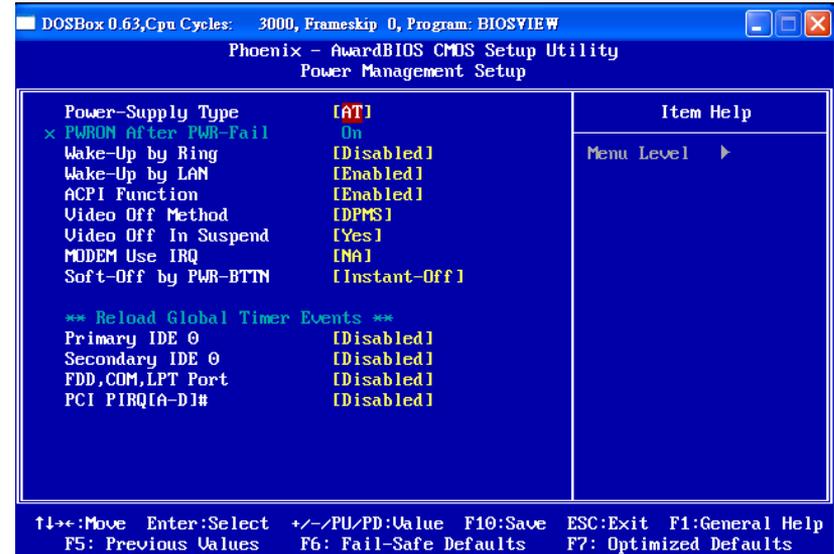
Figure 3-5: Power Management Setup

Power-Supply Type

PEAK 765 support both ATX aor AT Power Supplies. Default setting is AT mode.

PWRON After PWR-Fail

When change to ATX mode, the "Power on after power failure" function will been enabled.

Wake-Up by Ring / LAN

When the system enters a Soft-off mode (Standby power exists but system is not working), it will wake up system when specific signals occurred. The BIOS monitors the system for "activity" to determine when to enable power management.

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ACPI Function

The ACPI standard (Advanced Configuration and Interface power) allows the operating system directly to check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Video Off Method

This determines the manner in which the monitor is blanked. There are three choices:

✠ Blank Screen: This option only writes blanks to the video buffer.

✠ V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.

✠ * *DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

Video Off In Suspend

This determines the manner in which the monitor is blanked.
The choices: **Yes, No.

MODEM Use IRQ

Assign the IRQ resource for the MODEM. Default setting is NA.

Soft-Off by PWR-BTTN

Turning the system off with the on/off button places the system in a very low-power-usage state.There are two option: **nstant -Off (Shut down immediately)/ Delay 4 Sec (Shut down after 4 sec)

Reload Global Timer Events

✠ Primary/Secondary IDE 0/1

✠ FDD, COM, LPT Port

✠ PCI PIRQ [A-D]#

The events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything, which occurs to a device, which is configured as Enabled, even when the system is in a power down mode. The choices are Enabled, and Disabled.

After you have made your selections in the Power Management setup, press the <ESC> key to go back to the main program screen.

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3.11 PnP/PCI Configurations

This section describes configuring the PCI bus system. Peripheral Component Interface, 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.

Selecting PnP/PCI Configurations on the main program screen displays this menu: **= *Default setting*
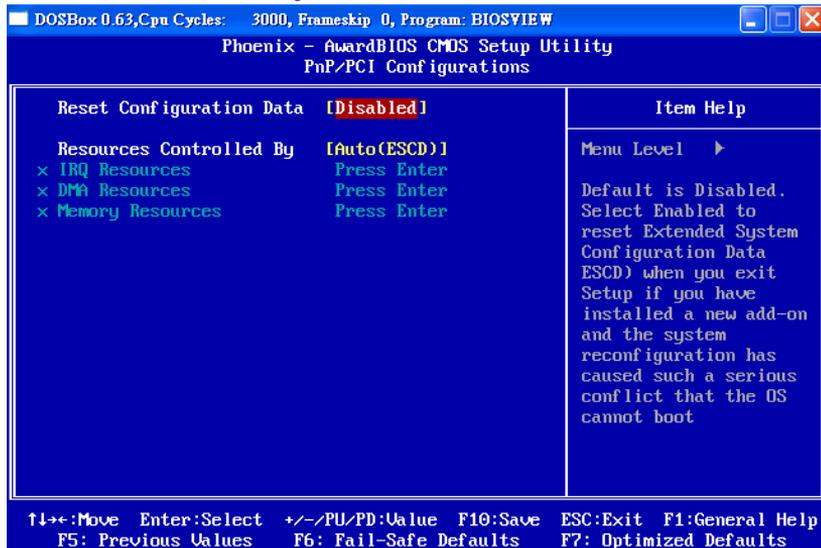
Figure 3-6: PnP/PCI Configurations

Reset Configuration Data

Normally, you leave this field Disabled, Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The choices are Enabled and Disabled.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices.

However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as going into each of the submenus that follows this field. The choices are Auto (ESCD), Manual.

3.12 PC Health Status

When main boards support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds. These are the read only items.

After you have read the PC Health Status, press the <ESC> key to go back to the main program screen.

3.13 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults.

Use this option if you have changed your system and it does not operate correctly or does not power up.

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3.14 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole setup utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

3.15 Set Password

The User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.

Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.

3.16 Save & Exit Setup

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

3.17 Exit Without Saving

Selecting this option and pressing <Enter> will exit the Setup utility without recording any new values or changing old ones.

Appendix A-Watchdog Timer

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The PEAK 765 features a watchdog timer that resets the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

✠ CR F5h. (WDT Control Mode Register; Default 00h)

BIT	Read/Write	Description
7~6	R / W	Keep original value
5	Reserved	
4	R / W	WDT count mode is 1000 times faster. 0: Disable. 1: Enable. (If bit-3 is in Second Mode, the count mode is 1/1000 sec.) (If bit-3 is in Minute Mode, the count mode is 1/1000 min.)
3	R / W	Select WDT count mode. 0: Second Mode. 1: Minute Mode.
2	R / W	Enable the rising edge of a KBC reset to issue a time-out event. 0: Disable. 1: Enable.
1	R / W	Disable / Enable the KBRST# pin output low pulse 0: Disable. 1: Enable.
0	Reserved	

✠ CR F6h. (WDT Counter Register; Default 00h)

BIT	Read/Write	Description
7~0	R / W	Watch Dog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value into the Watch Dog Counter and start counting down. If CR F7h, bits 7 and 6 are set, any Mouse Interrupt or Keyboard Interrupt event causes the previously-loaded, non-zero value to be reloaded to the Watch Dog Counter and the count down resumes. Reading this register returns the current value in the Watch Dog Counter, not the Watch Dog Timer Time-out value. 00h: Time-out Disable 01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes ………………………......................... FFh: Time-out occurs after 255 second/minutes

✠ CR F7h. (WDT Control & Status Register; Default 00h)

BIT	Read/Write	Description
7	R / W	Mouse interrupt reset enables watch-dog timer reload 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt
6	R / W	Keyboard interrupt reset enables watch-dog timer reload 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboard interrupt.
3~0	R / W	Keep original value

Watch Dog sample code:

```
;#############################################################
;Enable Configuration mode.
;#############################################################
out 2eh, 87h
out 2eh, 87h
;#############################################################
;Select logical device (Watch Dog).
;#############################################################
out 2eh, 07h
out 2fh, 08h
;#############################################################
;Activate Watch Dog Function.
;#############################################################
out 2eh, 30h
out 2fh, 01h
;#############################################################
; CR F5h. (WDT Control Mode Register; Default 00h)
;#############################################################
out 2eh, 0f5h
out 2fh, 06h          ;second mode
;out 2fh 0Eh          ;minute mode
;#############################################################
; CR F6h. (WDT Counter Register; Default 00h)
;#############################################################
out 2eh, 0f6h
out 2fh, 64h          ;100 seconds/minutes
```

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Appendix B-Power Consumpation

NEXCOM

Single Board Computer PEAK 765VL2

Test Configuration	Intel Pentium D 950 /3.4G/800Mhz DDR2/667/2GB * 2 = 4GB								
Low AC Line 110~115V: (System-Only)	+12V	Watts	+5V	Watts	+3.3V	Watts	+5VSB	Watts	Tools (W)
Full-Loading Mode	4.3A	51.6 W	4.85A	24.25 W	0.2A	0.66 W	0.1A	0.5 W	77.01 W
Light-Loading Mode	3.32A	39.84 W	3.87A	19.35 W	0.4A	1.32 W	1.2A	6 W	66.1 W
Standby Mode (HDD Drive Power-Down)	2.1A	25.2 W	4.29A	21.45 W	0.2A	0.66 W	0.1A	0.5 W	47.75 W

Test Criteria

✠ Test configuration should include test board, HDD drive, CD-ROM.

✠ Full loading mode should utilize CPU 100% with run Burn-in test program.

✠ Light loading mode will utilize CPU loading below 5%, and there is no data or application running.

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