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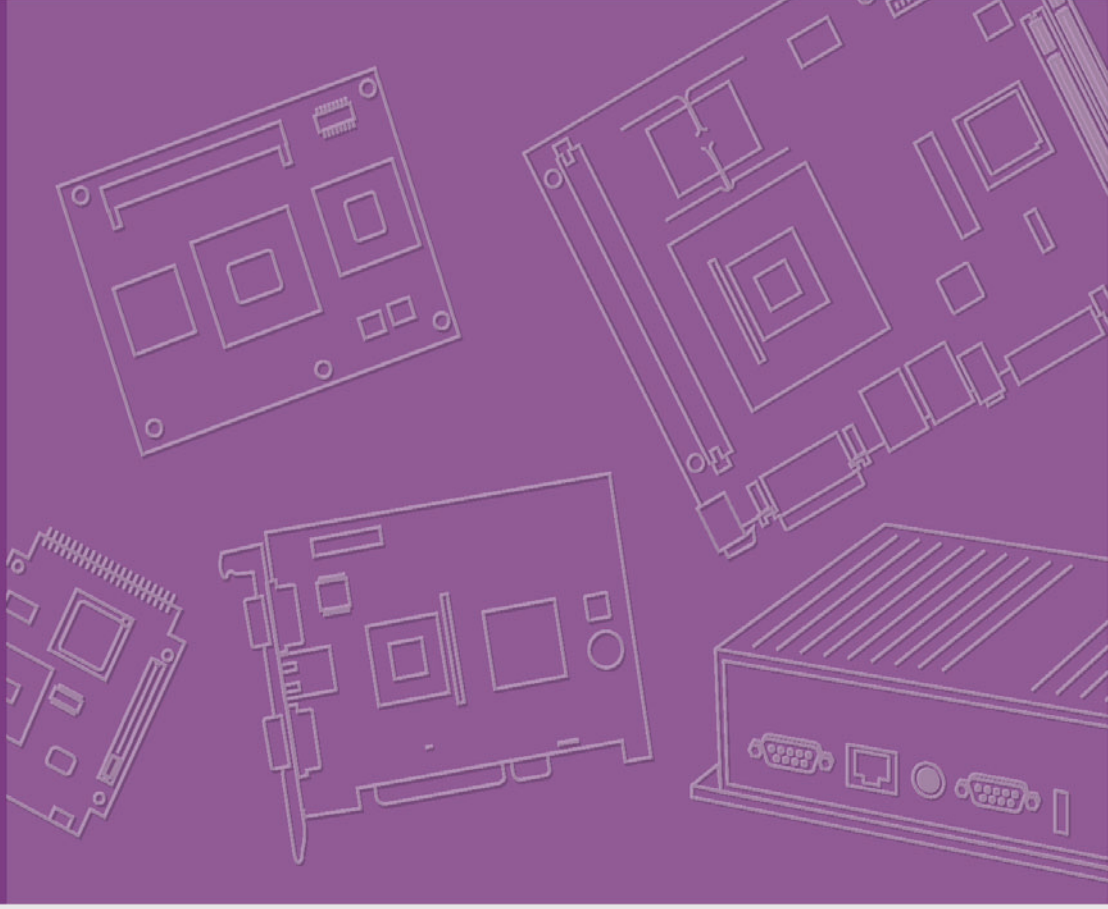
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User Manual

PCI-7030

Intel® ATOM™ N270 1.6GHz FSB533MHz, PCI Half-size SBC with Dual GbE LAN/LVDS/DVI/ 2 SATA/6 COM (2 COMs on board, plus 4 COMs by module)

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A Message to the Customer

Advantech Customer Services

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Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

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1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software,
   - etc.)
   - A complete description of the problem
   - The exact wording of any error messages

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- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

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 device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*



Memory Compatibility

Brand	Size	Speed	Vendor PN	Advantech PN	Memory
Transcend	512MB	DDR2 533	119833-0266	NA	Infineon HYB18T512 800AF37 SVV39006 0526 (32x8)
	2GB	DDR2 533	TS256MSQ64V5U	NA	Micron D9HNL (128x8)
Apacer	256MB	DDR2 533	78.82054.420	NA	ELPIDA JAPAN E5116AB-5C-E 05050WPWA (64x8)
	512MB	DDR2 533	78.92051.421	96D2-512M533NN-AP1	ELPIDA JAPAN E5108AB-5C-E 04520WR5Q (64x8)
	1GB	DDR2 533	78.02051.423	96D2-1G533NN-AP1	ELPIDA TWN E5108AE-5C-E (64x8)
Transcend (RoHS)	256MB	DDR2 667	TS32MSQ64V6M	NA	Hynix HY5PS121621B FP-Y5 (32x16)
	512MB	DDR2 667	TS6QSJ23002-6S/ TS64MSQ64V6J	96SD2-512M667NN-TR	SAMSUNG K4T51083QC ZCE6 (64x8)
	1GB	DDR2 667	TS128MSQ64V6J	NA	SAMSUNG K4T51083QC ZCE6 (64x8)
	2GB	DDR2 667	TS5QSU27300-6M	96SD2-2G667NN-TR	Micron D9HNL (128x8)
Apacer (RoHS)	512MB	DDR2 667	78.92G63.422	NA	ELPIDA E5108AG-6E-E (64x8)
	1GB	DDR2 667	78.02G63.423	96SD2-1G667NN-AP	ELPIDA E5108AGBG-6E-E (64x8)
DSL (RoHS)	256MB	DDR2 667	NA	NA	ELPIDA E5116AF-6E-E (32x16)
	512MB	DDR2 667	NA	NA	ELPIDA E5108AGBG-6E-E (64x8)
	1GB	DDR2 667	NA	NA	ELPIDA E5108AGBG-6E-E (64x8)
	2GB	DDR2 667	NA	NA	ELPIDA E1108ACSE-6E-E (128x8)
Transcend (RoHS)	1GB	DDR2 800	TS128MSQ64V8J	NA	HYNIX HY5PS12821E-FP-S5 (64x8)
	2GB	DDR2 800	TS256MSQ64V8U	NA	Micron D9HNP (128x8)
DSL (RoHS)	1GB	DDR2 800	NA	NA	ELPIDA TWN E5108AHSE-8E-E (64x8)
	2GB	DDR2 800	NA	NA	ELPIDA JPN E1108ACSE-8E-E (128x8)

Ordering Information

P/N	On-board processor	Chipset	VGA	LVDS	DVI	USB	LAN
PCI-7030VG-00A1E	ATOM N270 1.6G	945GSE	Yes	Yes	-	6	1 (82574L)
PCI-7030G2-00A1E	ATOM N270 1.6G	945GSE	Yes	Yes	Yes	5	2 (82574L)

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

Part Number	Description	Quantity
1700060202	Y-cable for PS/2 Keyboard, PS/2 Mouse	x 1
1701340603	FDD cable (600 mm)	x 1
1700000265	Power cable	x 1
1700002343	ATX feature cable	x 1
1703150102	Serial ATA HDD power cable	x 1
1700003194	Serial ATA HDD data cable	x 1
1701400452	EIDE (HDD) cable	x 1
1700002223	Parallel port Cable (2.0 mm w/BKT)	x 1
1700008887	USB cable with 4 ports (2.0 mm pitch)	x 1
1700008762	Dual-COM port cable kit for COM1-2	x 1
9689000002	Jumper pack	

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the PCI-7030 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the PCI-7030, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

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Chapter 1

General Information

1.1 Introduction

The PCI-7030 series is a half-sized CPU card designed with the Intel® 945GSE and the ICH7M for industrial applications that require both performance computing and enhanced power management capabilities. The PCI-7030 series has on board CPU Intel® Atom™ N270 1.6GHz with 533 MHz front side bus and DDR2 533 MHz up to 2 GB.

The PCI-7030 offers cost-saving integrated graphics, built on the Intel® 945GSE chipset and features the unique Intel® Extreme Graphics architecture that maximizes VGA performance and shares system memory up to 224 MB.

Advantech PCI-7030 is designed as Ultra Low power and Fanless with an Intel® 945GSE chipset and on board CPU Intel ATOM N270 1.6GHz FSB 533 MHz processor. A rich I/O connectivity of 6 serial ports by extra module, 6 USB 2.0, Dual Intel GbE LAN and 2 SATA ports at most.

1.2 Features

- **Multiple expansion feature:** PIC-7030 is PCI Half-sized slot CPU card with easy for upgrade and maintenance.
- **Cost effective 945GSE chipset:** support 533 Front side bus
- **Rich I/O connectivity:** 6 serial ports by LPC module, 6 USB 2.0, Dual Intel GbE LAN
- **Wide selection of storage devices:** IDE HDD, SATA HDD, CF, customers benefit from the flexibility of using the most suitable storage device for larger capacity
- **Optimized integrated graphic solution:** With Intel® Graphics Media Accelerator 950, supports versatile display options and 32-bit 3D graphics engine. Support VGA, 18/36 bits LVDS, DVI display.

1.3 Specifications

1.3.1 System

- **CPU:** Intel® Atom™ N270 1.6 GHz FSB 533 MHz
- **BIOS:** Award SPI 8 Mbit BIOS
- **System chipset:** Intel® 945GSE with ICH7M
- **SATA hard disk drive interface:** Two on-board SATA connectors with data transmission rate up to 150 MB
- **IDE Interface:** One onboard IDE connector supporting up to two enhanced IDE devices. Supports PIO mode 4 (16.67 MB/s data transfer rate) and ATA 33/66/100 (33/66/100 MB/s data transfer rate) BIOS enabled/disabled
- **CF interface:** Supports compact flash Type II

1.3.2 Memory

- **RAM:** Up to 2 GB in 1 slots 200-pin SODIMM sockets. Supports single channel DDRII 533 SDRAM

1.3.3 Input/Output

- **PCI bus:** Support 32/33MHz PCI 4 Slots to backplane.
- **Enhanced parallel port:** Configured to LPT1, with 25 pin box header. Supports EPP/SPP/ECP
- **Serial ports:** Six serial ports, 2 x RS-232 onboard, 4 x RS-422/485 w/Auto-flow by PCA-COM485 module or 4 x RS-232 by PCA-COM232 module.
- **Keyboard and PS/2 mouse connector:** Two 6-pin mini-DIN connectors are located on the mounting bracket for easy connection to a PS/2 keyboard and mouse
- **USB port:** Supports up to 6 USB2.0 for PCI-7030VG (2 on real IO); 5 USB2.0 for PCI-7030G2 (1 on real IO) with 480 Mbps; 4 ports onboard.
- **GPIO connector:** 16-bit general purpose Input/Output

1.3.4 Graphics

- **Controller:** Chipset integrated VGA controller
- **Display memory:** Dynamically shared system memory up to 224 MB
- **CRT:** Up to 2048 x 1536 resolution, 400 MHz RAMDAC
- **LVDS:** Supports single channel 18-bit/ dual channel 36-bit LVDS, Up to UXGA 1600 x 1200
- **DVI:** Support Maximum pixel lock of 400 MHz, up to 2048 x 1536 resolutions @ 75 Hz refresh rate

1.3.5 Ethernet LAN

- Supporting dual 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus which provides 500 MB/s data transmission rate
- **Controller:** Intel 82574L Chipset

1.3.6 Industrial features

- **Watchdog timer:** Can generate a system reset. The watchdog timer is programmable and can be set from 1 to 255 seconds or 1 to 255 minutes.

1.3.7 Mechanical and environmental specifications

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F) (operating humidity: 40°C @ 85% RH Non-Condensing)
- **Storage temperature:** -20 ~ 70° C (-4 ~ 158° F)
- **Humidity:** 5 ~ 95% non-condensing
- **Power supply voltage:** +5 V, +12 V, 5 Vsb
- **Power consumption:**

  +12 V @ 0.31 A, +5 V @ 2.19 A, +3.3 V @ 0 A,+5 VSB @ 0.04 A, +2 V @ 0 A

  Measuring the maximum current value with system under maximum load (ATOM 1.6G + DDR2 533 / 2G)
- **Board size:** 185 mm (L) x 122 mm (W) (7.3" x 4.8")
- **Board weight:** 0.365 kg

1.4 Jumpers and Connectors

Connectors on the PCI-7030 CPU card link it to external devices such as hard disk drives and a keyboard. In addition, the board has a number of jumpers used to configure your system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your CPU card.

Table 1.1: Jumpers

Label	Function
CMOS1	CMOS clear
JLVDS1	LVDS voltage selection
JWDT1	Watchdog timer output selection

Table 1.2: Connectors

Label	Function
JFP1(1-2)	HDD LED connector
JFP1(3-4)	Power LED connector
JFP1(5-6)	Suspend LED connector
JFP1(7-8)	Reset connector
JFP1(9-10)	ATX soft power switch
JFP2(1-2)	FAN fail LED Connector
JFP2(3-4)	Thermal fail LED Connector
DIMMA1	DDR2 SODIMM Socket
JIR1	IR connector
IDE1	IDE connector
CF1	CF Socket
FDD1	FDD connector
LPT1	Parallel port
USB12	USB port 1,2
USB34	USB port 3,4
USB5	USB port 5
SATA1	Serial ATA1
SATA2	Serial ATA2
COM12	Serial Port: COM1 COM2
KBMS1	PS/2 keyboard and mouse connector
KBMS2	External keyboard and mouse connector
VGA1	VGA connector
LAN12	Dual Gigabit Ethernet connector (LAN1 LAN2)
LANLED1	Front Panel LAN Indicator connector for LAN1
LANLED2	Front Panel LAN Indicator connector for LAN2
ATXF1	ATX feature connector
ATX1	ATX power connector
CPUFAN1	CPU FAN connector (3-pin)
SYSFAN1	System FAN connector (3-pin)
HDAUD1	High Definition audio connector
GPIO1	GPIO pin header
BT1	RTC battery connector
DVI1	DVI connector
LPC1	LPC connector
SPI_CN1	SPI flash programming connector
U16	SPI flash socket
SMBUS1	SM BUS connector
LVDS1	LVDS connector
INV1	Inverter connector

1.5 Board layout: Jumper and Connector Locations

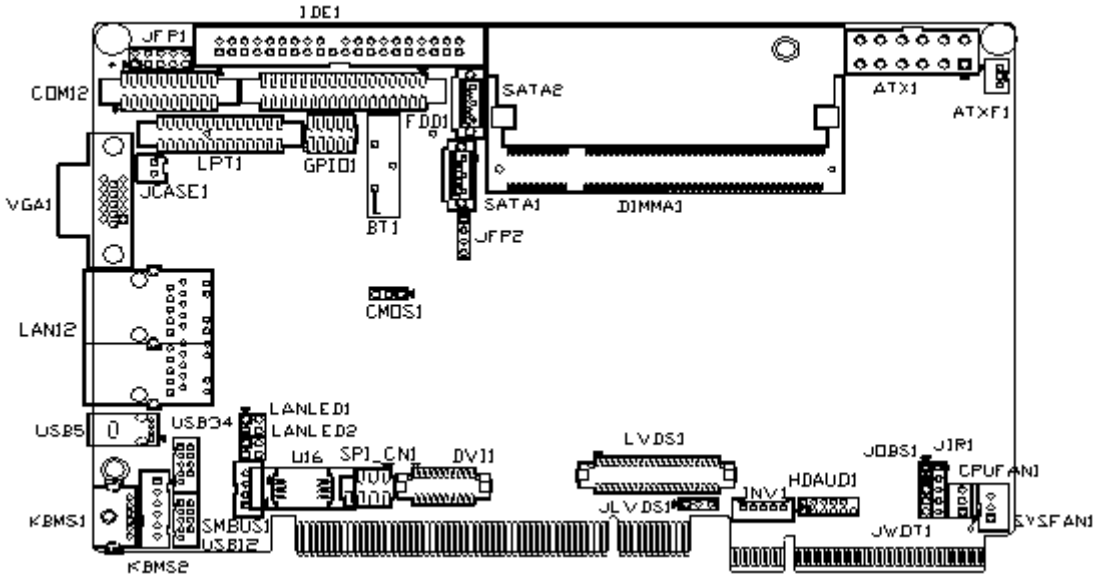


Figure 1.1 Jumper and Connector Location

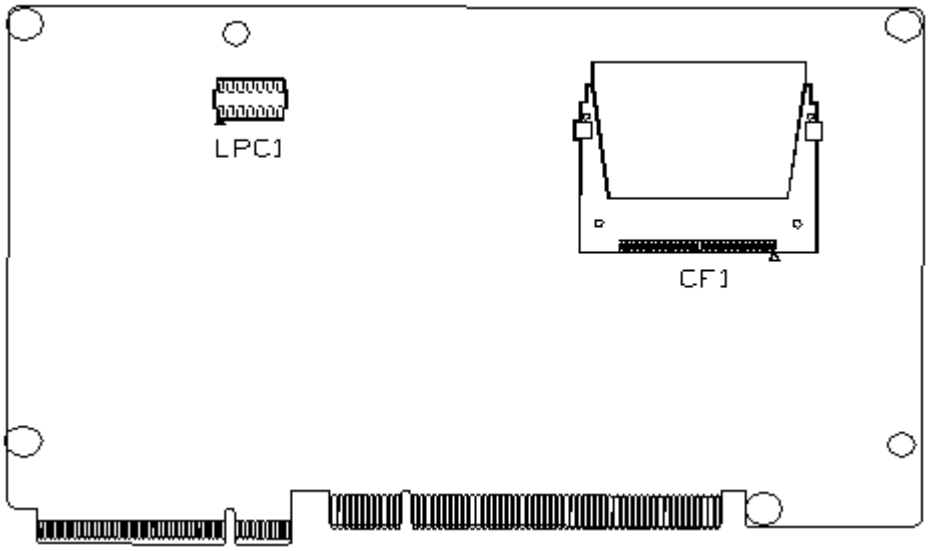


Figure 1.2 I/O Connectors

1.6 PCI-7030 Board Diagram

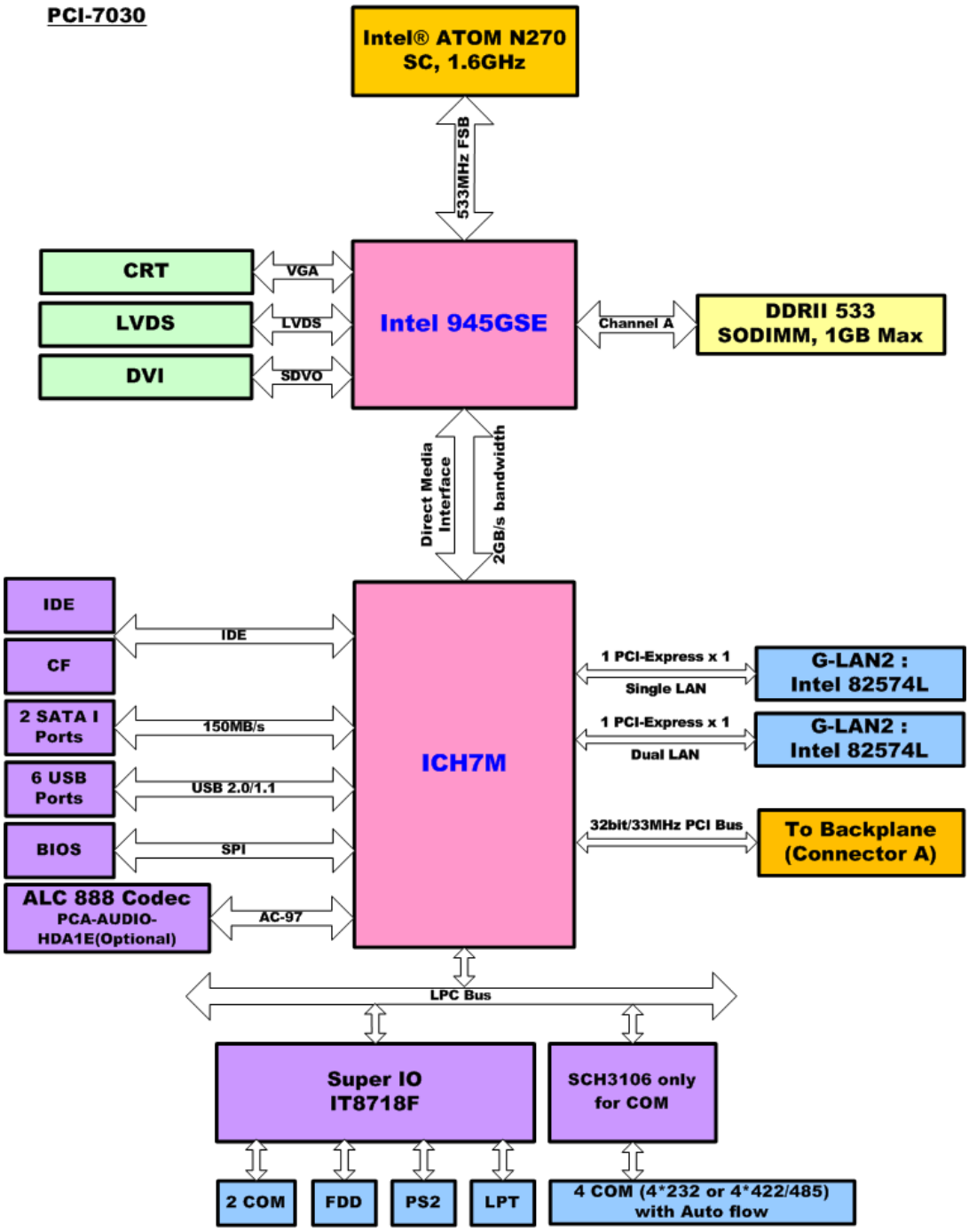


Figure 1.3 PCI-7030 Board Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.*



Caution! *Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to electro-static discharges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*



Caution! *The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.*



Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the man-ufacturer. Discard used batteries according to the manufacturer's instructions.*

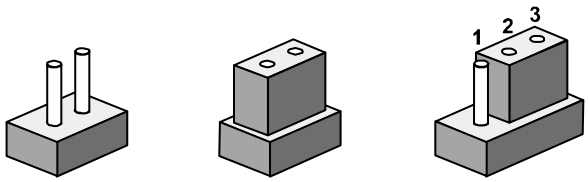


1.8 Jumper Settings

This section provides instructions on how to configure your motherboard by setting the jumpers. It also includes the motherboards's default settings and your options for each jumper.

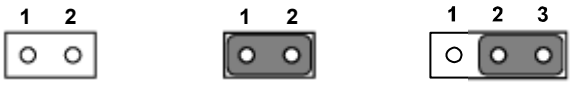
1.8.1 How to Set Jumpers

You can configure your motherboard to match the needs of your application by setting the jumpers. A jumper is a metal bridge that closes an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” (or turn ON) a jumper, you connect the pins with the clip. To “open” (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2, and 3. In this case you connect either pins 1 and 2, or 2 and 3.



open **closed** **closed 2-3**

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



open **closed** **closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

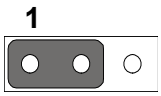
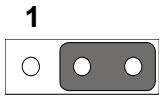
1.8.2 CMOS Clear (CMOS1)

To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS". Before turning on the power supply, set the jumper back to "3.0 V Battery On". This jumper is used to erase CMOS data and reset system BIOS Information.

The procedure for clearing CMOS is:

1. Turn off the system.
2. Short pin 2 and pin 3.
3. Turn on the system. The BIOS is now reset to its default setting.

Table 1.3: CMOS1

Function	Jumper Setting	
*Keep CMOS data		1-2 closed
Clear CMOS data		2-3 closed

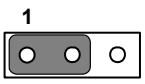
* Default

1.8.3 JLVD1: LCD Power 3.3 V/5 V Selector

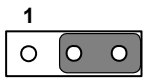
Table 1.4: JLV1/JLV2: LCD Power 3.3 V/5 V Selector

Closed Pins	Result
1-2*	3.3 V*
2-3	5 V

*Default



3.3 V
1-2 closed



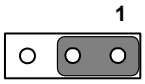
5 V
2-3 closed

1.8.4 JWDT1: Watchdog Timer Output Option

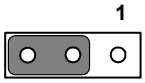
Table 1.5: JWDT1: Watchdog Timer Output Option

Closed Pins	Result
1-2	NC
2-3*	System Reset*

*Default



NC
1-2 closed



System Reset
2-3 closed

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable. All of the connector pin assignments are shown in Appendix B.

Warning! *Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on. Sensitive electronic components can be damaged by a sudden rush of power. Only experienced electronics personnel should open the PC chassis.*

Caution! *Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

1.9 System Memory

The PCI-7030 series has one socket for a 200-pin SODIMMx1.

This sockets use 1.8 V un-buffered double data rate synchronous DRAMs (DDR SDRAM). They are available in capacities of 256, 512, and 1024 MB. The sockets can be filled in any combination with DIMMs of any size, giving a total memory size between 256 MB and 2 GB. PCI-7030 series does NOT support ECC (error checking and correction).

1.10 Memory Installation Procedures

To install SODIMMs, first make sure the two handles of the SODIMM socket are in the “open” position. i.e. The handles lean outward. Slowly slide the SODIMM module along the plastic guides on both ends of the socket. Then press the SODIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the SODIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

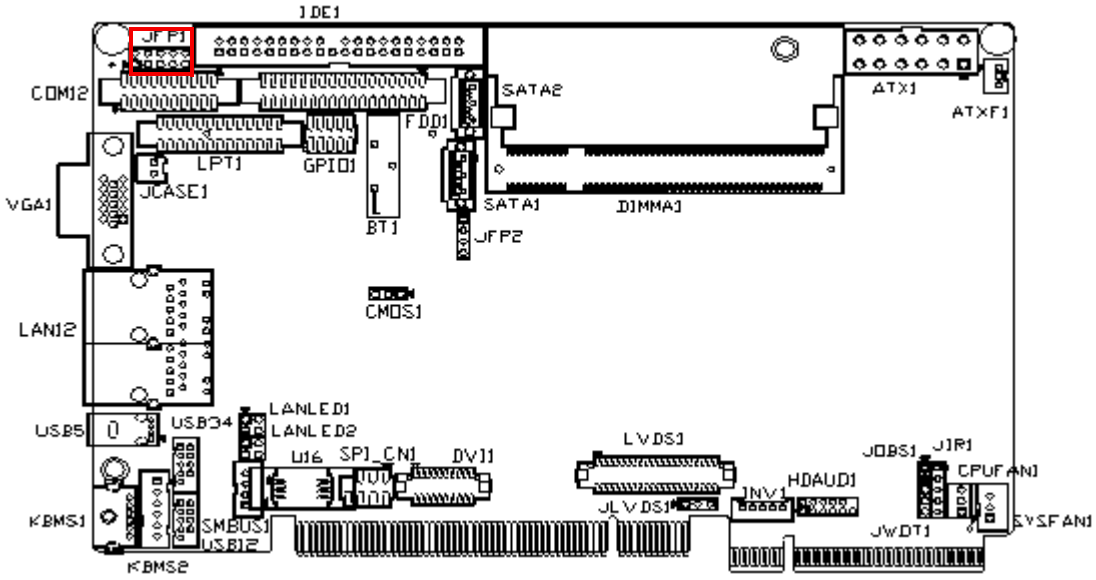
Chapter 2

Connecting Peripherals

2.1 Introduction

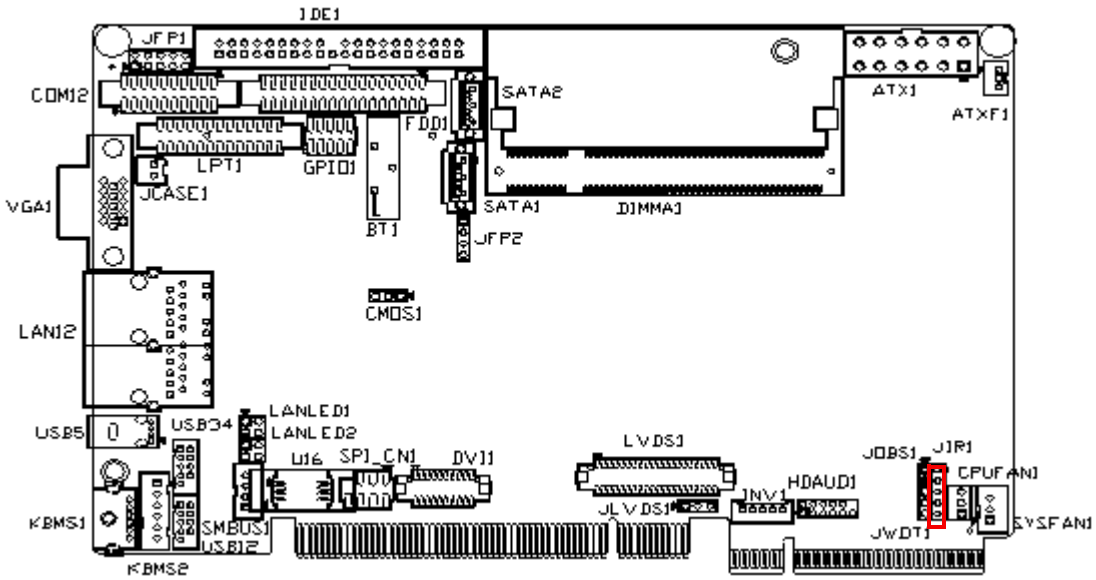
You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed or have a packed chassis, you may need to partially remove the card to make all the connections.

2.2 Front Panel Connectors (JFP1 & JFP2)



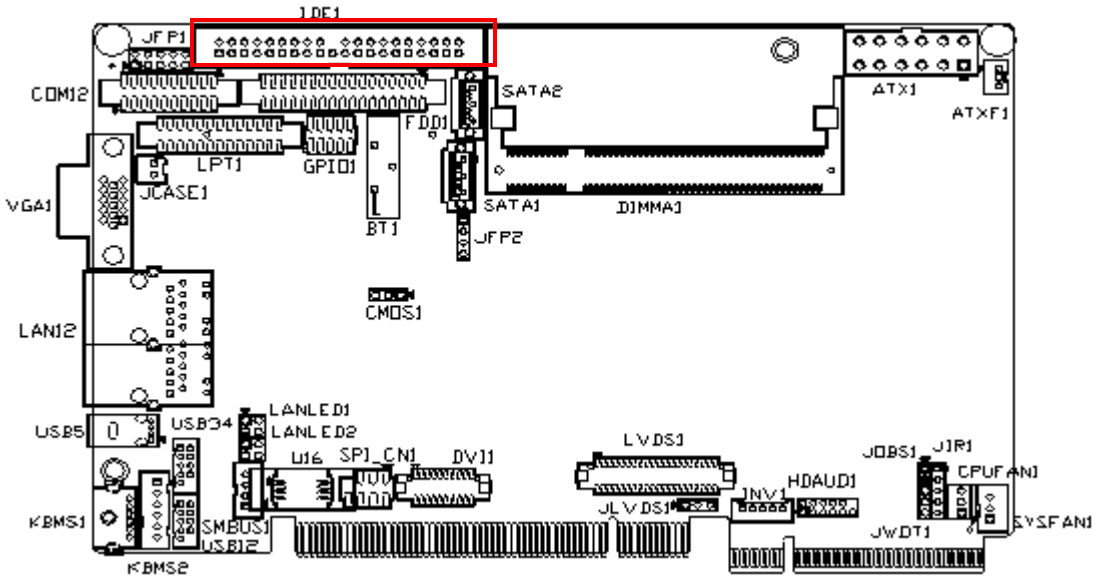
There are several external switches to monitor and control the PCI-7030.

2.3 IR Connector (JIR1)



This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.4 IDE Connector (IDE1)



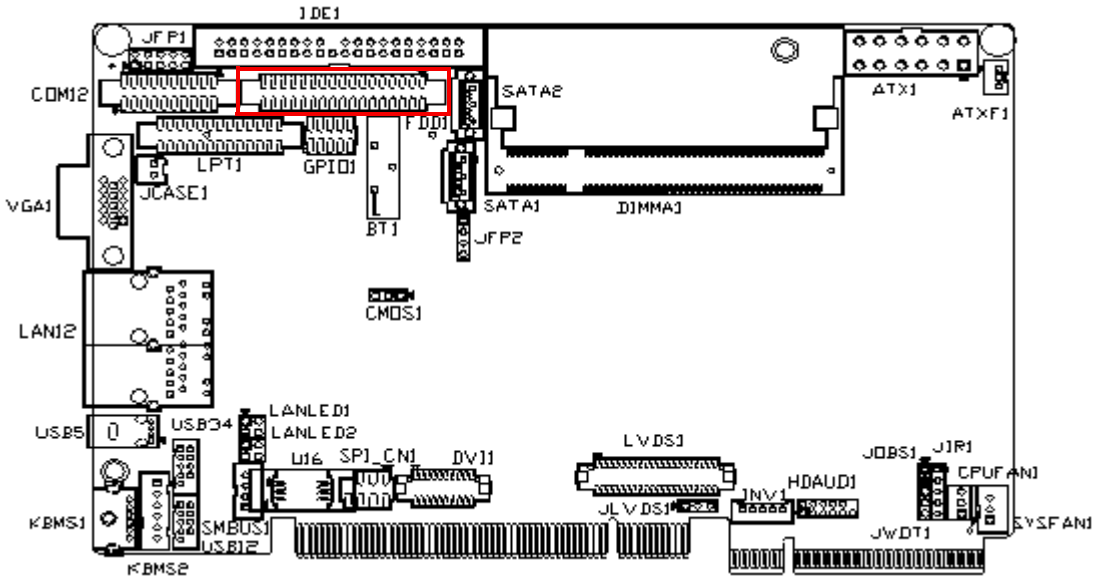
The PCI-7030 provides an IDE channel to which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the board's internal controller.

One onboard IDE connector supporting up to two enhanced IDE devices (CF card is regarded as one IDE device). Supports PIO mode 4 (16.67 MB/s data transfer rate) and ATA 33/66/100 (33/66/100 MB/s data transfer rate) BIOS enabled/disabled

2.5 Compact Flash card Socket (CF1)

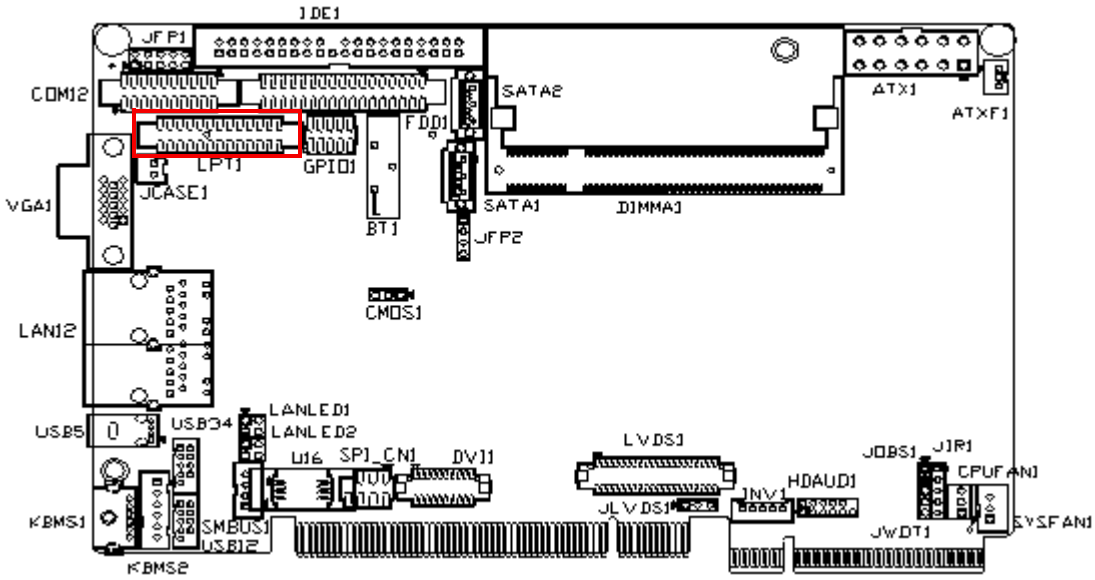
The board provides a CompactFlash card type I/II socket. The CompactFlash card shares the IDE channel.

2.6 Floppy Connector (FDD1)



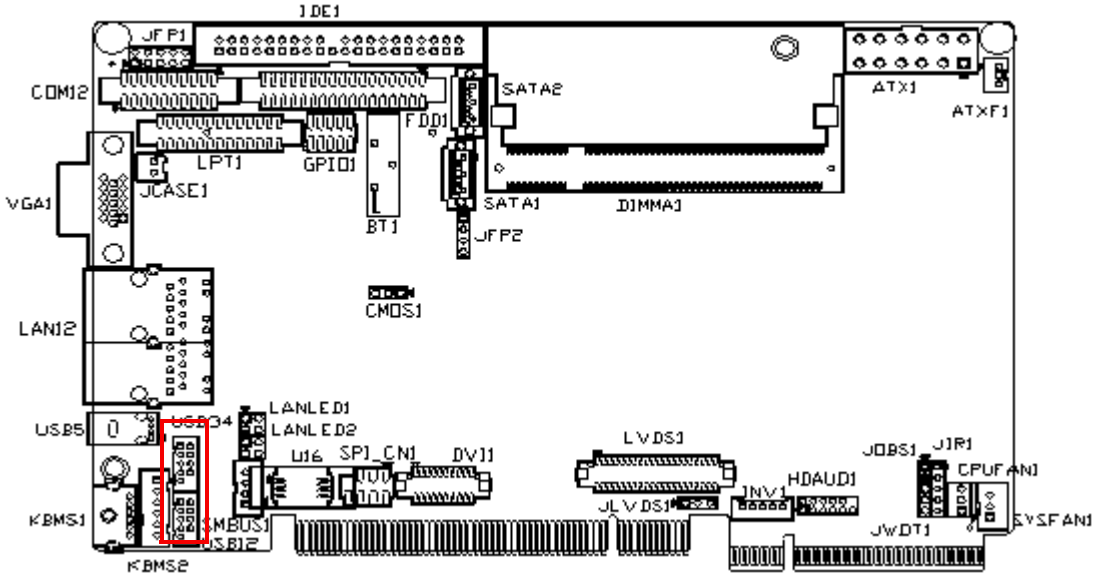
You can attach one floppy drive to the PCI-7030. You can use any combination of 5.25" (360 KB and 1.2 MB) and/ or 3.5" (720 KB, 1.44 MB, and 2.88 MB) drives.

2.7 Parallel Port (LPT1)



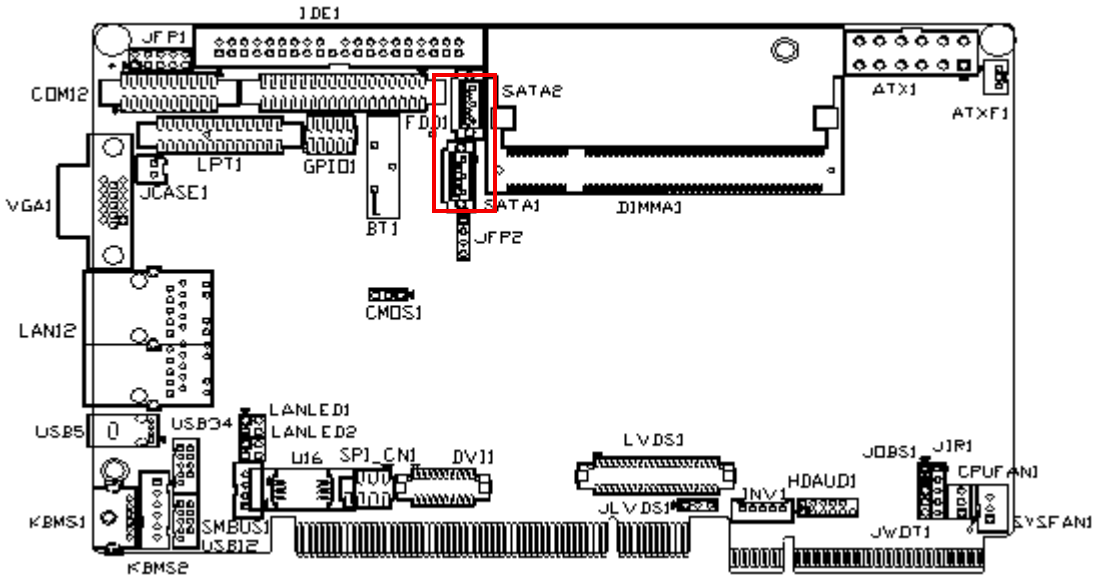
The parallel port is normally used to connect the motherboard to a printer. The PCI-7030 includes an onboard parallel port, accessed through a 25-pin flat-cable connector, LPT1.

2.8 USB Ports (USB12/USB34)



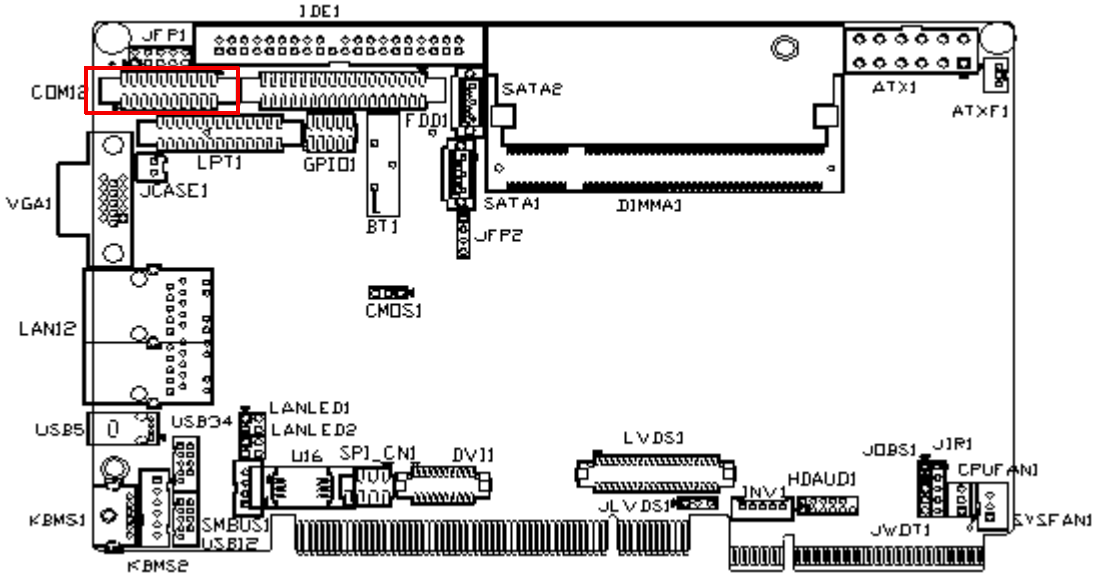
PCI-7030VG-00A1E provides up to six USBs: USB12, USB34, plus two from real I/O. (PCI-7030G2-00A1E provides up to five: USB12, USB34, plus one from real I/O.) This gives complete Plug & Play and hot swapping for over a hundred external devices. The USB interface complies with USB Specification Rev. 2.0, supporting transmission rate up to 480 Mbps and is fuse protected. The USB interface can be disabled in the system BIOS setup.

2.9 Serial ATA Interface (SATA1, SATA2)



PCI-7030 features a high performance Serial ATA interface (up to 150 MB/s) which eases cabling to hard drives with long, thin cables.

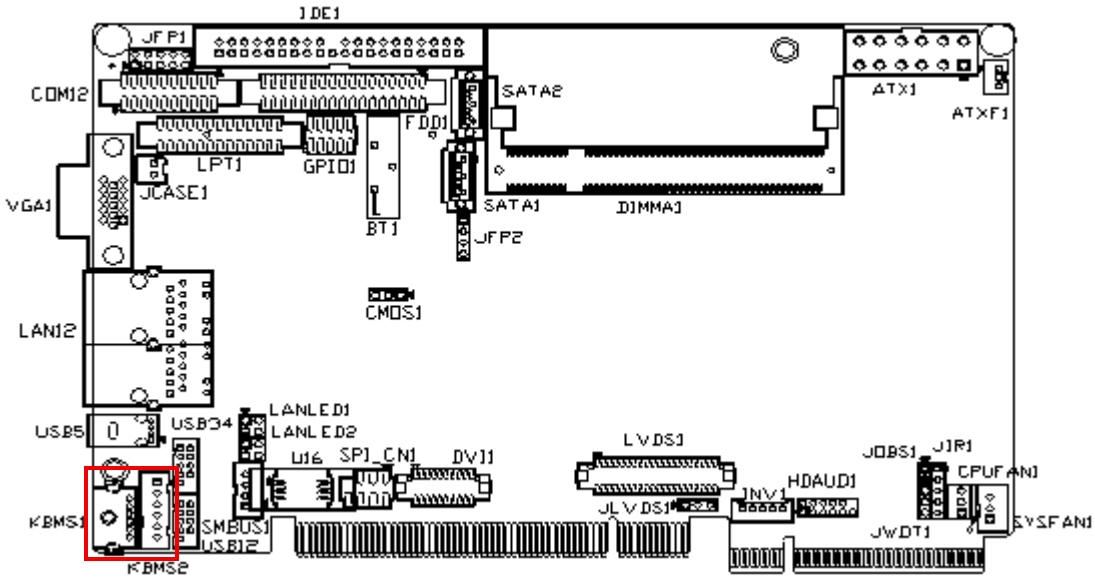
2.10 Serial Ports (COM12)



The PCI-7030 offers two serial ports: COM1 & COM2. These ports can connect to serial devices, such as a mouse or to a communications network. The IRQ and address ranges for all ports are fixed. However, if you want to disable the port or change these parameters later, you can do this in the system BIOS setup.

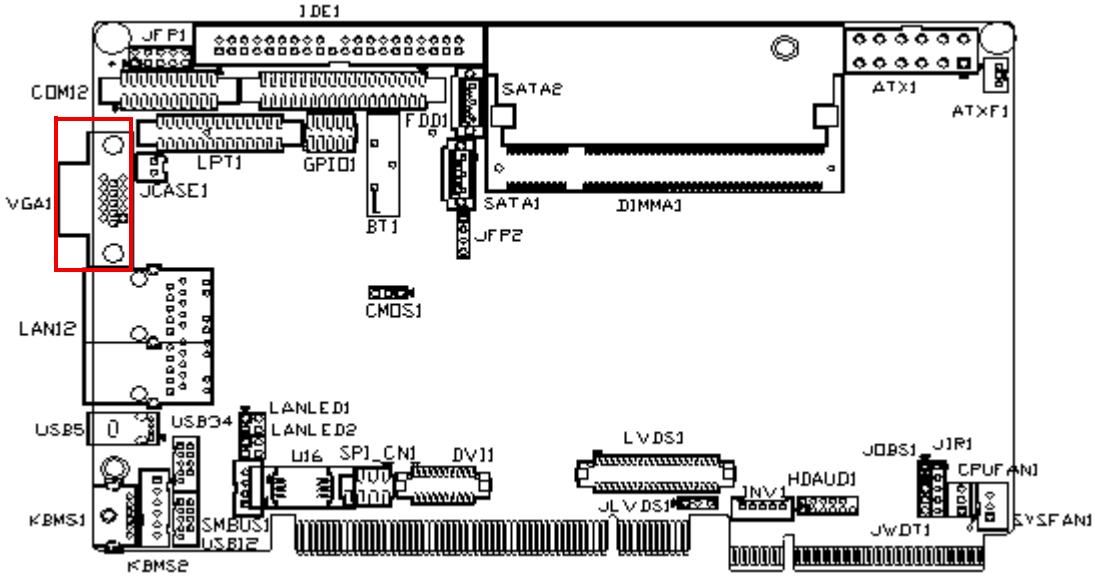
Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.11 PS/2 Keyboard / Mouse connector (KBMS1 & 2)



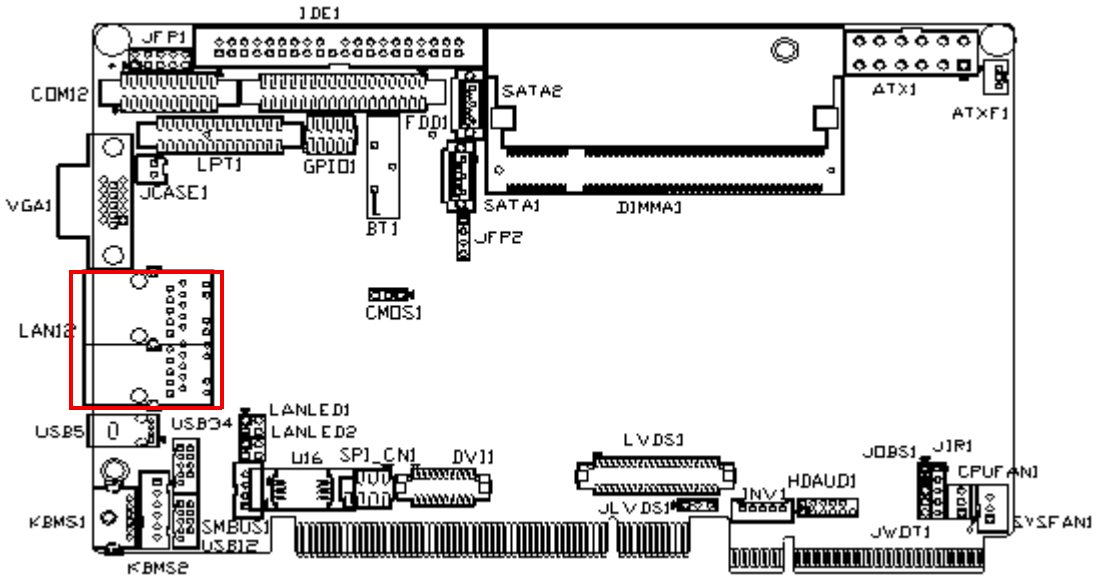
One 6-pin mini-DIN connectors (KBMS1) on the card mounting bracket provide connection to a PS/2 keyboard and a PS/2 mouse, respectively. KBMS2 (5-pin 2.54mm wafer box) can also be connected to an adapter cable (P/N: 1700060202, available from Advantech) for connecting to both a PS/2 keyboard.

2.12 VGA Connector (VGA1)



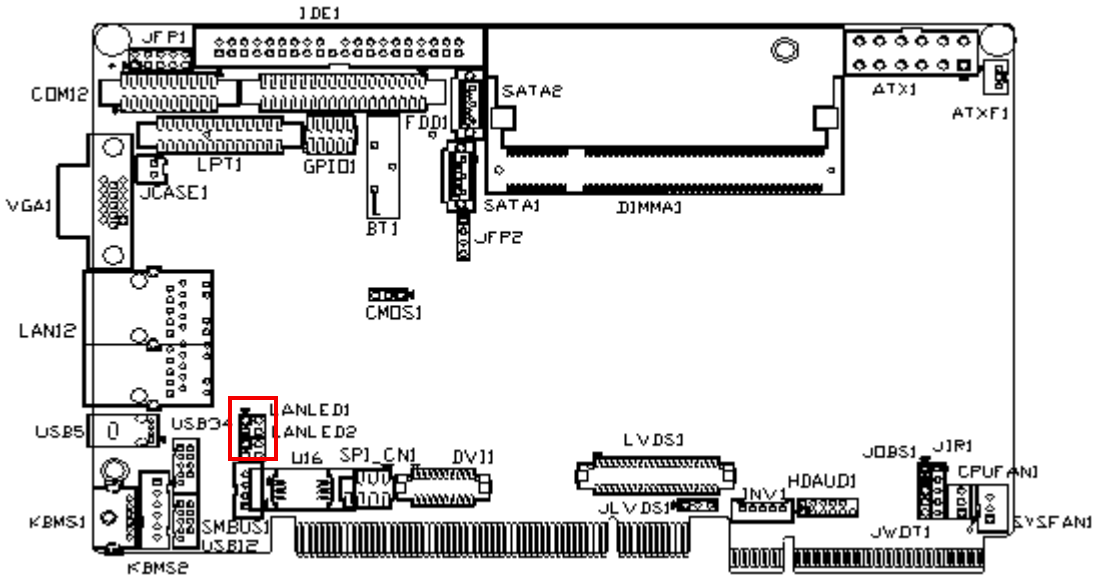
The PCI-7030 includes a VGA interface that can drive conventional CRT displays. VGA1 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector VGA1 are detailed in Appendix B.

2.13 LAN RJ45 connector (LAN12)



PCI-7030 uses the Intel 82574L Gigabit LAN chip which is linked to PCIe x1 Link. With this chip, PCI-7030 may provide high throughputs for a heavy load networking environment. It provides one or two RJ-45 connectors in the rear side and is convenient for most industrial applications. PCI-7030G2 provides two Gigabit LAN and PCI-7030VG provides one Gigabit LAN.

2.14 LAN LED connector (LANLED1/LANLED2)



PCI-7030 provides an external LAN LED Pin header for connecting to the front side of the chassis. With this convenient design users can easily see whether the LAN port is active or not. Refer to Appendix B for detailed information on the pin assignments

.

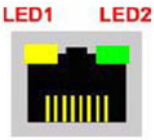
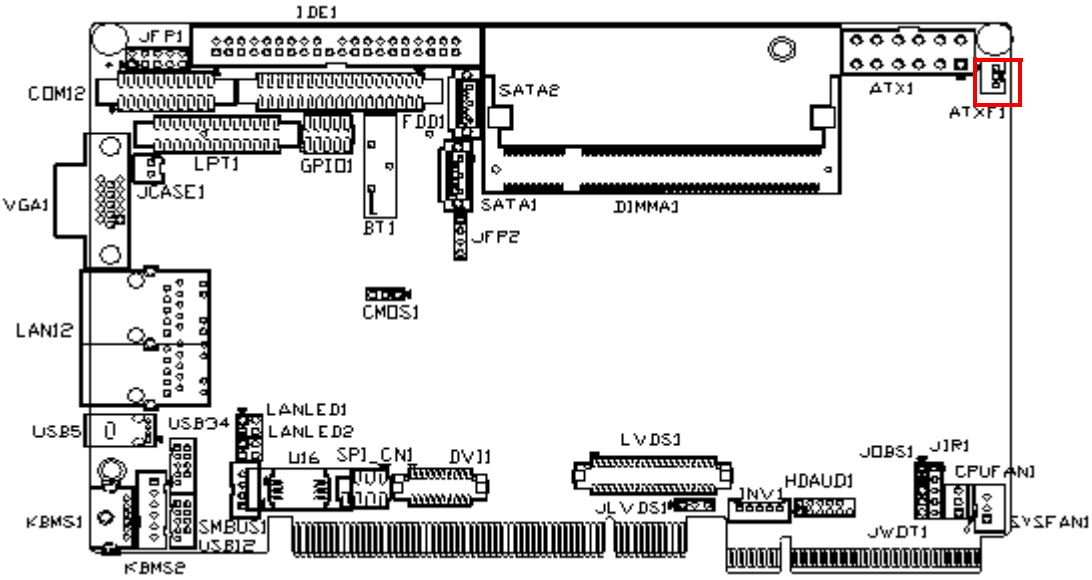


Table 2.1: Front Panel LAN indicator connector		
LAN Mode	**LED1**	**LED2**
1000Mbps Link On	Green On	On
1000Mbps Active	Green on	Green Flashes
1000Mbps Link Off	Off	Off
100Mbps Link On	Orange On	Green On
100Mbps Active	Orange On	Green Flashes
100Mbps Link Off	Off	Off
10Mbps Link On	Off	Green On
10Mbps Active Off	Green	Flashes
10Mbps Link Off	Off	Off

2.15 ATX Feature connector(ATXF1)



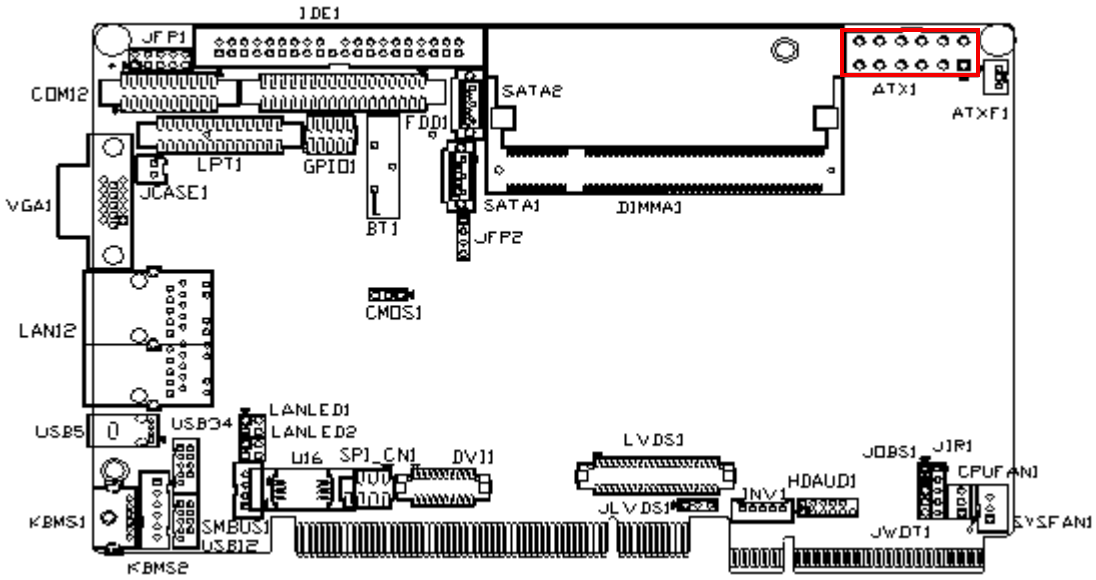
The PCI-7030 can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function:

1. Get the specially designed ATX-to-EBX power cable
2. Connect the 3-pin plug of the cable to ATXF1 (ATX feature connector).
3. Connect the power on/off button to JPF1(9-10)

Default value is set ATXF1 to short pin1-2.

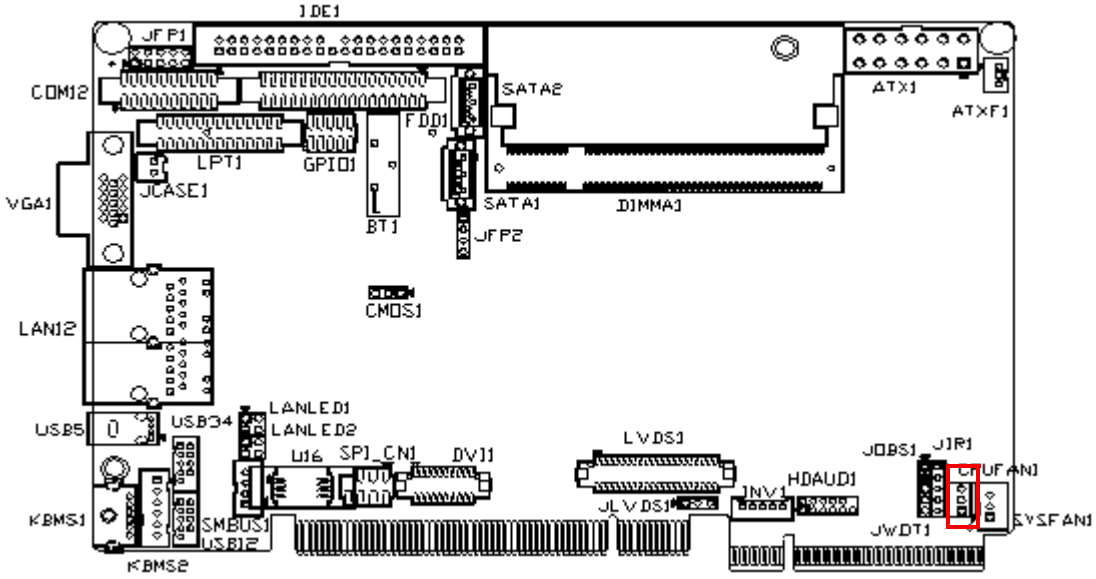
Important Make sure that the ATX power supply can take at least a 10mA load on the 5V standby lead (5 VSB). If not, you may have difficulty powering on your system.

2.16 ATX power control connector (ATX1)



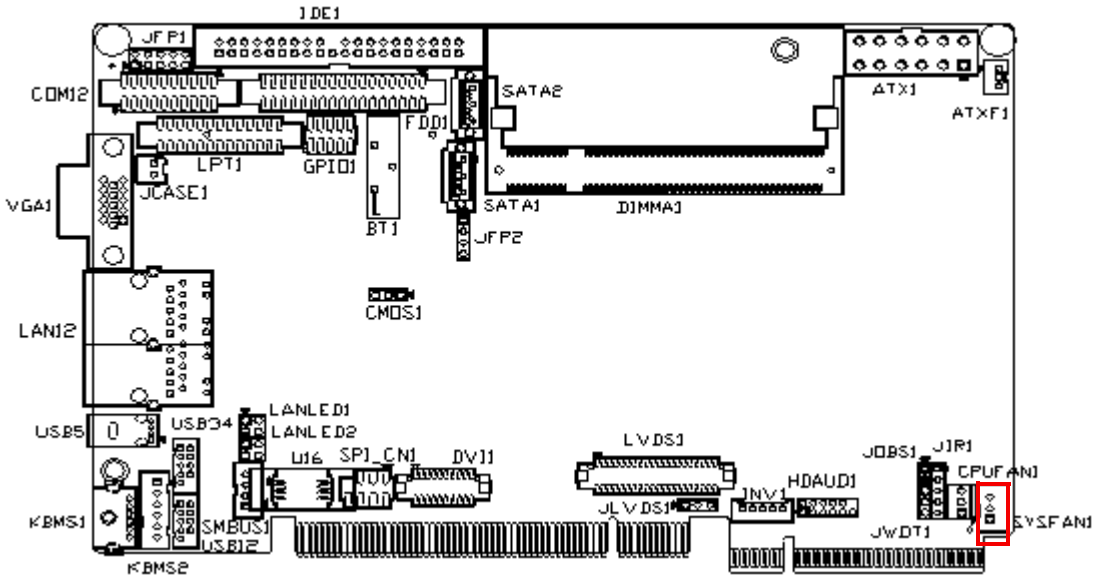
The PCI-7030 support ATX power. ATX1 supplies main power (+5V,+12V, 5VSB), and it is a 6 x 2 power connector

2.17 CPU FAN connector (CPUFAN1)



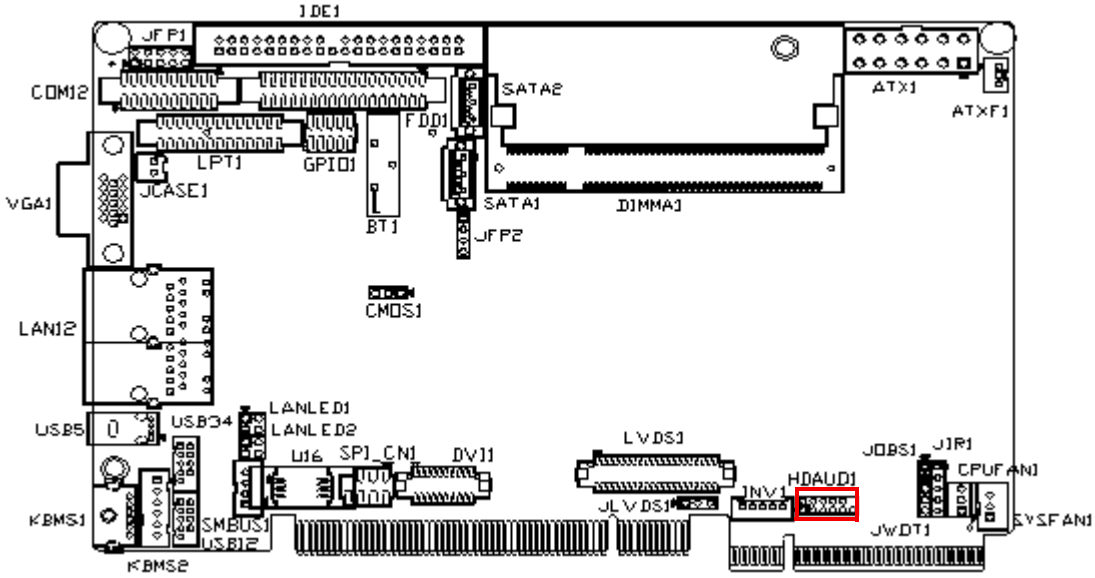
The PCI-7030 is equipped with a 3-pin FAN connector providing +12 V power for CPU FAN.

2.18 System FAN connector (SYSFAN1)



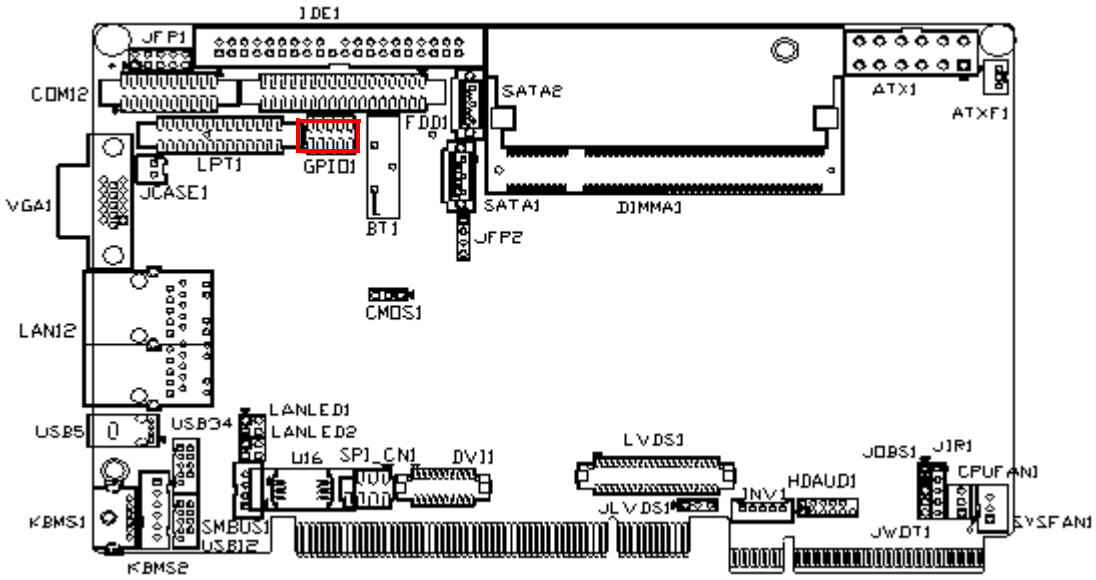
The PCI-7030 is equipped with a 3-pin FAN connector providing +12 V power for system FAN.

2.19 Audio Interface Connector (HDAUD1)



The Audio Interface link is a 10 pin connector, the PCI-7030 can support Audio with the addition of optional PCE-AUDIO-HDA1E. For detailed pin assignments, refer to Appendix B.

2.20 GPIO Header (GPIO1)

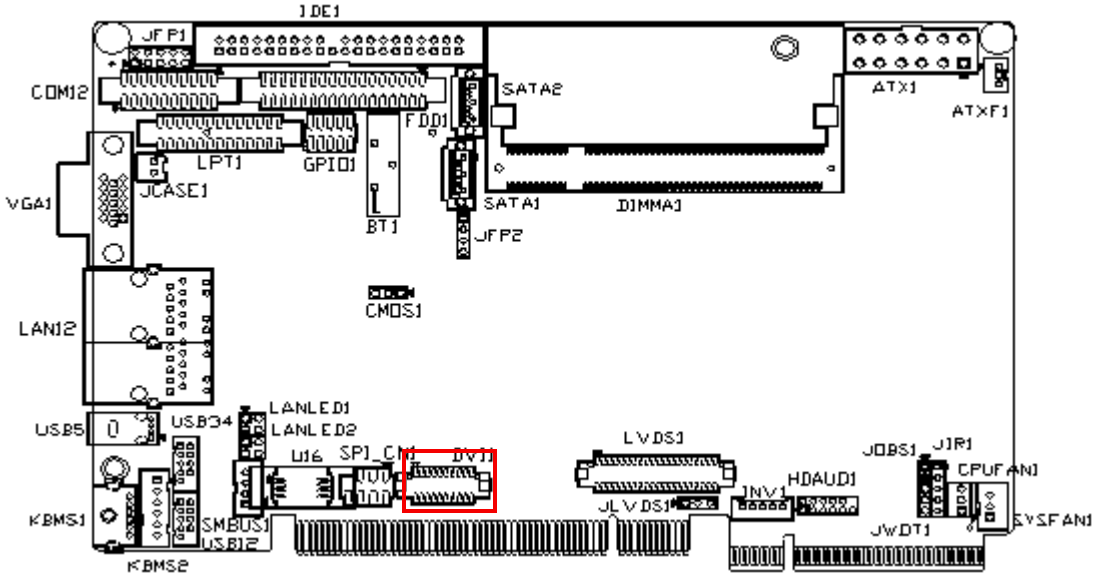


Provides a 10-pin header for Digital I/O usage. Refer to Appendix B for detailed information on the pin assignments.

The board supports 8-bit GPIO through GPIO connector. The 8 digital in- and outputs can be programmed to read or control devices, with input or out- put defined.

This GPIO is CMOS level (0 ~ 5V).

2.21 DVI LCD panel connector(DVI1)



Digital Visual Interface (DVI) is the standard interface for high-performance connection between PCs and Flat Panel Displays, Digital CRT displays, Projectors, and HDTV. The PCI-7030 is able to drive a DVI connector display at a pixel resolution up to maximum pixel lock of 400 MHz up to 2048 x 1536 resolutions @ 75 Hz

2.21.0.1 Panel type and Resolution mode selection

Customer can select display type and boot number from BIOS menu selection.

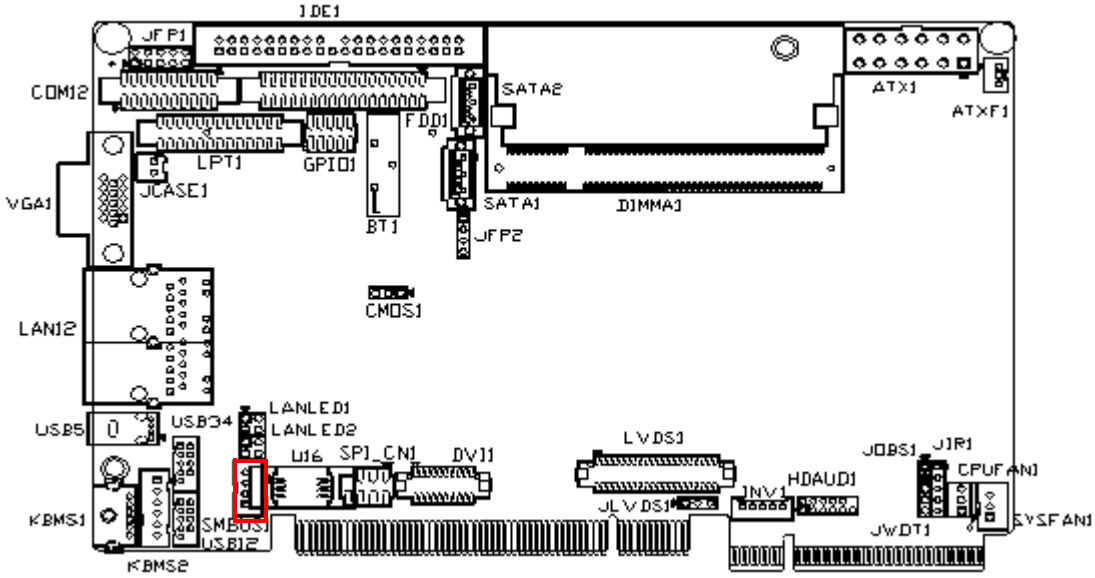
2.22 Low Pin Count Header (LPC1)

PCI-7030 provides a 14-pin header for LPC module. Refer to Appendix B for detailed information on the pin assignments. Here are the LPC modules that you can choose.

Table 2.2: LPC Module

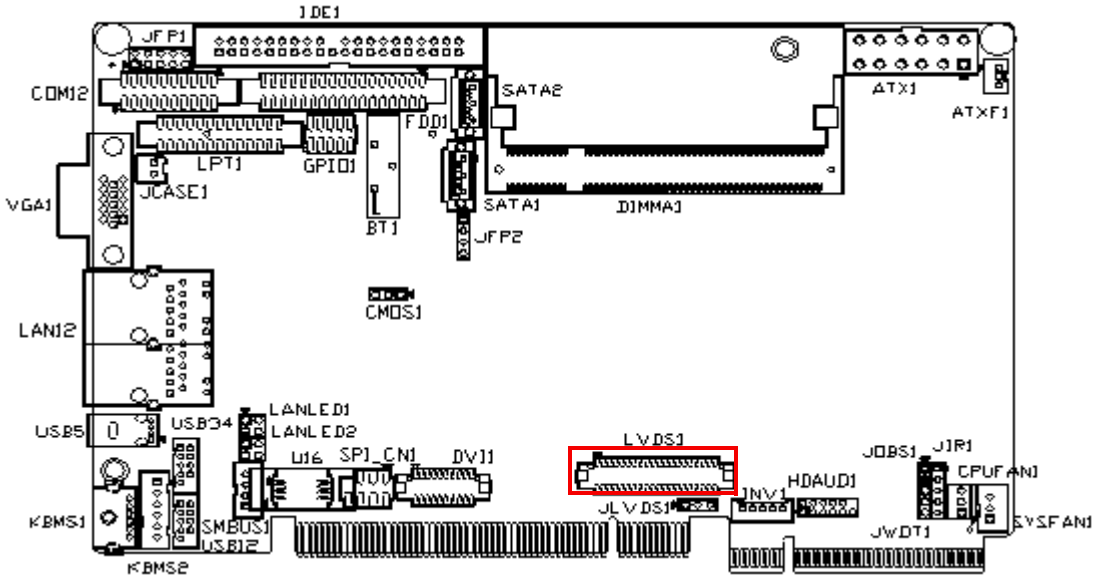
Part Number	Description
PCA-COM485	4 x 422/485 COM module with auto-flow control
PCA-COM232	4 x 232 COM module

2.23 SM Bus Connector (SMBUS1)



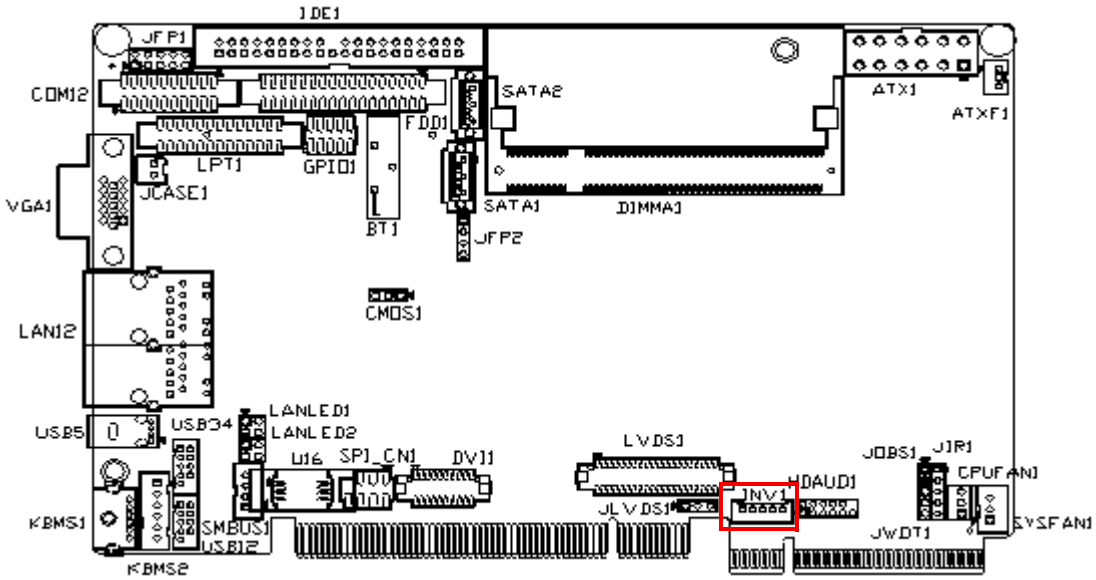
4-pin connector reserved for extra SMBus device.

2.24 LVDS Connector (LVDS1)



For PCI-7030, LVDS1 consists of a 40-pin connector which can support 18/36-bit up to UXGA 1600 x 1200

2.25 LCD Inverter Connector (INV1)



The LCD inverter is connected to INV1 via a 5-pin connector to provide power to the LCD display.

Chapter 3

BIOS Operation

3.1 Introduction

Advantech provides a full-featured Award BIOS that delivers superior performance, compatibility and functionality for manufactures of Industrial PCs and embedded boards; its many options and extensions let you customize your products to a wide range of designs and target markets.

The modular, adaptable AwardBIOS supports the broadest range of third-party peripherals and all popular chipsets, plus Intel®, AMD, nVidia, VIA, and compatible CPUs from 386 through Pentium® and AMD Geode™, K7 and K8 (including multiple processor platforms), and VIA Eden C3 and C7 CPUs.

You can use Advantech's utilities to select and install features to suit your design needs.

3.2 BIOS Setup

The PCI-7030 Series system has built-in AwardBIOS with a CMOS SETUP utility which allows users to configure required settings or to activate certain system features.

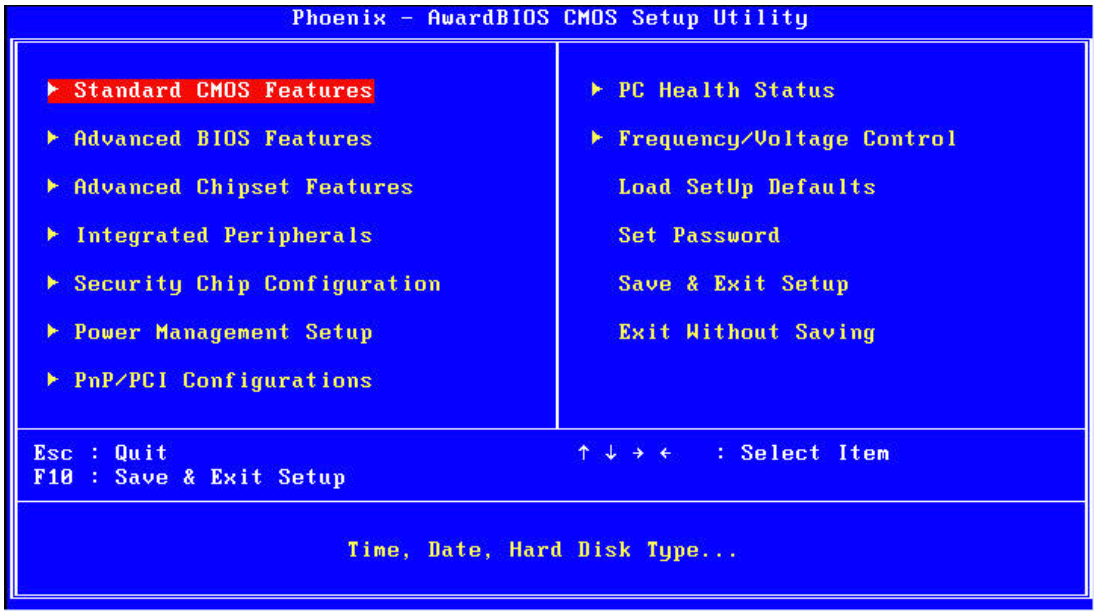
The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

When the power is turned on, pressing the <Del> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen.

Control Keys	
< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Setup Default
<F10>	Save all CMOS changes

3.2.1 Main Menu

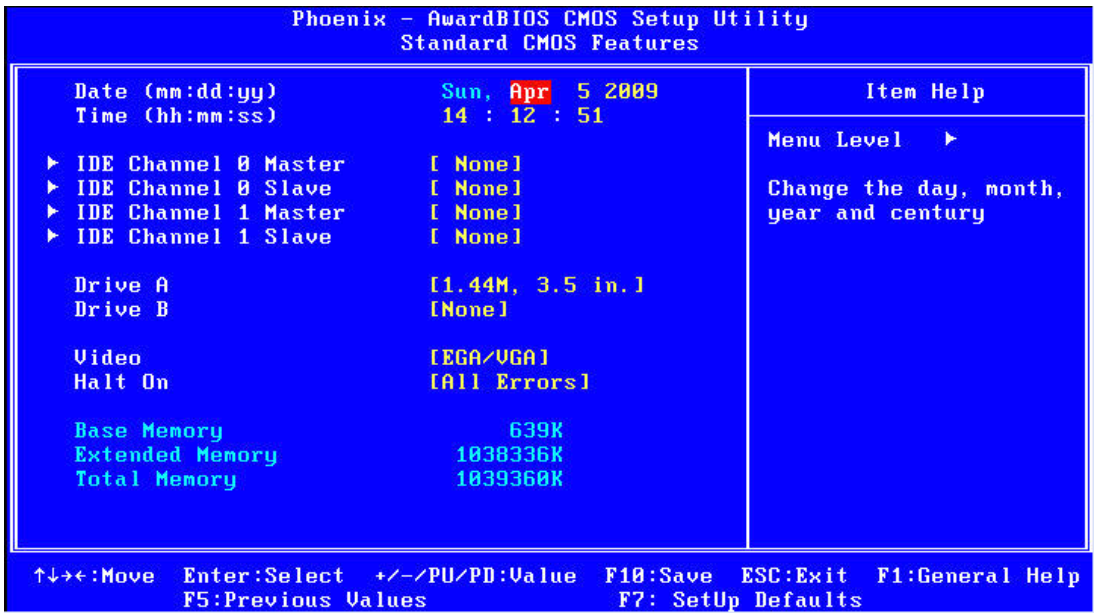
Press <Del> to enter AwardBIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



- **Standard CMOS Features**
  This setup page includes all the items in standard compatible BIOS.
- **Advanced BIOS Features**
  This setup page includes all the items of Award BIOS enhanced features.
- **Advanced Chipset Features**
  This setup page includes all the items of Chipset configuration features.
- **Integrated Peripherals**
  This setup page includes all onboard peripheral devices.
- **Security chip configuration**
  This SETUP page includes all the items of Trusted Module Configuration features. This sub-menu item only appears when the Trusted Module is plugged in.
- **Power Management Setup**
  This setup page includes all the items of Power Management features.
- **PnP/PCI Configurations**
  This setup page includes PnP OS and PCI device configuration.
- **PC Health Status**
  This setup page includes the system auto detect CPU and system temperature, voltage, fan speed.
- **Frequency/Voltage Control**
  This setup page includes CPU host clock control, frequency ratio and voltage.
- **Load Setup Defaults**
  This setup page includes Load system optimized value, and the system would be in best performance configuration.
- **Set Password**
  Establish, change or disable password.

- **Save & Exit Setup**
  Save CMOS value settings to CMOS and exit BIOS setup.
- **Exit Without Saving**
  Abandon all CMOS value changes and exit BIOS setup.

3.2.2 Standard CMOS Features



- **Date**
  The date format is <weekday>, <month>, <day>, <year>.

Weekday	From Sun to Sat, determined and displayed by BIOS only
Month	From Jan. to Dec.
Day	From 1 to 31
Year	From 1999 through 2098

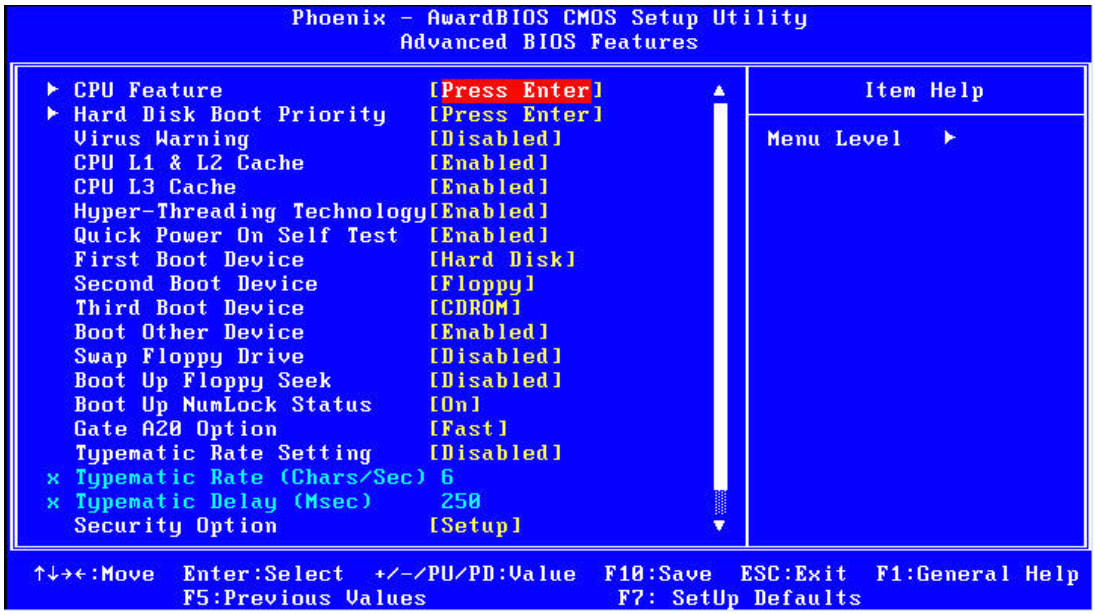
- **Time**
  The time format is <hour> <minute> <second>, based on 24-hour time.
- **IDE Channel 0 Master/Slave**
  IDE HDD Auto-Detection Press "Enter" for automatic device detection.
- **Video**
  Select EGA or VGA display.
- **Halt on**
  The item determines whether the computer will stop if an error is detected during power up.

No Errors	The system boot will not stop for any error.
All Errors	Whenever the BIOS detects a non-fatal error the system will be stopped.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)

- **Base Memory**
  The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

- **Extended Memory**
  The BIOS POST will determine the amount of extended memory (above 1 MB in CPU's memory address map) installed in the system.
- **Total Memory**
  This item displays the total system memory size.

3.2.3 Advanced BIOS Features



- **CPU Feature**
  This item allows users to adjust CPU features.
- **Hard Disk Boot Priority**
  This item allows users to select boot sequence for system device HDD, USB-HDD, SCSI, RAID.
- **Virus Warning [Disabled]**
  Enables or disables the virus warning.
- **CPU L1 & L2 Cache [Enabled]**
  This item allows users to enable CPU L1 and L2 cache.
- **CPU L3 Cache**
  This item allows users to enable CPU L3 cache.
- **Hyper-Threading Technology**
  While using a CPU with Hyper-Threading technology, you can select "Enabled" to enable Hyper-Threading Technology in an OS which supports Hyper-Threading Technology or select "Disabled" for other OSs which do not support Hyper-Threading technology.
- **Quick Power On Self Test [Enabled]**
  This field speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third and forth time. Setup setting default is enabled.
- **First / Second / Third / Other Boot Drive**

Hard Disk	Select boot device priority by Hard Disk.
CDROM	Select boot device priority by CDROM.
USB-FDD	Select boot device priority by USB-FDD.

USB-ZIP	Select boot device priority by USB-ZIP.
USB-CDROM	Select boot device priority by USB-CDROM.
LAN	Select boot device priority by LAN.
Disabled	Disable this boot function.

- **Gate A20 Option [Fast]**

  This item enables users to switch A20 control by port 92 or not.

- **Typematic Rate Setting**

  This item enables users to set the two typematic controls items.

  – Typematic Rate (Chars/Sec)

  This item controls the speed at which the system registers auto-repeated key-strokes. The eight settings are 6, 8, 10, 12, 15, 20, 24 and 30.

  – Typematic Delay (Msec)

  This item sets the keypress time delay before autorepeat begins.

  Four delay rate options are 250, 500, 750 and 1000.

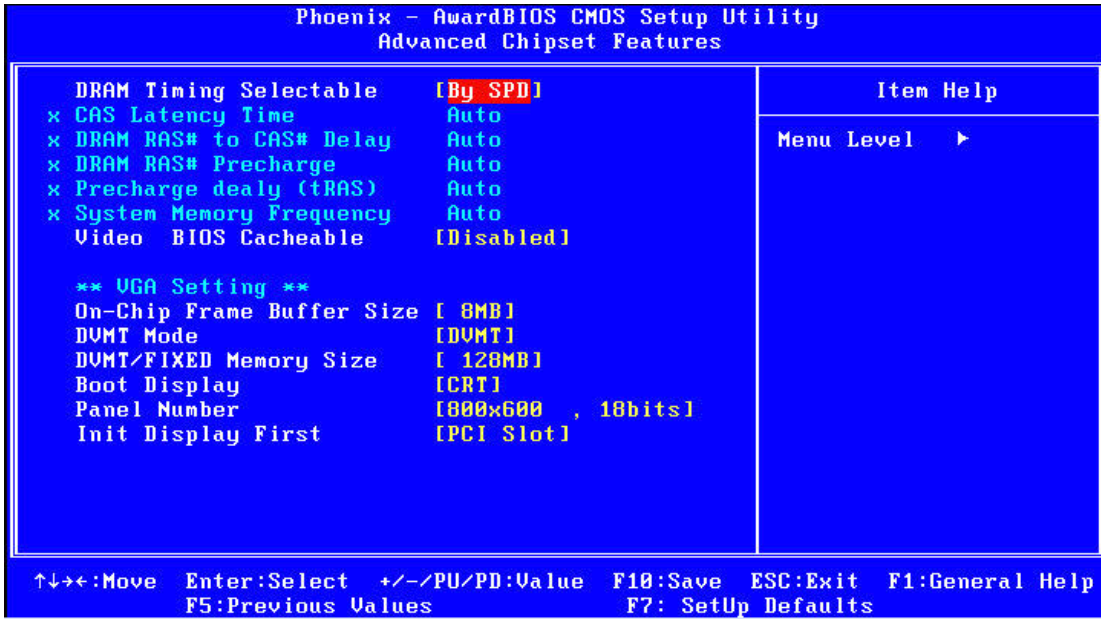
- **Security Option [Setup]**

System	System will not boot and refuses access to Setup page if the correct password is not entered at the prompt.
Setup	System will boot, but access to Setup requires password (default value).

- **APIC Mode [Enabled]**

  This item allows user to enabled of disabled “Advanced Programmable Interrupt Controller”. APIC is implemented in the motherboard and must be supported by the operating system, and it extends the number of IRQ's available.

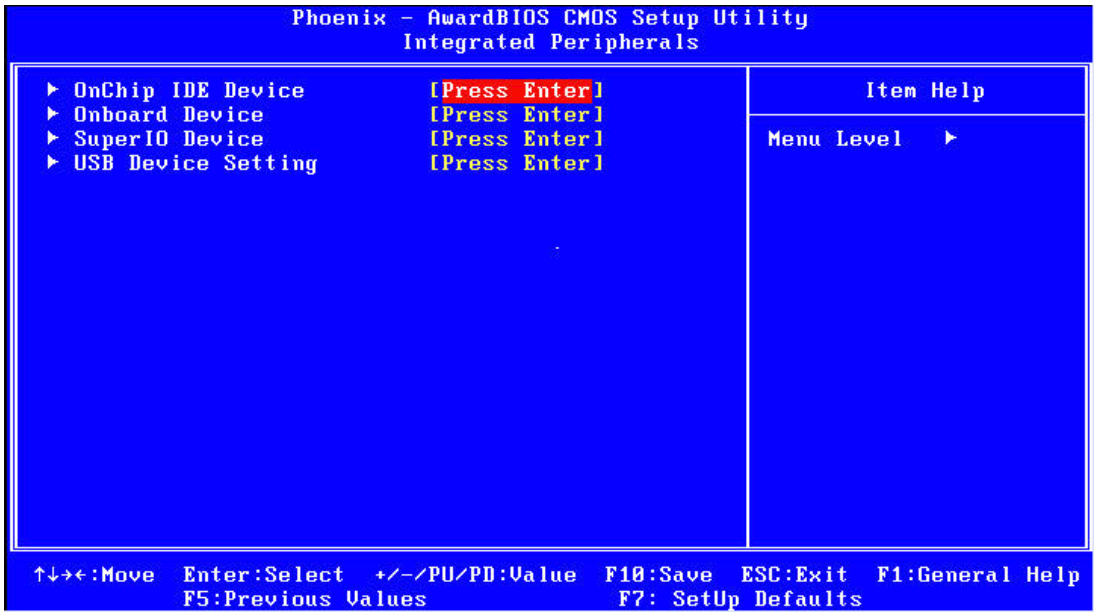
3.2.4 Advanced Chipset Features



Note! *This “Advanced Chipset Features” page controls configuration of the board’s chipset. This page is chipset dependent; screens may differ somewhat depending on the chipset. It is strongly recommended that only technical users make changes to the default settings.*

- **DRAM Timing Selectable [By SPD]**
  This item enables users to set the optimal timings for items 2 through 5; system default setting “By SPD” follows the SPD information and ensures the system runs stably with optimal performance.
- **CAS Latency Time [Auto]**
  This item enables users to set the timing delay in clock cycles before SDRAM starts a read command after receiving it.
- **DRAM RAS# to CAS# Delay [Auto]**
  This item enables users to set the timing of the transition from RAS (row address strobe) to CAS (column address strobe) as both rows and column are separately addressed shortly after DRAM is refreshed.
- **DRAM RAS# Precharge [Auto]**
  This item enables users to set the DRAM RAS# precharge timing, system default is setting to “Auto” to reference the data from SPD ROM.
- **Precharge delay (tRAS) [Auto]**
  This item allows user to adjust memory precharge time.
- **Video BIOS Cacheable [Disabled]**
  This item allows the video BIOS to be cached to allow faster execution and better performance.
- **On-Chip Frame Buffer Size [8 MB]**
  This item allows the user to adjust the on-chip frame buffer size 8 MB or 1 MB.
- **DVMT Mode [DVMT]**
  This item allows the user to adjust Intel's Dynamic Video Memory Technology (DVMT). BIOS provides three options: DVMT, FIXED, and Both.
- **DVMT/FIXED Memory Size [128MB]**
  This item allows the user to adjust DVMT/FIXED graphics memory size.
- **Boot Display**
  This item allows the user to decide boot display mode.
- **Panel Number**
  This item allows the user to decide display resolution.
- **Init Display First**
  This item is the setting for start up video output: either from PCI Express or Onboard device.

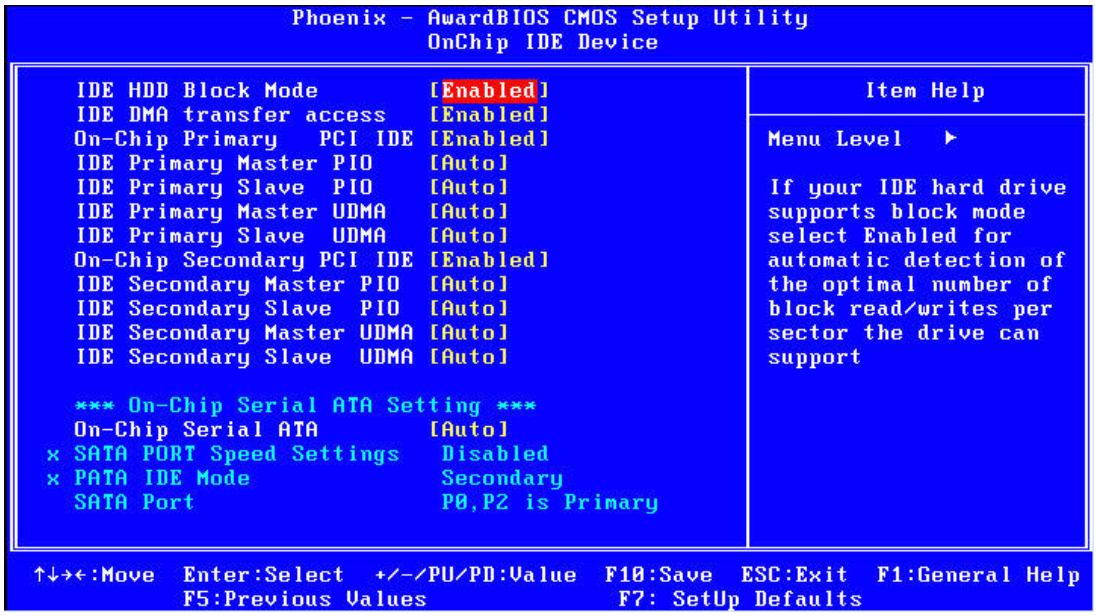
3.2.5 Integrated Peripherals



Note! *This "Integrated Peripherals" page controls the configuration of the board's chipset, including IDE, ATA, SATA, USB, AC97, MC97 and Super IO and Sensor devices. This page is chipset dependent; the screen capture above is illustrative, but screens do differ depending on chipset features.*

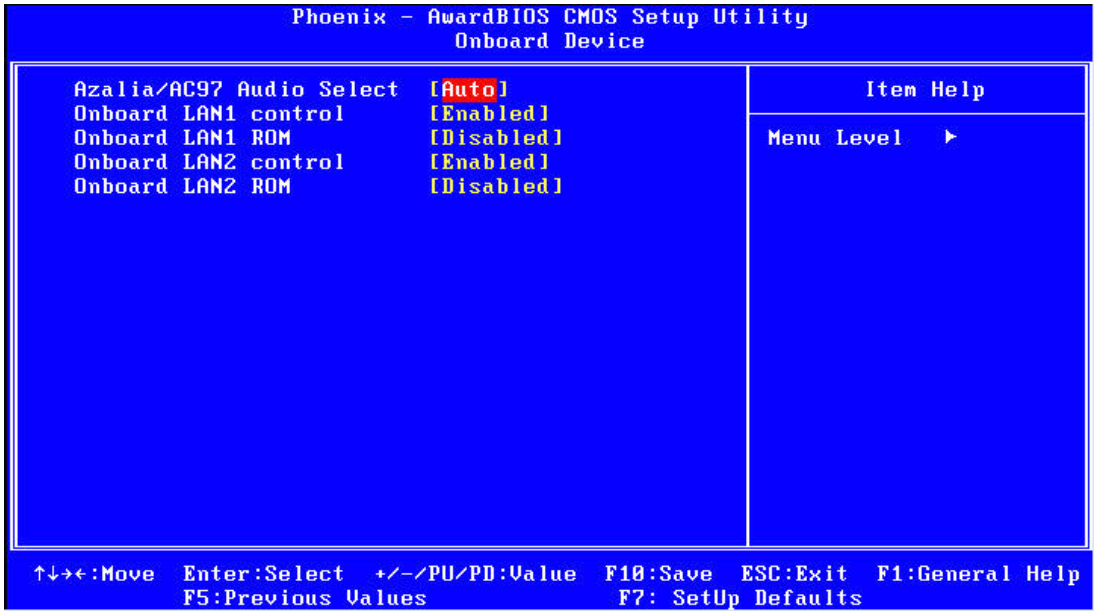
- **OnChip IDE Device**

  This item enables users to set the OnChip IDE device status, including some of new chipsets also support SATA devices (Serial-ATA).



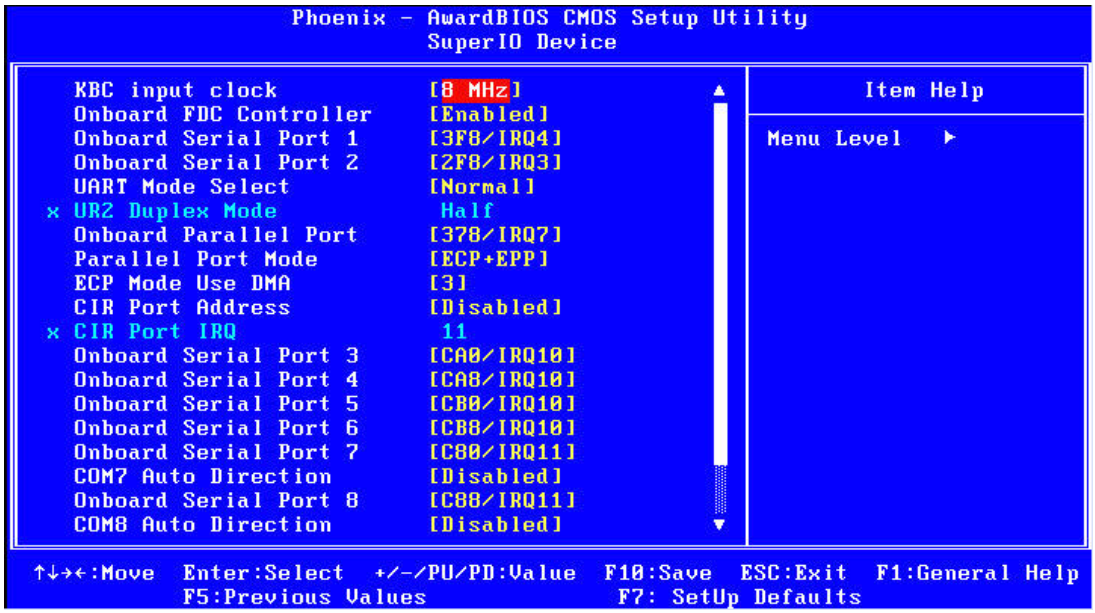
- **Onboard Device**

  This item enables users to set the Onboard device status, including enabling AC97, and LAN devices.



- **Super IO Device**

  This item enables users to set the Super IO device status, including enabling of COM, and LPT.



- **CKB input clock [8 MHz]**

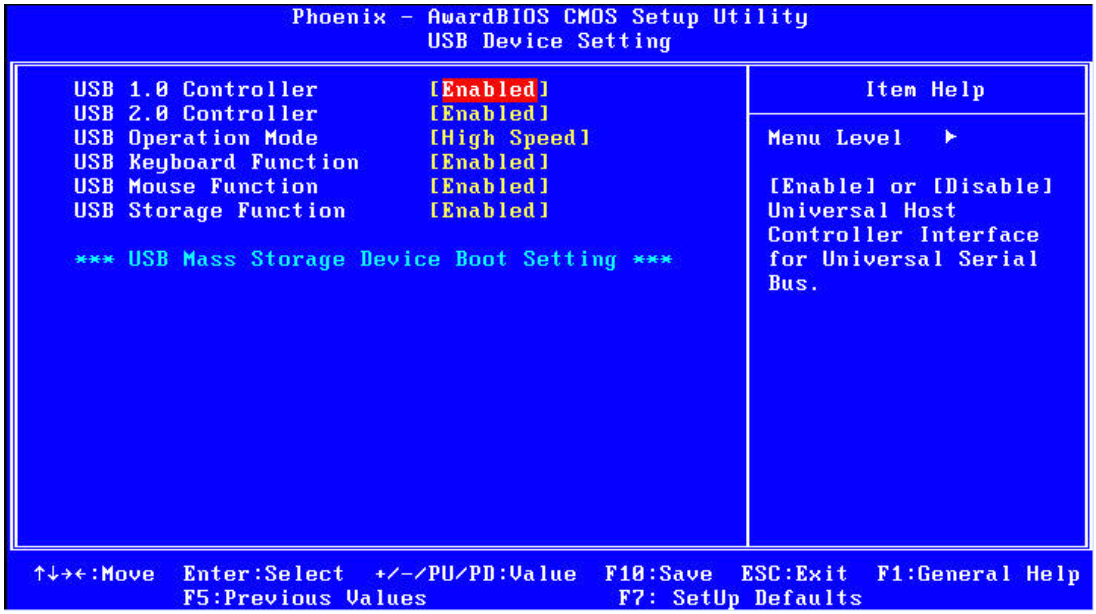
  PS/2 keyboard communicates with the keyboard controller. The speed of the data link depends on the clock signal generated by the keyboard controller.

- **Onboard FDC Controller [Enable]**

  When enabled, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to Disabled.

- **Onboard Serial port 1 [3F8 / IRQ4]**
  This item allows user to adjust serial port 1 of address and IRQ.
- **Onboard Serial port 2 [2F8/ IRQ3]**
  This item allows user to adjust serial port 2 of address and IRQ.
- **UART Mode select [Normal]**
  This item allows you to select UART mode.
- **Onboard Parallel Port [378/IRQ7]**
  This item allows user to adjust parallel port of address and IRQ.
- **Parallel Port Mode [ECP+EPP]**
  This item allows user to adjust parallel port mode.
- **ECP Mode Use DMA [3]**
  This item allows user to adjust ECP DMA resource.
- **CIR Port Address [Disable]**
  This item allows user to adjust CIR port of address and IRQ.
- **Onboard Serial port 3 [CA0/IRQ10]**
  This item allows user to adjust serial port 3 of address and IRQ.
- **Onboard Serial port 4 [CA8/IRQ10]**
  This item allows user to adjust serial port 4 of address and IRQ.
- **Onboard Serial port 5 [CB8/IRQ10]**
  This item allows user to adjust serial port 5 of address and IRQ.
- **Onboard Serial port 6 [CB8/IRQ10]**
  This item allows user to adjust serial port 6 of address and IRQ.
- **Onboard Serial port 7 [C80/IRQ11]**
  This item allows user to adjust serial port 7 of address and IRQ.
  This serial port 7 need to be provided by LPC module (optional)
- **COM7 Auto Direction [Disable]**
  This item allows user to enable Auto-Flow control function of COM7 if supported.
- **Onboard Serial port 8 [C88/IRQ11]**
  This item allows user to adjust serial port 8 of address and IRQ.
  This serial port 8 need to be provided by LPC module (optional)
- **COM8 Auto Direction [Disable]**
  This item allows user to enable Auto-Flow control function of COM8 if supported.
- **Onboard Serial port 9 [C90/IRQ11]**
  This item allows user to adjust serial port 9 of address and IRQ.
  This serial port 9 need to be provided by LPC module (optional)
- **COM9 Auto Direction [Disable]**
  This item allows user to enable Auto-Flow control function of COM9 if supported.
- **Onboard Serial port 10 [C98/IRQ11]**
  This item allows user to adjust serial port 10 of address and IRQ.
  This serial port 10 need to be provided by LPC module (optional)
- **COM10 Auto Direction [Disable]**
  This item allows user to enable Auto-Flow control function of COM10 if supported.

3.2.6 USB Device Setting



- **USB 1.0 Controller**

  Select.Enabled. if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices are "Enabled" and "Disabled".

- **USB 2.0 Controller**

  This entry is used to disable/enable the USB 2.0 controller only. The BIOS itself may or may not have high-speed USB support. If the BIOS has high speed USB support built in, the support will automatically turn on when a high speed device is attached. The choices are "Enabled" or "Disabled".

- **USB Operation Mode**

  Set the USB 2.0 controller to Hi Speed (480 Mbps) or Full Speed (12 Mbps).

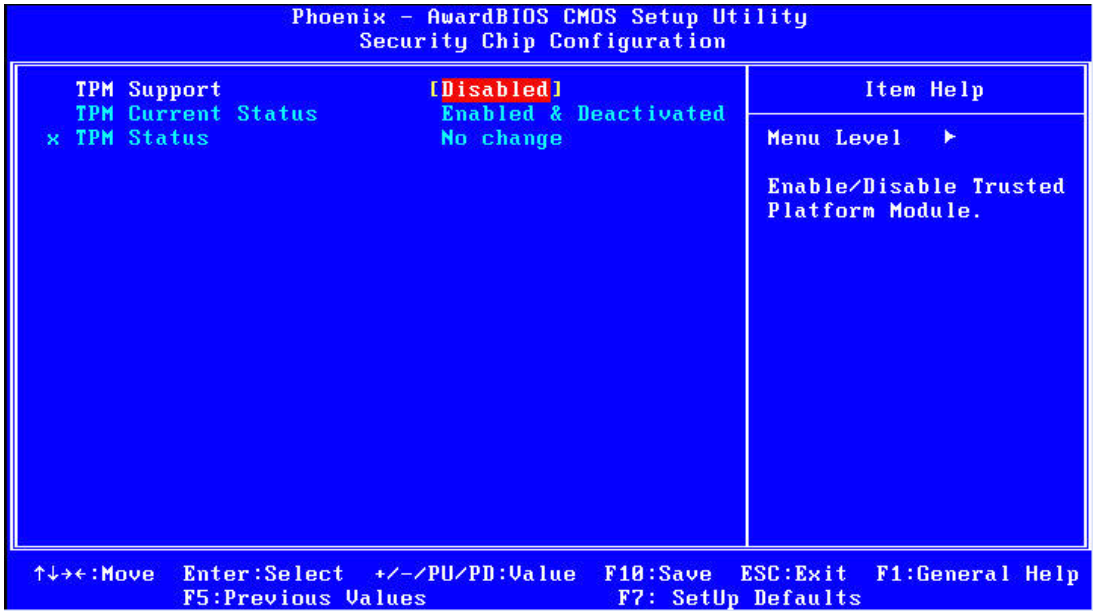
- **USB Keyboard / Mouse Function**

  Select “Enabled” if you plan to use a USB keyboard/Mouse. The choices are "Enabled" and "Disabled".

- **USB Storage Function**

  Select "Enabled" if you plan to use an external USB storage device to boot system under DOS mode. The choices are "Enabled" and "Disabled".

3.2.7 Security Chip Configuration (Optional Item)

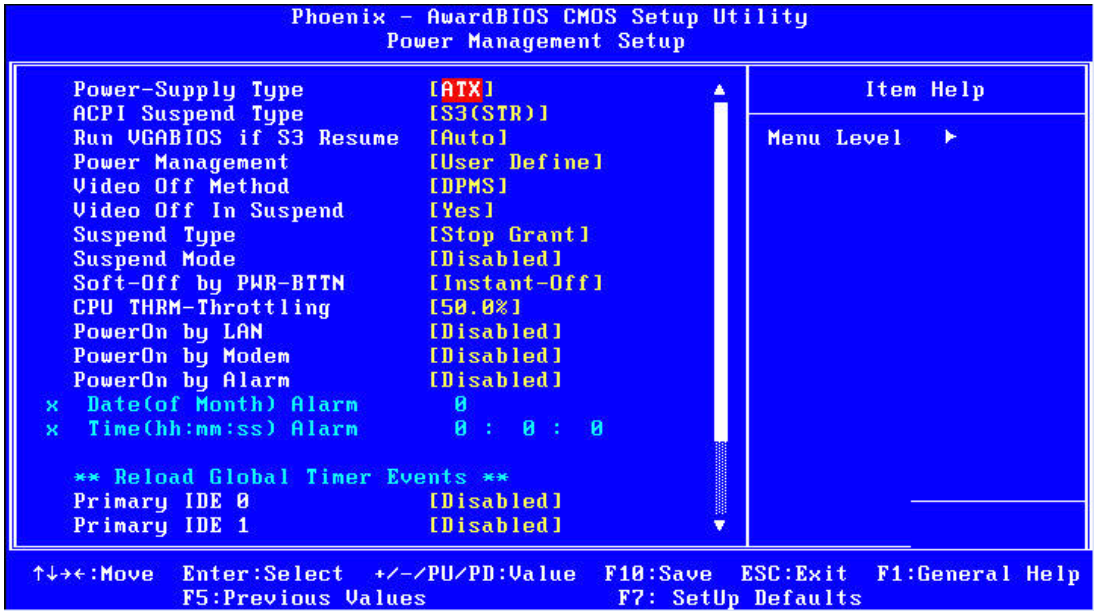


3.2.8 TPM Support

The items in this menu allow you to set the TPM (Trusted Platform Module) features. Select an item and then press <Enabled> to display the configuration options.

Note! *To enable the TPM function, set the TPM Support item to [Enabled] and then save the change; after rebooting, the TPM configuration menu will show the active options.*

3.2.9 Power Management Setup



Note! *Adjust "Power management Setup" to configure the system to most effective energy savings still consistent with the intended style of use.*

- **Power-Supply Type [ATX]**
  This item allows user to set power-supply type, ATX or AT mode.
- **ACPI Suspend Type [S3(STR)]**
  This item allows user to select sleep state when in suspend.

S1(POS)	The suspend mode is equivalent to a software power down;
S3(STR)	The system shuts down with the exception of a refresh current to the system memory.

- **Run VGA BIOS if S3 Resume [Auto]**
  This item allows system to reinitialize VGA BIOS after system resume from ACPI S3 mode.
- **Power Management [User Define]**
  This item allows user to select system power saving mode.

Min Saving	Minimum power management. Suspend Mode=1 hr.
Max Saving	Maximum power management. Suspend Mode=1 min.
User Define	Allows user to set each mode individually. Suspend Mode= Disabled or 1 min ~1 hr.

- **Video Off Method [DPMS]**
  This item allows user to determine the manner is which the monitor is blanked.

V/H SYNC+Blank	This option will cause system to turn off 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 [Yes]**
  This item allows users to turn off video when system is in suspend mode.

- **Suspend Type [Stop Grant]**

  This item allows users to determine the suspend type.

- **Suspend Mode [Disabled]**

  This item allows users to set a delay time. If system inactivity exceeds the delay time, all devices except the CPU will be shut off.

- **Soft-Off by PWR-BTTN [Instant-Off]**

  This item allows users to define function of power button.

Instant-Off	Press power button for instant power off.
Delay 4 Sec	Press power button for four seconds to initiate power off.

- **CPU THRM-Throttling**

  The ability is control how much percent of your CPU's clock speed will be throttled down when the CPU overheat. You can set "75.0%", "50.0%", and "25.0%".

- **PowerOn by LAN [Enabled]**

  This item allows users to power on the system via LAN. The choices are “Enabled” and “Disabled”.

- **PowerOn by Modem [Enabled]**

  This item allows users to power on the system by Modem. The choices are “Enabled” and “Disabled”.

- **PowerOn by Alarm [Disabled]**

  The choices are “Enabled” and “Disabled”. If enabled, the fields that follow indicate dates and times of alarm settings.

- **Primary IDE 0 (1) and Secondary IDE 0 (1)**

  When Enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) becomes active. The choices are "Enabled" and "Disabled".

- **FDD, COM, LPT PORT**

  When Enabled, the system will resume from suspend mode if the FDD, interface, COM port, or LPT port is active. The choices are "Enabled" and "Disabled".

- **PCI PIRQ [A-D]#**

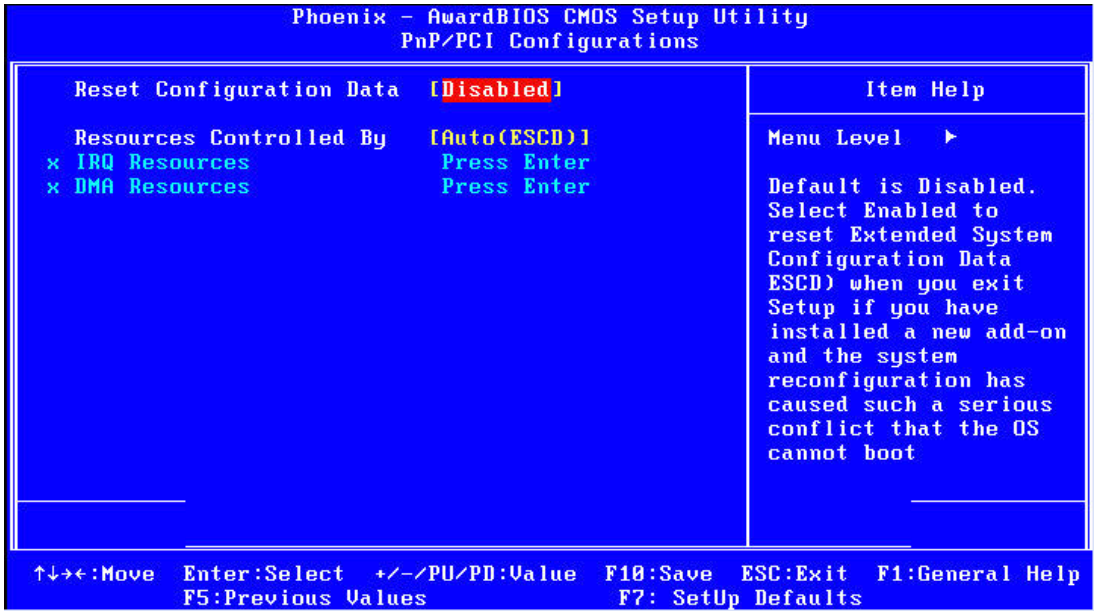
  When Enabled, the system resumes from suspend mode if an interrupt occurs.

  The choices are "Enabled" and "Disabled".

- **PWRON After PWR-Fail [ON/Off/Former-Sts]**

  Use this to set up the system after power failure. The “Off” setting keeps the system powered off after power failure, the “On” setting boots up the system after failure, and the “Former-Sts” returns the system to the status before power failure.

3.2.10 PnP/PCI Configurations



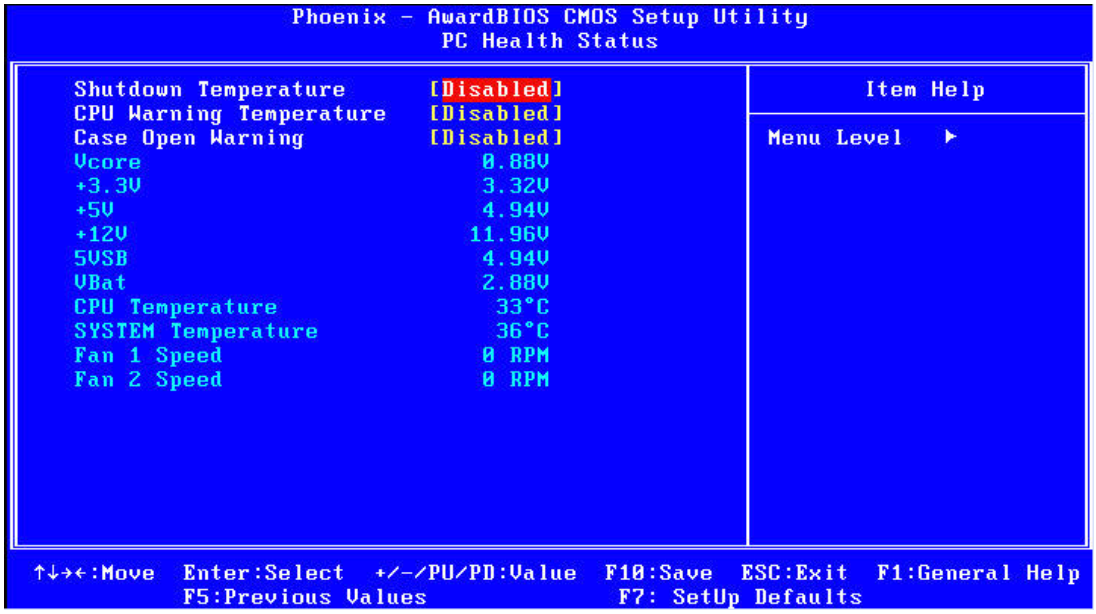
- **Reset Configuration Data [Disabled]**

  The default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) if you have installed a new add-on card, and system configuration is in such a state that the OS cannot boot.

- **Resources Controlled By [Auto(ESCD)]**

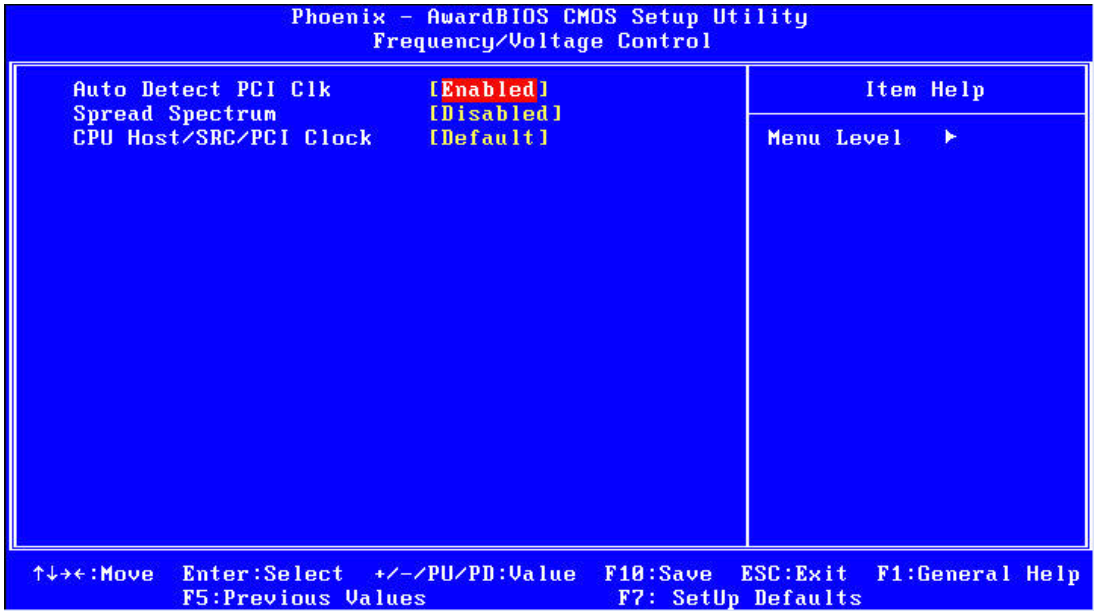
  The commands here are “Auto(ESCD)” or “Manual”. Choosing “Manual” requires you to choose resources from the following sub-menu. “Auto(ESCD)” automatically configures all of the boot and Plug and Play devices, but you must be using Windows 95 or above.

3.2.11 PC Health Status



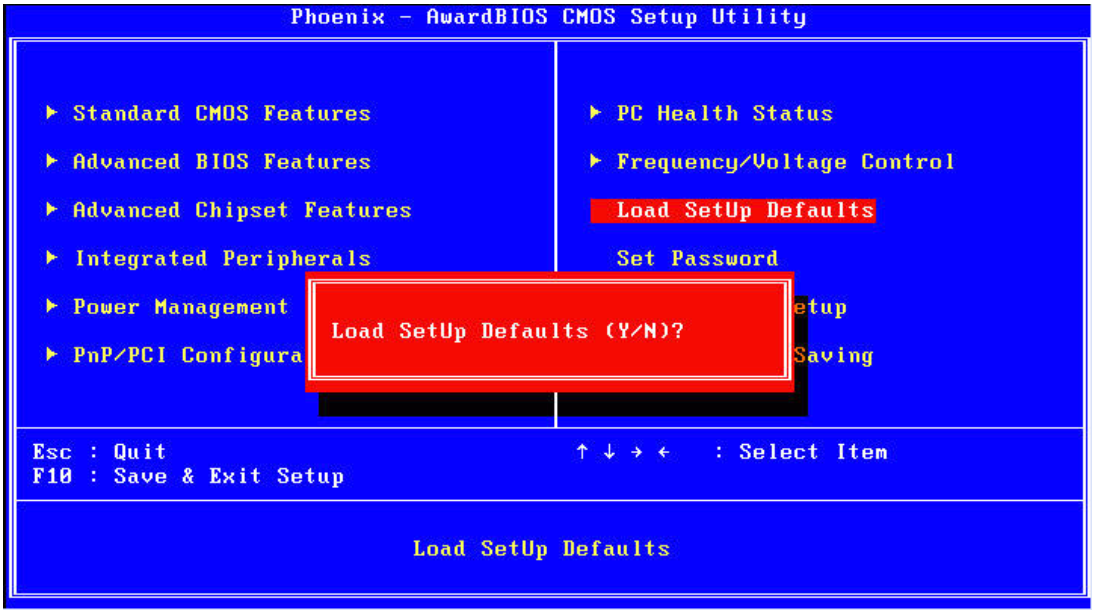
- **Shutdown Temperature [Disabled]**
  The system will shut down automatically if the CPU temperature goes over the selected setting.
- **CPU Warning Temperature [Disabled]**
  The system will give an automatic warning if the CPU temperature goes over the selected setting.
- **Case Open Warning [Disabled]**
  Enable this to detect if the case is open or closed.
- **VCORE and Other Voltages**
  This shows the voltage of VCORE, +3.3 V, +5 V, +12 V, 5VSB, VBat(V)
- **CPU Temperature**
  This shows the current CPU temperature.
- **SYSTEM Temperature**
  This shows the current temperature of the system.
- **FAN 1 Speed**
  This shows the current FAN 1 operating speed.
- **FAN 2 Speed**
  This shows the current FAN 2 operating speed.

3.2.12 Frequency/Voltage Control



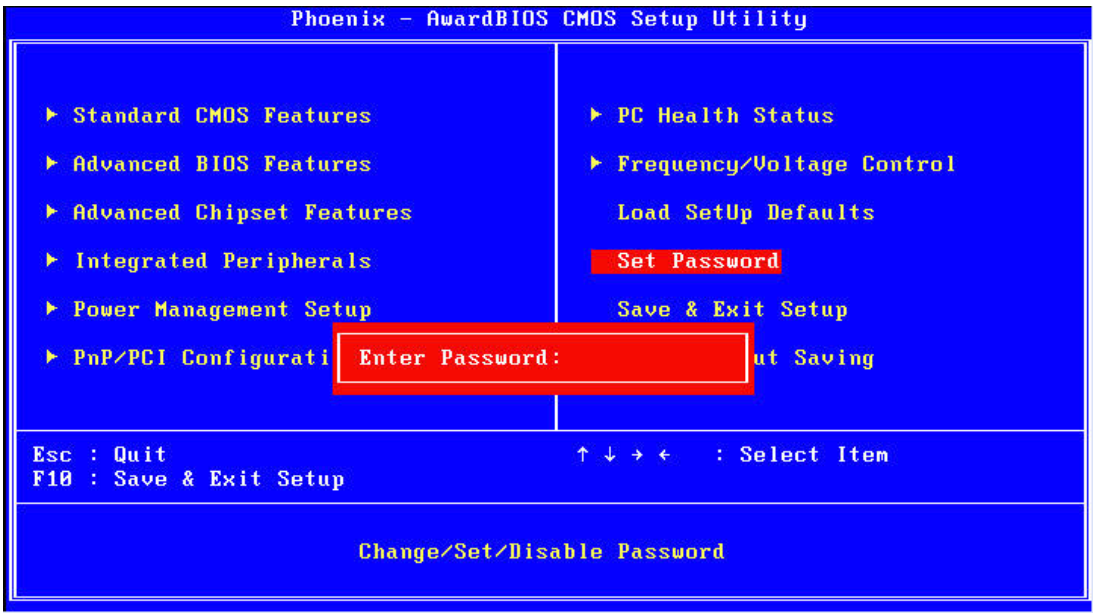
- **Auto Detect PCI Clk [Enabled]**
  This item enables users to set the PCI Clock by system automatic detection or by manual.
- **Spread Spectrum [Disabled]**
  This item enables users to set the spread spectrum modulation.
- **CPU Host/SRC/PCI Clock [Default]**
  This item enables users to set the CPU Host and PCI clock by system automatic detection or by manual.

3.2.13 Load Setup Defaults



Note! *Load Setup Defaults loads the default system values directly from ROM. Useful if the stored record created by the Setup program should ever become corrupted (and therefore unusable).*

3.2.14 Set Password



Note! *To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. "Setup" requires a password only to enter Setup. "System" requires the password either to enter Setup or to boot the system. A password can be at most 8 characters long.*

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the desired password and press <Enter>.
3. At the “Confirm Password” prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

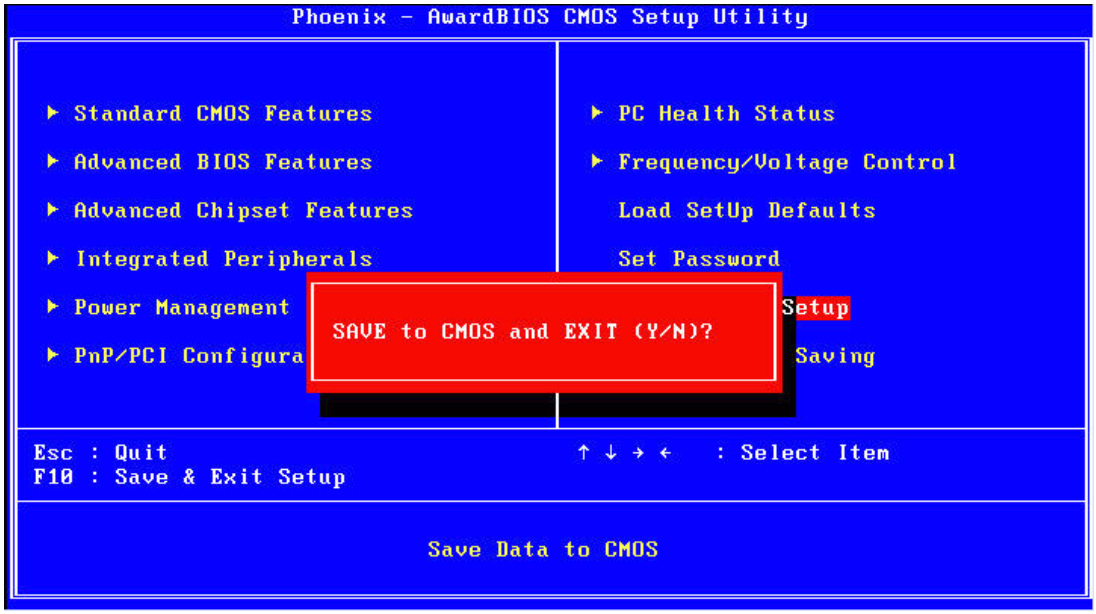
To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the existing password and press <Enter>.
3. You will see “Confirm Password”. Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, enter the new password and press <Enter>.
5. At the “Confirm Password” prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the existing password and press <Enter>.
3. You will see “Confirm Password”. Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, please don’t enter anything; just press <Enter>.
5. At the”Confirm Password” prompt, again, don’t type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

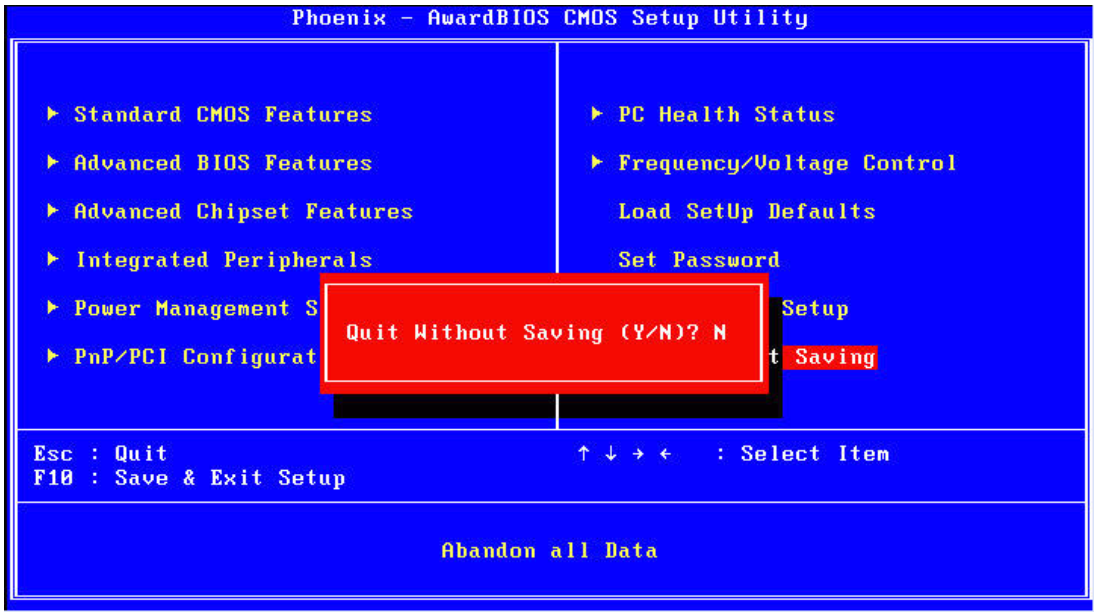
3.2.15 Save & Exit Setup



Note! *Typing "Y" will quit the BIOS Setup Utility and save user setup values to CMOS.*

Typing "N" will return to BIOS Setup Utility.

3.2.16 Quit without Saving



Note! *Typing "Y" will quit the BIOS Setup Utility without saving to CMOS.*

Typing "N" will return to BIOS Setup Utility.

Chapter 4

Chipset Software Installation Utility

4.1 Before You Begin

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the AIMB-210 are located on the software installation CD. The driver in the folder of the driver CD will guide and link you to the utilities and drivers under a Windows system. Updates are provided via Service Packs from Microsoft*.

Note! *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

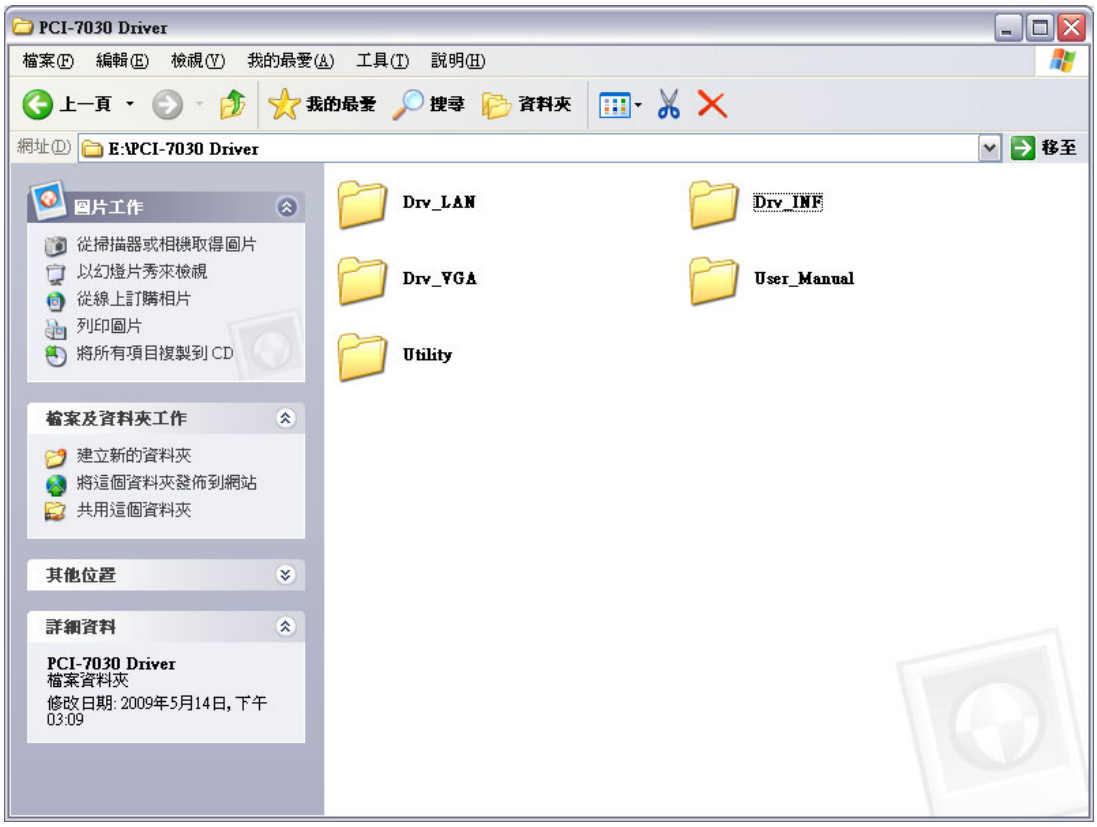
- Core PCI PnP services
- IDE Ultra ATA 100/66/33 and Serial ATA interface support
- USB 1.1/2.0 support (USB 2.0 driver needs to be installed separately for Win98)
- Identification of Intel® chipset components in the Device Manager
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

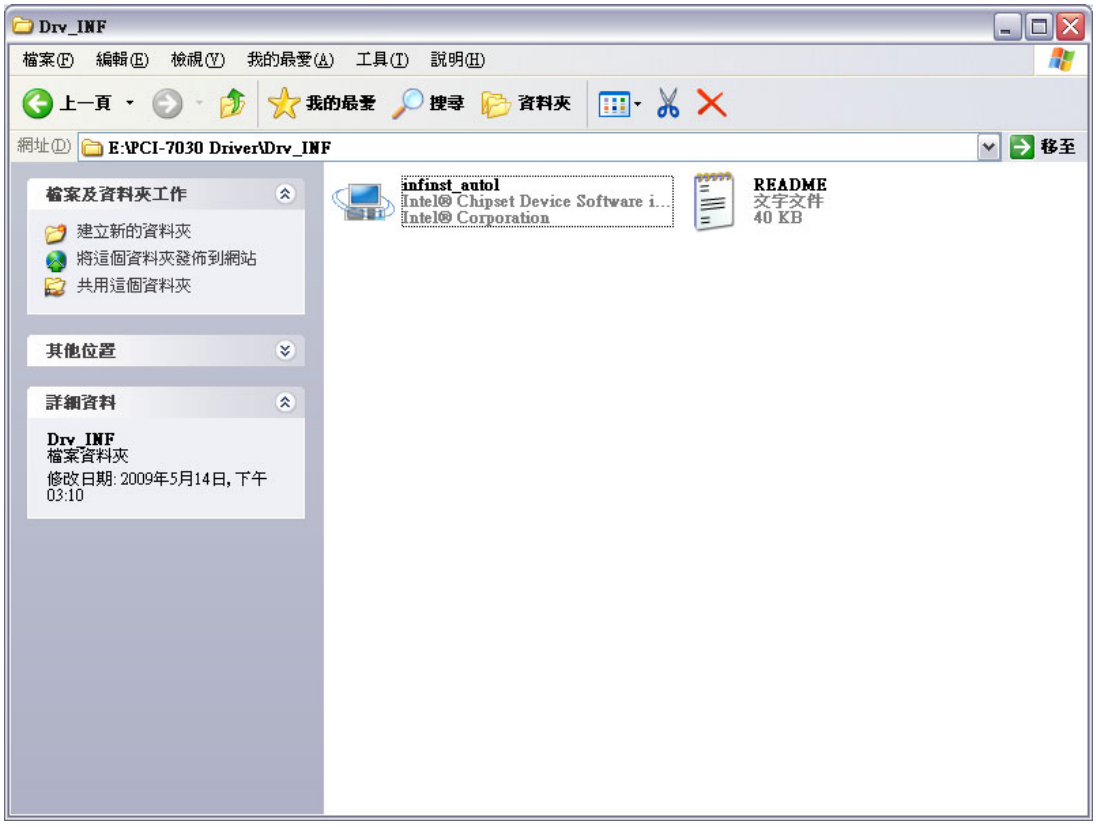
Note! *This utility is used for the following versions of Windows, and it has to be installed **before** installing all the other drivers:*

- *Windows 2000*
- *Windows XP*
- *Windows Vista*

4.3 Windows XP Driver Setup

1. Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "Drv_INF" folder and click "infinst_autol.exe" to complete the installation of the driver.





Chapter 5

VGA Setup

5.1 Introduction

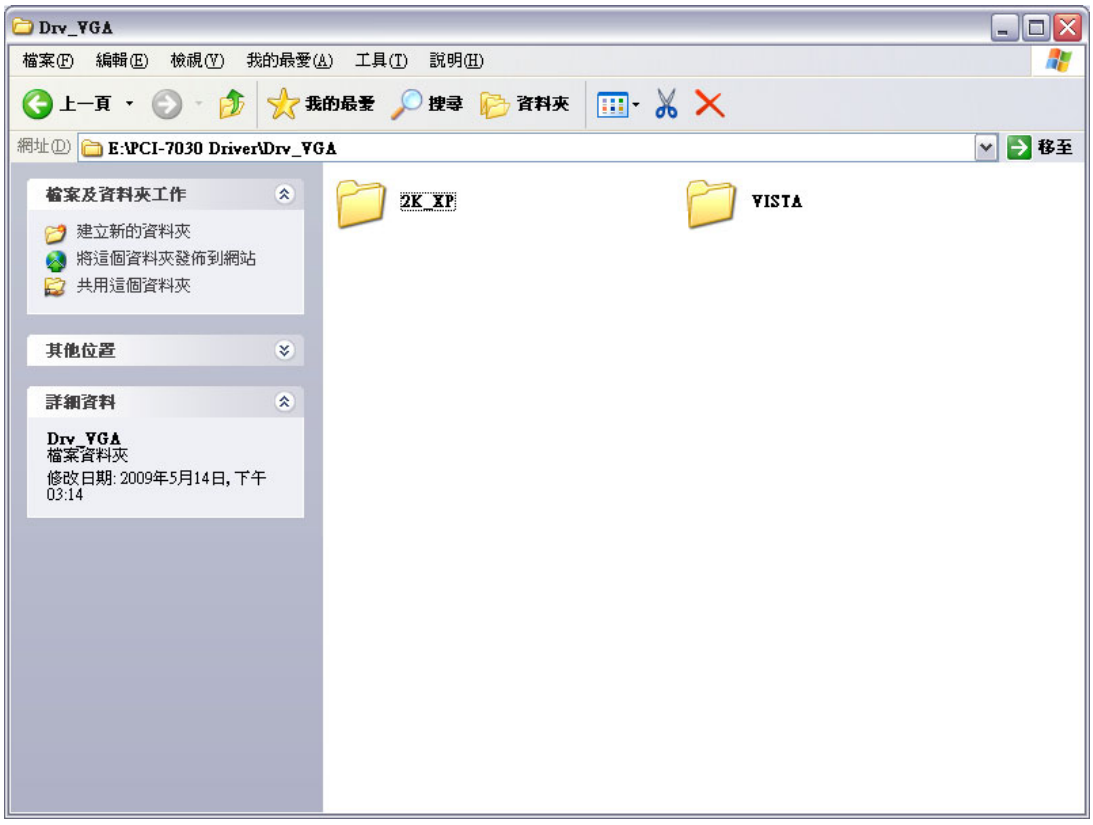
To benefit from the Intel® 945GSE integrated graphics controller, you need to install the VGA driver. The Intel® 945GSE integrated graphics controller includes the following features:

- Intel® Graphics Media Accelerator 950: Incorporating the latest Microsoft® DirectX 9 support capabilities. Dual independent display, enhanced display modes for widescreen flat panels, and optimized 3D support deliver an intense and realistic visual experience without requiring a separate graphics card.

5.2 Windows Vista/XP/2000

Note! *Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 4 for information on installing the CSI utility.*

Insert the driver CD into your system's CD-ROM drive. You can see the driver folders items. Navigate to the "Drv_VGA" folder and click "setup.exe" to complete the installation of the drivers for Vista, Windows XP, and Windows 2000.



Chapter 6

LAN Configuration

6.1 Introduction

The PCI-7030 has a dual Gigabit Ethernet LAN via dedicated PCI Express x 1 bus (Intel82574L), which offers bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet to operate at 1000Mbps.Features

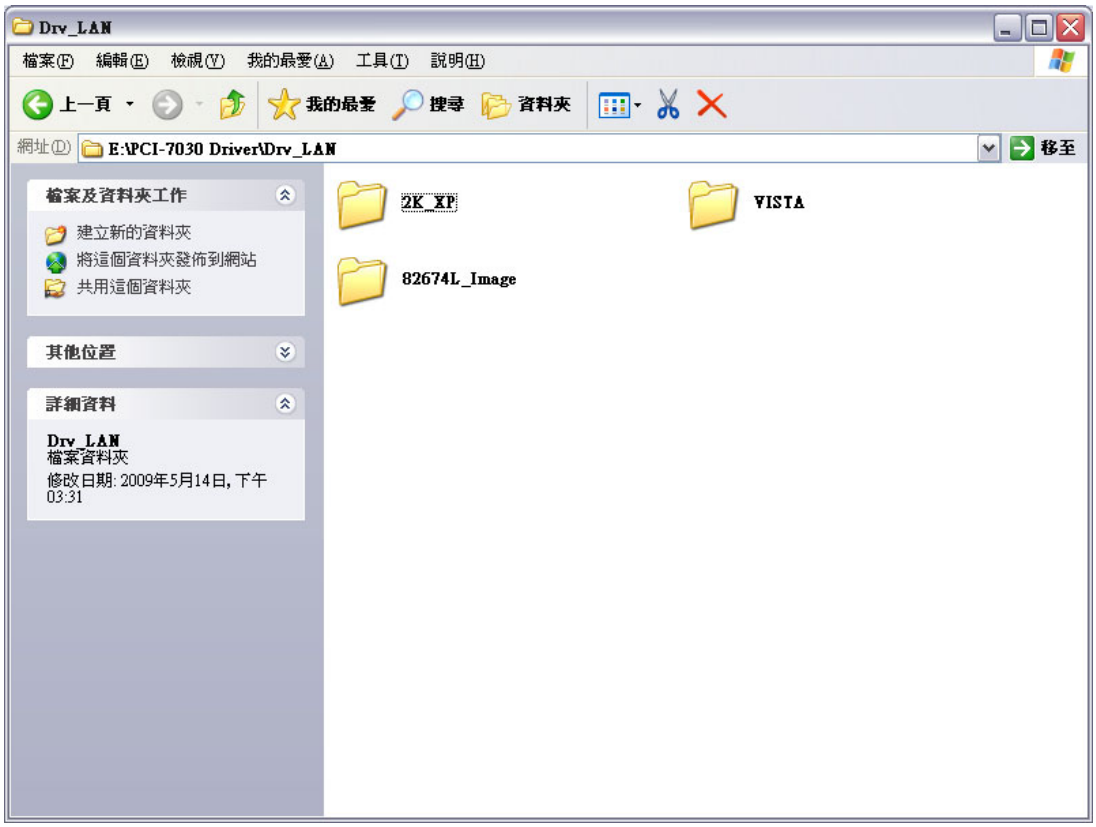
6.2 Installation

Note! *Before installing the LAN drivers, make sure the CSI utility has been installed on your system. See Chapter 4 for information on installing the CSI utility.*

The PCI-7030 Intel82574L Gigabit integrated controller supports all major network operating systems. However, the installation procedure varies with different operating systems. Please find and use the section that provides the driver setup procedure for the operating system you are using.

6.3 Win XP/Vista Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select the Drv_LAN folder then navigate to the directory for your OS.



Appendix A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

The PCI-7030's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1.1 Watchdog Timer Overview

The watchdog timer is built into the super I/O controller IT8718F. It provides the following user-programmable functions:

- Can be enabled and disabled by user program
- Timer can be set from 1 to 65535 seconds or 1 to 65535 minutes
- Generates an interrupt or resets signal if the software fails to reset the timer before time-out

A.1.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. You must first assign the address of register by writing an address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

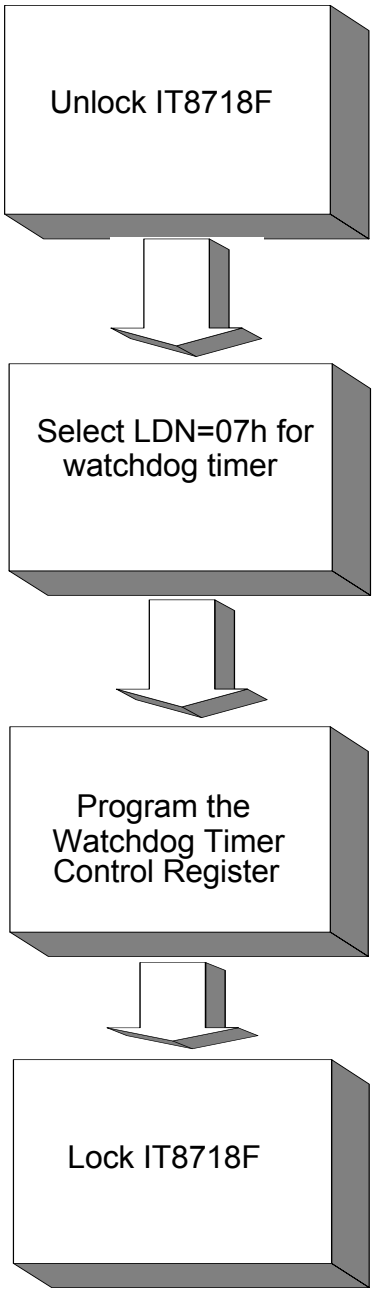

Unlock IT8718F
Select LDN=07h for watchdog timer
Program the Watchdog Timer Control Register
Lock IT8718F

Table A.1: Watchdog Timer Registers		
Address of Register (2E)	Attribute	
Read/Write	Value (2F) & description	
87(hex)/01(hex)/55(hex)/		
9 (hex)/01(hex)/55(hex)/ 55(	-----	Write this value to I/O address port 2E (hex)
55(hex)		to unlock the IT8718F.
07 (hex)	write	Write 07 (hex) to select LDN (Logic Device Number)
		of GPIO Configuration Register
72 (hex)	write	Set seconds or minutes as units for the timer.
		Write 0 to bit 7: set minute as counting unit.
		[default]
		Write 1 to bit 7: set second as counting unit.
73 (hex)	Read/write	Watch Dog Timer-out Value (LSB)
74 (hex)	Read/write	Watch Dog Timer-out Value (MSB)
		74&73 value 01~FFFF (hex): The amount of the count, in seconds
		or minutes, depends on the value set in register 72
		(hex). This number decides how long the watch-
		dog timer waits for strobe before generating an
		interrupt or reset signal. Writing a new value to this
		register can reset the timer to count with the new
AA (hex)	-----	value.
		IT8718F.

A.1.3 Example Program

1. Enable watchdog timer and set 10 sec. as timeout interval

```
;--------------------------------------------------------
mov dx,2eh ; Unlock IT8718F
mov al,87h
out dx,al

mov al,01h
out dx,al

mov al,55h
out dx,al

mov al,55h
out dx,al
;--------------------------------------------------------
mov dx,2eh ; Select LDN of GPIO ConfigurationRegister
mov al,07h
out dx,al
inc dx
mov al,07h
out dx,al
;---- Set second as counting unit ----------------
mov dx,2eh
mov al,72h out dx,al
inc dx
in al,dx
or al,80h
out dx,al
;--------------------------------------------------------
mov dx,2eh ; Set timeout interval as 10 seconds and start counting
mov al,74h out dx,al
inc dx
mov al,00h
out dx,al

mov dx,2eh
mov al,73h
out dx,al
inc dx
mov al, 0Ah
out dx, al
;--------------------------------------------------------
mov dx,2eh ; Lock IT8718F
mov al,0aah
out dx,al
;
```

Appendix B

I/O Pin Assignments

B.1 Front Panel Connectors (JFP1)

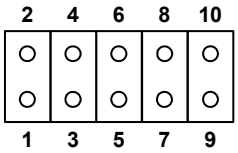


Table B.1: Front Panel Connectors (JFP1)			
Pin	**Signal**	**Pin**	**Signal**
1	HDD LED+	2	HDD LED-
3	Power LED+	4	Power LED-
5	Suspend LED+	6	Suspend LED-
7	System Reset Button	8	GND
9	ATX Power Button	10	GND

B.2 Front Panel Connectors (JFP2)

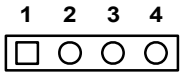


Table B.2: Panel Connectors (JFP2)	
Pin	**Signal**
1	FAN Fail LED +
2	FAN Fail LED -
3	Thermal Fail LED +
4	Thermal Fail LED -

B.3 USB Ports (USB12/USB34)

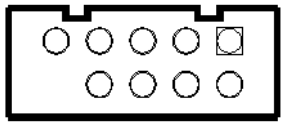


Table B.3: USB Ports (USB12/USB34)			
Pin	**Signal**	**Pin**	**Signal**
1	VCC	2	VCC
3	USB Data1-	4	USB Data2-
5	USB Data1+	6	USB Data2+
7	GND	8	GND
9	GND	10	

B.4 IR Connector (JIR1)

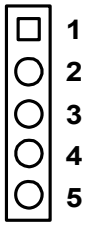


Table B.4: IR Connector (JIR1)	
Pin	**Signal**
1	VCC
2	NC
3	IR_RX
4	GND
5	IR_TX

B.5 Serial Ports (COM12)

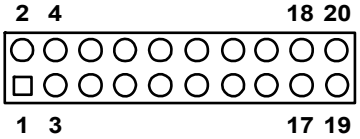


Table B.5: Serial Ports (COM12)			
Pin	**Signal**	**Pin**	**Signal**
1	DCD1	2	DSR1
3	RX1	4	RTS1
5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND	10	GND
11	DCD2	12	DSR2
13	RX2	14	RTS2
15	TX2	16	CTS2
17	DTR2	18	RI2
19	GND	20	GND

B.6 PS/2 Keyboard / Mouse connector (KBMS2)

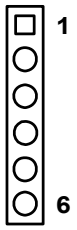


Table B.6: PS/2 Keyboard / Mouse connector (KBMS2)

Pin	Signal
1	PS2 keyboard clock
2	PS2 keyboard data
3	PS2 mouse data
4	GND
5	VCC
6	PS2 mouse clock

B.7 LAN LED connector (LANLED1/LANLED2)

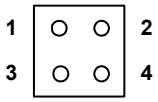


Table B.7: LAN LED connector (LANLED1/LANLED2)

Pin	Signal	Pin	Signal
1	LAN1_LINK/ACTIVITY#	2	LAN1_1000#
3	VCC3	4	LAN1_100#

B.8 ATX Feature connector(ATXF1)

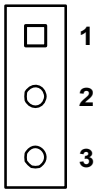


Table B.8: ATX Feature connector(ATXF1)

Pin	Signal
1	5V standby
2	VCC
3	PS_ON#

B.9 CPU FAN connector (CPUFAN1)

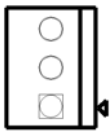


Table B.9: CPU FAN connector (CPUFAN1)	
Pin	**Signal**
1	FAN_PWM
2	+12V
3	FAN_TACH

B.10 System FAN connector (SYSFAN1)

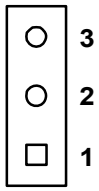


Table B.10: System FAN connector (SYSFAN1)	
Pin	**Signal**
1	FAN_PWM
2	+12V
3	FAN_TACH

B.11 Audio Interface Connector (HDAUD1)

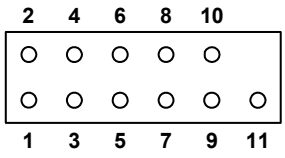


Table B.11: Audio Interface Connector (HDAUD1)			
Pin	**Signal**	**Pin**	**Signal**
1	ACZ_VCC	2	GND
3	ACZ_SYNC	4	ACZ_BITCLK
5	ACZ_SDOUT	6	ACZ_SDIN0
7	ACZ_SDIN1	8	ACZ_RST#
9	ACZ_12V	10	GND
11	GND	12	

B.12 GPIO Header (GPIO1)

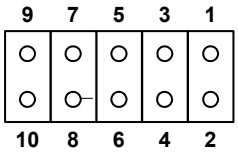


Table B.12: GPIO Header (GPIO1)			
Pin	**Signal**	**Pin**	**Signal**
1	GPIO1	2	GPIO5
3	GPIO2	4	GPIO6
5	GPIO3	6	GPIO7
7	GPIO4	8	GPIO8
9	VCC	10	GND

B.13 DVI LCD panel connector (DVI1)

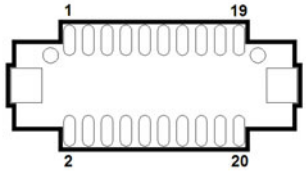


Table B.13: DVI LCD panel connector (DVI1)			
Pin	**Signal**	**Pin**	**Signal**
1	TDC0-	2	VCC
3	TDC0+	4	TLC-
5	GND	6	TLC+
7	TDC1-	8	GND
9	TDC1+	10	SC_DDC
11	GND	12	SD_DDC
13	TDC2-	14	HPDETT
15	TDC2+	16	NC
17	VCC	18	NC
19	NC	20	NC

B.14 LVDS Connector (LVDS1)

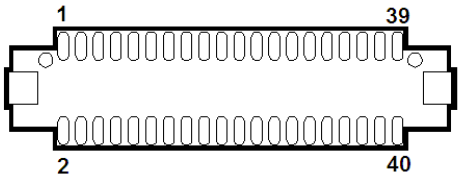


Table B.14: LVDS Connector (LVDS1)

Pin	Signal	Pin	Signal
1	LVDS_VCC	2	LVDS_VCC
3	GND	4	GND
5	LVDS_VCC	6	LVDS_VCC
7	LVDS0_D0-	8	LVDS1_D0-
9	LVDS0_D0+	10	LVDS1_D0+
11	GND	12	GND
13	LVDS0_D1-	14	LVDS1_D1-
15	LVDS0_D1+	16	LVDS1_D1+
17	GND	18	GND
19	LVDS0_D2-	20	LVDS1_D2-
21	LVDS0_D2+	22	LVDS1_D2+
23	GND	24	GND
25	LVDS0_CLK-	26	LVDS1_CLK-
27	LVDS0_CLK+	28	LVDS1_CLK+
29	GND	30	GND
31	LVDS0_DDC_SC	32	LVDS0_DDC_SD
33	GND	34	GND
35	NC	36	NC
37	NC	38	NC
39	NC	40	NC

B.15 LCD Inverter Connector (INV1)

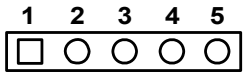


Table B.15: LCD Inverter Connector (INV1)

Pin	Signal
1	+12V
2	GND
3	BACK_ON#
4	Brightness
5	VCC

B.16 SM Bus Connector (SMBUS1)

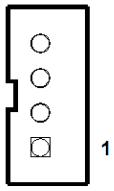


Table B.16: SM Bus Connector (SMBUS1)

Pin	Signal
1	VCC
2	SMBUS CLK
3	SMBUS Data
4	GND

B.17 Low Pin Count Header (LPC1)

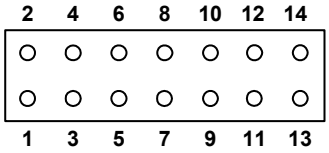


Table B.17: Low Pin Count Header (LPC1)

Pin	Signal	Pin	Signal
1	LPC_CLK	2	LPC_LAD1
3	LPC_RST#	4	LPC_LAD0
5	LPC_FRAME#	6	+3.3V
7	LPC_LAD3	8	GND
9	LPC_LAD2	10	NC
11	SERIRQ	12	PWROK
13	5V Standby	14	+5V

B.18 ATX power control connector (ATX1)

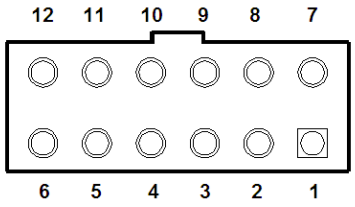


Table B.18: ATX power control connector (ATX1)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	7	GND
2	+5V	8	GND
3	+5V	9	5V Standby
4	GND	10	PSON#
5	+5V	11	GND
6	+5V	12	+12V

B.19 VGA Connector (VGA1)

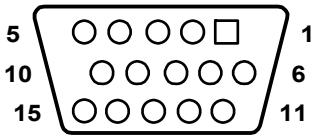


Table B.19: VGA Connector (VGA1)			
Pin	**Signal**	**Pin**	**Signal**
1	RED	9	CRT_VCCIN
2	VGA_G	10	GND
3	VGA_B	11	N/C
4	N/C	12	V_SDAT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	V_SCLK

Appendix C

System Assignments

C.1 System I/O Ports

Table C.1: System I/O Ports

Addr. range (Hex)	Device
000-01F	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
278-27F	Parallel printer port 2 (LPT3)
290-297	On-board hardware monitor
2F8-2FF	Serial port 2
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Graphics adapter
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1
CA0-CA7	Serial port 3
CA8-CAF	Serial port 4
CB0-CB7	Serial port 5
CB8-CBF	Serial port 6
C80-C87	Serial port 7
C88-C8F	Serial port 8
C90-C97	Serial port 9
C98-C9F	Serial port 10

C.2 DMA Channel Assignments

Table C.2: DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

C.3 Interrupt Assignments

Table C.3: Interrupt Assignments

Priority	Interrupt#	Interrupt source
1	NMI	Parity error detected
2	IRQ0	Interval timer
3	IRQ1	Keyboard
-	IRQ2	Interrupt from controller 2 (cascade)
4	IRQ8	Real-time clock
5	IRQ9	Cascaded to INT 0A (IRQ 2)
6	IRQ10	Serial communication port 3/4/5/6
7	IRQ11	Serial communication port 7/8/9/10
8	IRQ12	PS/2 mouse
9	IRQ13	INT from co-processor
10	IRQ14	Primary IDE Channel
11	IRQ15	Secondary IDE Channel
12	IRQ3	Serial communication port 2
13	IRQ4	Serial communication port 1
14	IRQ5	Available
15	IRQ6	Available
16	IRQ7	Parallel port 1 (print port)

C.4 1st MB Memory Map

Table C.4: 1st MB Memory Map

Addr. range (Hex)	Device
E0000h - FFFFFh	BIOS
D0000h - DFFFFh	Unused
C0000h - CFFFFh	VGA BIOS
A0000h - BFFFFh	Video Memory
00000h - 9FFFFh	Base memory

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