SBC-375

Socket 370 Single Board Computer with Celeron® and Pentium® III Processor

 Printed in the United States of America

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A	Manual Released	2/04
B	USB port information corrected	10/04
C	Name change, correct where applicable with document	4/07

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Chapter 1 Introduction

The SBC-375 board is a PICMG form factor board. It comes with either a high performance Pentium® III, or economical Celeron Processor along with the Intel advanced 815E chipset.

The SBC-375 provides on chip VGA that provides up to 1600x1200 resolution. The video memory shares a portion of the system's main memory. An advanced high performance super AT I/O chip – ITE IT8712 is used in the SBC-375 board, providing two serial ports compatible with the NS16C550. The parallel port and IDE interface are IBM PC/AT compatible.

The SBC-375 uses the Intel 82801BA integrated LAN controller, a fully integrated 10/100BASE-TX, LAN solution with high performance networking functions and Alert-on-LAN features. The board supports up to 133MHz FSB CPU and 133MHz SDRAM memory modules.

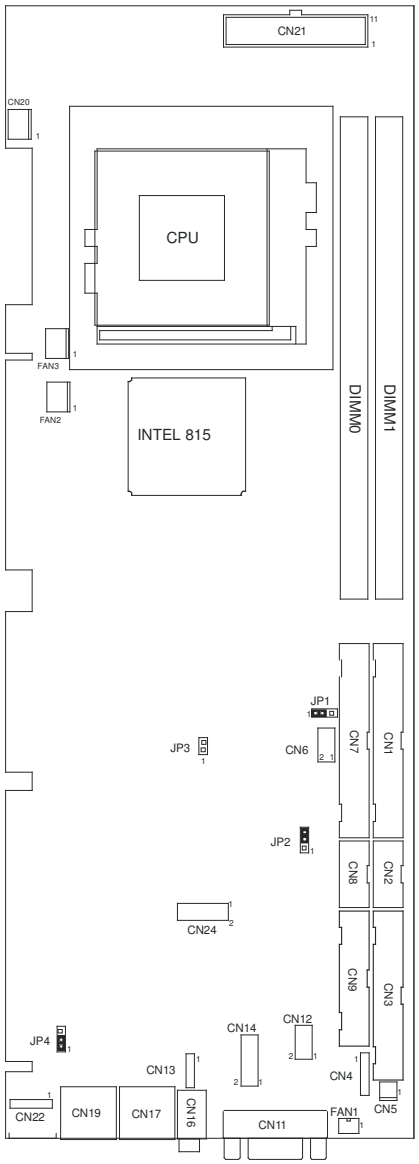
Specifications:

CPU	Supports socket 370 bases CPU such as • Celeron® Processor, 700MHz –1.2GHz or above • Pentium® III(FC-PGA) Processor, 1.26GHz or above
DMA Channels	7
Interrupt Levels	15
Chipset	Intel 815E
RAM Memory	Provide two 168 pin DIMM socket, maximum memory capability up to 512MB/133MHz.
Ultra ATA/33/66/100 IDE Interface	Two PCI Enhanced IDE channels. The south bridge ICH2 supports Ultra ATA/33/66/100 IDE interface. To support Ultra ATA66/100 Hard disk, a specific cable must be available.
Floppy Disk Drive Interface	Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
Serial Ports	Two high-speed 16C550 UART compatible ports
Parallel Port	One IEEE1284 compatible Bi-directional ports
USB Port	Support two USB 1.1 compatible ports.
Audio	Onboard AC'97Codec that supports two channel Left/Right Line IN/OUT, and Left/Right speaker out, MIC IN, CD IN.
Watchdog Timer	Time setting form 1 second to 255 second System Reset generate when CPU did not periodically trigger the timer.
VGA Controller	Embedded VGA controller the enables screen resolution up to 1600x1200 in 256 Colors at 85Hz Refresh.
Intel 82801BA embedded LAN Controller	• IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. • Fast back-to-back transmission support with minimum interframe spacing. Connected to user's LAN through RJ45 connector.
Keyboard Controller	8042 compatible for keyboard and PS/2 mouse

Chapter 2 SBC-375 Connectors and Jumpers

This chapter shows connector and jumper locations and pinouts for the SBC-375. It describes how to connect peripherals, switches, and indicators to the SBC-375 board. The board is configured for best performance at Pro-face. Changes should only be attempted by qualified technicians.

SBC-375 Layout



Floppy Disk Drive Connector

SBC-375 board equipped with a 34-pin daisy-chain driver connector cable.

- ***CN3: FDC CONNECTOR***

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

Ultra ATA33/66/100 IDE Disk Drive Connector

The user can attach two IDE (Integrated Device Electronics) hard drives to the SBC-375 IDE controller.

- ***CN1 (IDE 1): Primary IDE Connector***
- ***CN7 (IDE 2): Secondary IDE Connector***

PIN	DESCRIPTION
1	RESET#
3	DATA 7
5	DATA 6
7	DATA 5
9	DATA 4
11	DATA 3
13	DATA 2
15	DATA 1
17	DATA 0
19	GROUND
21	N/C
23	IOW#
25	IOR#
27	N/C
29	N/C
31	INTERRUPT
33	SA1
35	SA0
37	HDC CS0#
39	HDD ACTIVE#

PIN	DESCRIPTION
2	GROUND
4	DATA 8
6	DATA 9
8	DATA 10
10	DATA 11
12	DATA 12
14	DATA 13
16	DATA 14
18	DATA 15
20	N/C
22	GROUND
24	GROUND
26	GROUND
28	BALE - DEFAULT
30	GROUND - DEFAULT
32	IOCS16#-DEFAULT
34	N/C
36	SA2
38	HDC CS1#
40	GROUND

Parallel Port

This port is usually connected to a printer, The SBC-375's on-board parallel port is accessed through a 26-pin flat-cable connector CN9. Three modes are supported: SPP, EPP, and ECP.

- ***CN9: Parallel Port Connector***

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

Serial Ports

The SBC-375 offers two high speed NS16C550 compatible serial ports with Read/Receive 16 byte FIFO serial ports.

- ***CN2: COM1 10-pin Connector***

PIN	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD)
2	RECEIVE DATA	(RXD)
3	TRANSMIT DATA	(TXD)
4	DATA TERMINAL READY	(DTR)
5	GROUND	
6	DATA SET READY	(DSR)
7	REQUEST TO SEND	(RTS)
8	CLEAR TO SEND	(CTS)
9	RING INDICATOR	(RI)
10	NC	

- ***CN8: COM2 10-pin Connector***

PIN	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD)
2	RECEIVE DATA	(RXD)
3	TRANSMIT DATA	(TXD)
4	DATA TERMINAL READY	(DTR)
5	GROUND	
6	DATA SET READY	(DSR)
7	REQUEST TO SEND	(RTS)
8	CLEAR TO SEND	(CTS)
9	RING INDICATOR	(RI)
10	NC	

Keyboard Connector

The SBC-375 provides 5-PIN Header and 6-PIN keyboard/mouse connector.

- ***CN23: 6-pin Keyboard/Mouse Connector***

PIN	DESCRIPTION
1	+5V
2	MOUSE DATA
3	MOUSE CLOCK
4	KEYBOARD DATA
5	KEYBOARD CLOCK
6	GROUND

- ***CN22: 5-pin Keyboard Connector***

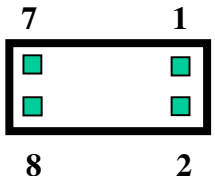
PIN	DESCRIPTION
1	KEYBOARD CLK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	+5V

USB Port Connector

The SBC-375 provides Two USB port.

CN6:

1	VCC
2	GROUND
3	DATA-
4	DATA+
5	DATA+
6	DATA-
7	GROUND
8	VCC

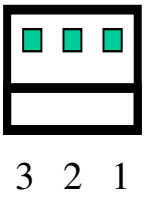


Fan Connector

The SBC-375/ EVG provides CPU cooling fan connector. CPU connectors can supply 12V/500mA of power to the cooling fan. The Fan's rotation is in full speed.

- ***FAN2/FAN3: CPU Fan Connector***

PIN	DESCRIPTION
3	Sensor
2	12V
1	Ground



LAN RJ45 Connector

SBC-375 is equipped with a 10/100Mbps Ethernet Controller. The user can connect it to LAN through RJ45 LAN connector. The pin assignments are shown in the following table:

- ***CN17: LAN RJ45 Connector***

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX+	5	N/C
2	TX-	6	RX-
3	RX+	7	N/C
4	N/C	8	N/C

- ***CN12: LAN LED Connector***

1	100ACT+	2	100ACT-
3	100LINK+	4	100LINK-

VGA Connector

SBC-375 built-in 15-pin VGA connector directly to user's CRT monitor.

- ***CN11: 15-pin Female Connector***

1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Audio Connectors

The AC'97 compliant CODEC support several audio functions. The connector is described as below.

- ***CN14: AUDIO CONNECTOR***

1	LEFT SPEAKER OUT SIGNAL (WITH OP AMPLIFIER)
2	RIGHT SPEAKER OUT SIGNAL (WITH OP AMPLIFIER)
3	GROUND(FOR SPK CONNECTOR)
4	GROUND(FOR LINE OUT CONNECTOR)
5	LEFT LINE OUT SIGNAL
6	RIGHT LINE OUT SIGNAL
7	LEFT LINE IN SIGNAL
8	RIGHT LINE IN SIGNAL
9	GROUND(FOR LINE IN CONNECTOR)
10	GROUND(NO USE)
11	MIC IN
12	GROUND(FOR MIC IN CONNECTOR)

- ***CN13: CD-IN***

1	CD LEFT SIGNAL
2	GROUND
3	GROUND
4	CD RIGHT SIGNAL

- ***CN16: Left/Right Audio Line Output Connector for Headphone***

1	GROUND
2	LEFT SIGNAL (SPK LEFT)
3	NC
4	RIGHT SIGNAL (SPK RIGHT)
5	NC

External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN24 connector.

- ***CN24: Multi Panel***

PIN	DESCRIPTION
1	POWER-LED +
3	N/C
5	POWER-LED -
7	N/C
9	HDD LED +
11	HDD LED -

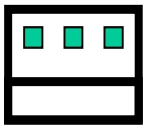
PIN	DESCRIPTION
2	SPEAKER -
4	N/C
6	N/C
8	SPEAKER +5V
10	RESET SW
12	RESET SW GND

- ***CN5 : ATX Power Switch Connector***

PIN	DESCRIPTION
1	PWR_BUTTON+
2	Ground

- ***CN20: ATX Power +5VSB and PSON# Connector***

PIN	DESCRIPTION
3	Ground
2	PSON#
1	+5VSB



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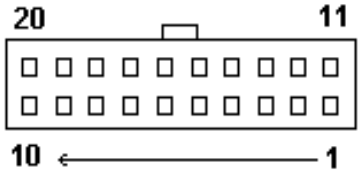
ATX Power Connector

The SBC-375 can work without a backplane, when attached to external power through the following ATX power connector.

- ***CN21: ATX Power Supply Connector***



CN21 is a 20-pin ATX Power Supply Connector. Please refer to the following table for the pin assignments.

PIN	DESCRIPTION	PIN NO.	DESCRIPTION
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PSON#	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	Power good
19	+5V	9	+5VSB
20	+5V	10	+12V

Clear CMOS Setup

If the user wants to clear the CMOS Setup(for example forgot the password, the user should clear the original setup and reset the password), the user should close JP1 for about 3 seconds, then open it. To set back to normal operation mode, please open JP1.

- ***JP1: Clear CMOS Setup***

JP1	DESCRIPTION
1-2	Keep CMOS Setup (Normal Operation)
2-3	Clear CMOS Setup

BIOS Protection Setting

To protect the bios from writing, place the cap on the location 2-3.

- ***JP2: Flash Protection Setting***

JP2	DESCRIPTION
2-3	Locked
1-2	Unlocked

Keyboard Power Selection

- ***JP4: Keyboard Power Selection***

JP4	DESCRIPTION
1-2	VCC
2-3	5VSB

Compact Flash Card Master/Slave Mode Setting

- **JP3: Master/Slave Mode Setting**

JP3	DESCRIPTION
OPEN	SLAVE
SHORT	MASTER

Chapter 3 Award BIOS Setup

Introduction

This chapter discusses the Setup program built into the BIOS. The Setup program allows users to configure the system. This configuration is then stored in battery-backed CMOS RAM so that it retains the Setup information when the power has been turned off.

Starting Setup

The BIOS is immediately active when the user turn on the computer. While the BIOS is in control, the Setup program can be activated in one of following two ways:

By pressing <Del> immediately after switching on the system, or

By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

If the message disappears before the user can respond to it and the user still wishes to enter the BIOS Setup Menu, please restart the system by turning off the power momentarily then turn it back on or by pressing the "RESET" button on the system case. The user may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If the user does not press these keys at the right timing and the system does not boot, an error message will be displayed and the user will again be prompted to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Using Setup

In general, the user can use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more details on how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp Key	Increase the numeric value or make changes
PgDn Key	Decrease the numeric value or make changes
+ Key	Increase the numeric value or make changes
- Key	Decrease the numeric value or make changes
Esc Key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 Key	General help on Setup navigation keys
F5 Key	Load previous values from CMOS
F6 Key	Load the fail-safe defaults from BIOS default table
F7 Key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

Main Menu

Once the user enters the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows the user to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software	
Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations Frequency/Voltage Control	Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
Esc : Quit ↑↓←→ : Select Item F10 : Save & Exit Setup	
Time, Date, Hard Disk Type….	

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Please note that some systems may not include all of the following entries.

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the Advanced Features available on the system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to specify user's settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if the system supports PnP / PCI. See section 4.10 for the details.

Frequency/Voltage Control

Use this menu to specify settings for frequency/voltage control. See section 4.11 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for the system to operate. See section 4.12 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 4.12 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.13 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.14 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.14 for the details.

Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value wanted in each item.

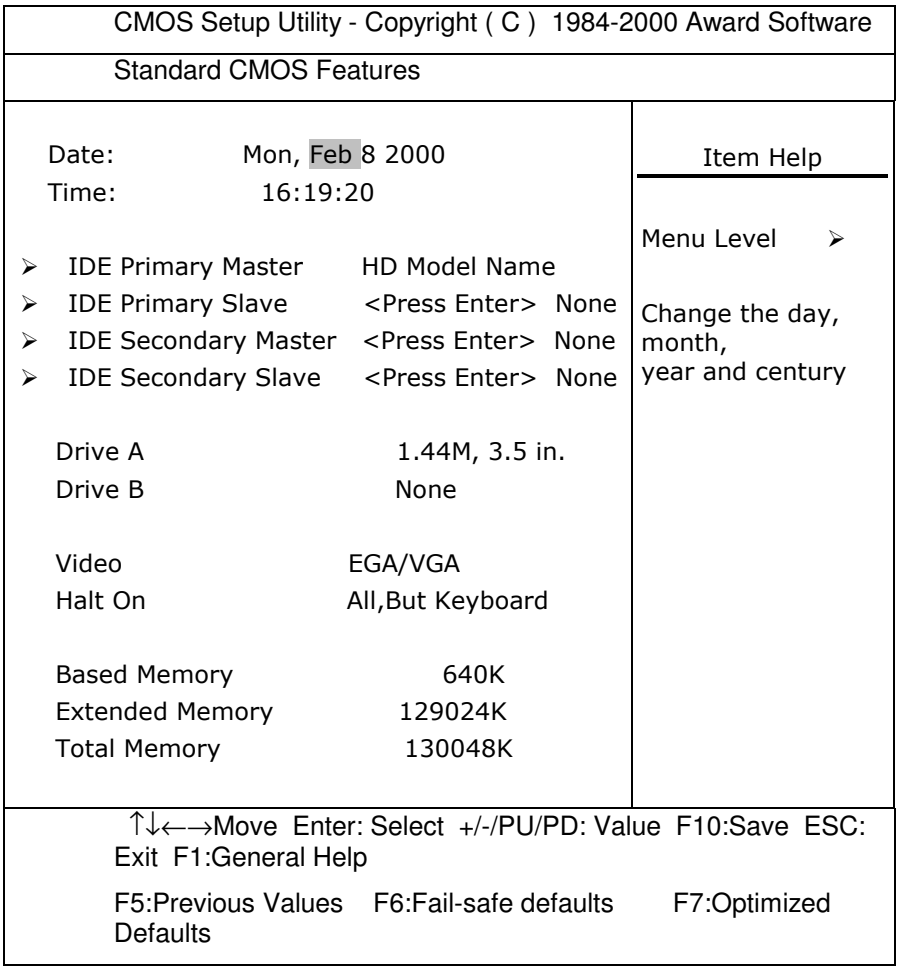


Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 2 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

CMOS Setup Utility – Copyright © 1984-2000 Award Software		
IDE Primary Master		
IDE HDD Auto-Detection	Press Enter	Item Help
		Menu Level ➢➢
IDE Primary Master	Auto	
Access Mode	Auto	
Capacity	15362 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	29765	
Head	16	
Precomp	0	
Landing Zone	29764	
Sector	63	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Select 'manual' to set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 3 Hard disk selections

Advanced BIOS Features

This section allows the user to configure the system for basic operation. The user can set and select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

MOS Setup Utility – Copyright © 1984 – 2000 Award Software		
Advanced BIOS Features		
Virus Warning	Disabled	Item Help
Enabled		
CPU Internal Cache	Enabled	Menu Level ➢
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Process Number feature	Enabled	
Quick Power On Self Test	Disabled	
First Boot device	Floppy	
Second Boot device	HDD-0	
Third Boot device	LS120	
Boot other device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Virus Warning

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

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

CPU Internal Cache/External Cache

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

The Choice: Enabled, Disabled.

CPU L2 Cache ECC Checking

This item allows the user to enable/disable CPU L2 Cache ECC checking.

The Choice: Enabled, Disabled.

Processor Number Feature

This item allows the user to enable/disable support KLAMATH.

The Choice: Enabled, Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after the user power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

The Choice: Enabled, Disabled.

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, the user can swap the logical drive name assignments.

The Choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The Choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The Choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

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

The Choice: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

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

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The Choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when the user enters setup menu.

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

Note: To disable security, select PASSWORD SETTING at Main Menu and then the user will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and any user can enter Setup Menu freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The Choice: Non-OS2, OS2.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not. Choose: Yes or No.

Advanced Chipset Features

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software		
Advanced Chipset Features		
SDRAM CAS Latency Time	3	Item Help
SDRAM Cycle Time Tras/Trc	7/9	_____
SDRAM RAS-to-CAS Delay	3	Menu Level ➢
SDRAM RAS Precharge Time	3	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	
CPU Latency Timer	Disabled	
Delay Transaction	Enabled	
AGP Graphics Aperture Size	64MB	
Use VGA BIOS In VBU Block	Enabled	
On-Chip Video Window Size	64MB	
Output Device Priority	CRT/FP/TV	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

This section allows the user to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data has been lost. Such a scenario may occur if the system had mixed speed DRAM chips installed so greater delays may be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3.

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

System BIOS Cacheable

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

The Choice: Enabled, Disabled.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choice: Enabled, Disabled.

CPU Latency Timer

Enabled :CPU cycle will only be Deferred after in has been in a “Snoop Stall” for 31 clocks and another ADS# has arrived.

Disabled:CPU cycle will only be Deferred immediately after the GMCH receives another ADS#.

The Choice: Enabled, Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.

The Choice: Enabled, Disabled.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use.

The Choice: 32MB, 64MB, Disabled.

Integrated Peripherals

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software		
Integrated Peripherals		
On-Chip Primary PCI IDE	Enabled	Item Help
On-Chip Secondary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	Menu Level ➢
IDE Primary Slave PIO	Auto	If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
USB Controller	Disabled	
USB Keyboard Support	Disabled	
AC97 Audio	Auto	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
Watch Timer Unit Select	Second	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

There are some item in bottom of scroll.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

The Choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

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

The Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

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

The Choice: Auto, Disabled.

USB Controller

Select *Enabled* if the system contains a Universal Serial Bus (USB) controller as well as the presence of USB peripherals.

The Choice: Enabled, Disabled.

USB Keyboard Support

Select *Enabled* if the system contains a Universal Serial Bus (USB) controller as well as the presence of a USB keyboard.

The Choice: Enabled, Disabled.

AC97 Audio

This item allows the user to decide to enable/disable the 810E chipset family to support AC97 Audio.

The Choice: Auto, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If user's IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The Choice: Enabled, Disabled.

Onboard FDC Controller

Select Enabled if the system has a floppy disk controller (FDC) installed on the system board and the user wishes to use it. If the user install and-in FDC or the system that has no floppy drive, please select Disabled in this field.

The Choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

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

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

UART Mode Select

Select a serial port 2 operation mode.

The Choice: Normal, IrDA, ASKIR, SCR.

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Select a parallel operation mode.

The Choice: SPP, EPP, ECP,ECP+EPP.

Watchdog Timer Unit Select

Select the WatchDog Timer unit.

The Choice: Second, Minute.

Power Management Setup

The Power Management Setup allows the user to configure the system to the most efficient energy saving mode while operating in a user defined system environment.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software		
Power Management Setup		
Power Management	User Define	Item Help
Video Off Method	DPMS	_____
Video Off In Suspend	Yes	Menu Level ➢
Suspend Type	Stop Grant	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD,COM,LPT Port	Disabled	
PCI, PIRQ[A-D]#	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

HDD Power Down

Doze Mode

Suspend Mode

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

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

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

Video Off In Suspend

This determines the manner in which the monitor will go blank.

The Choice: Yes, No.

SuspendType

Select the Suspend Type.

The Choice: PWRON Suspend, Stop Grant.

Suspend Mode

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

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

HDD Power Down

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

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

PM EVENTS

PM 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 in a device when configured *Enabled*, even when the system is in a power down mode.

Primary IDE 0

Primary IDE 1

Secondary IDE 0

Secondary IDE 1

FDD, COM, LPT Port

PCI PIRQ[A-D] #

PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

CMOS Setup Utility – Copyright © 1984-2000 Award Software		
PnP/PCI Configurations		
Reset Configuration Data	Disabled	Item Help ----------
Resources Controlled By	Auto(ESCD)	Menu Level ➢
x IRQ Resources	Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data(ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Reset Configuration Data

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 and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The Choice: Enabled, Disabled .

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot as well as Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").

The Choice: Auto(ESCD), Manual.

IRQ Resources

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

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

The Choice: Enabled, Disabled.

Frequency/Voltage Control

CMOS Setup Utility – Copyright © 1984-2000 Award Software		
Frequency/Voltage Control		
Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	----------
CPU Host/PCI Clock	133/33MHz	Menu Level ➢
CPU Clock Ratio	X 4	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The Choice: Enabled, Disabled.

Spread Spectrum

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

The Choice: Enabled, Disabled.

CPU Host / PCI Clock

This item allows you to select CPU Host and PCI clock.

The Choice: Default,130/33,133/33,137/34,140/35,145/36,150/38(M)

CPU Clock Ratio

This item allows you to select CPU clock ratio.

The Choice: 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8,8.5,9,9.5,10,10.5,11,11.5,12.

Defaults Menu

Selecting “Defaults” from the main menu shows you two options which are described below

Load Fail-Safe Defaults

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

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

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

Load Optimized Defaults

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

Load Optimized Defaults (Y/N) ? N

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

Supervisor/User Password Setting

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

Supervisor Password: Users with is password can enter Setup Menu as well as settings.

User Password: Users with this password can only enter the Setup Menu but do not have the right to change any setting. When you select this function, the following message will appear at the center of the screen to guide you in creating a password.

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

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

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

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

Exit Selecting

- **Save & Exit Setup**

  Pressing <Enter> on this item asks for confirmation:

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

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

- **Exit Without Saving**

  Pressing <Enter> on this item asks for confirmation:

  Quit without saving (Y/N)? Y

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

Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH	
Sub-function:	
AL – 2:	Set the Watchdog Timer's period
BL:	Time-out value(Its unit--second or minute, is ependent on the item "Watchdog Timer unit select" in CMOS setup).

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

Note: when exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example Program:

```
;
; INITIAL TIMER PERIOD COUNTER
W_LOOP:
    MOV   AX, 6F02H        ;setting the time-out value
    MOV   BL, 30           ;time-out value is 48 seconds
    INT   15H
 ;
; ADD YOUR APPLICATION PROGRAM HERE
    CMP   EXIT_AP, 1       ;is your application over?
    JNE   W_LOOP           ;No, restart your application
    MOV   AX, 6F02H        ;disable Watchdog Timer
    MOV   BL, 0            ;
    INT   15H
;
; EXIT
```

Appendix B. Address Mapping

I/O Address Map

I/O address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 timer
060-06F	8042 (Keyboard Controller)
070-07F	Real time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F2	Core logic programming configuration
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2 (LPT3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT2)
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	AC'97 CODEC
IRQ3	COM2	IRQ11	Intel 82562ET LAN
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

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

Appendix C. ATX Power Supply

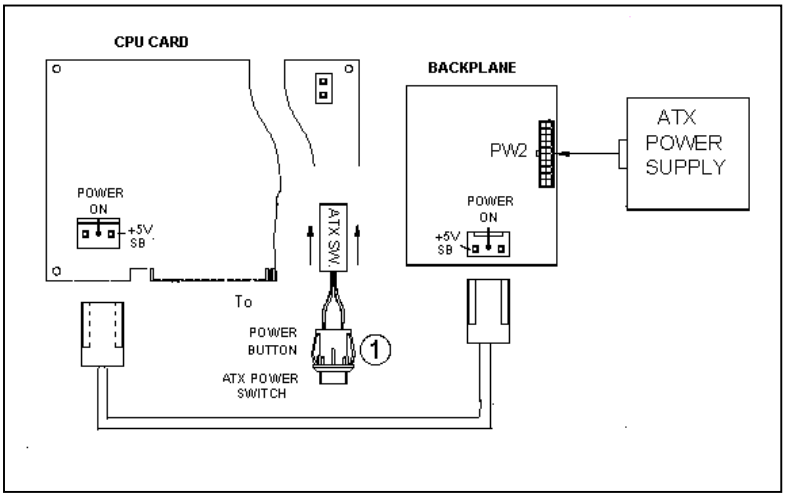
The following notes show how to connect ATX Power Supply to the backplanes and / or the ISBC card.

For backplanes with ATX Connector

Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.

Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

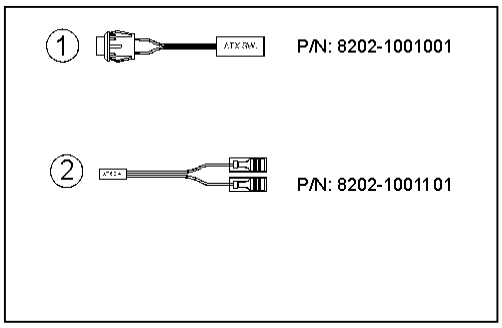
SBC-375 (through Power Button & GND):



Connect the ATX power button switch to the CN5 (power button). And connect the power cable from Backplane to CN20 of CPU card.

If you want to turn ON the system, just press the button once.

And if you want to turn off the power supply, please press the ATX power switch button for about 4 seconds.

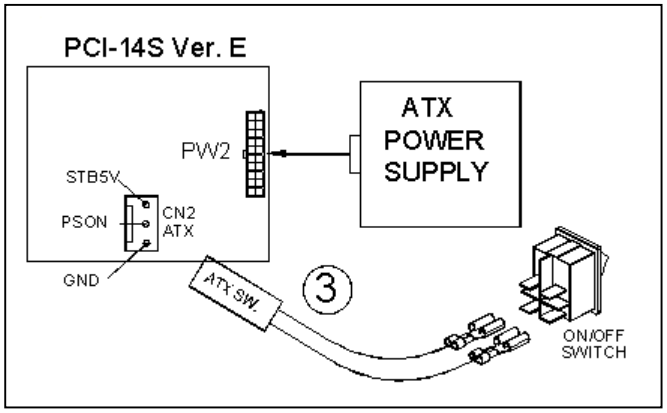


A. For the backplanes with ATX power supply connector

For some SBC without ATX power ON/OFF function, then you can control the ATX power supply through backplane's PS ON connector. Refer to the figure below for the backplanes with ATX connector. The connection can be made simply by following the two steps listed below:

Connect the ON/OFF (ordinary one) switch to Pin 2 (PS ON) and Pin 3 (GND) of connector CN2

You may now turn the power ON/OFF by pressing the power switch

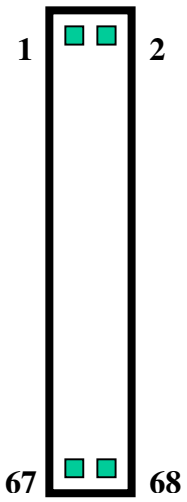


Appendix D. PCI Special Extension Connector

SBC-375 is equipped with one special PCI connector for extension.

- ***CN18 : Special Extension PCI Connector***

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC5	2	AD0
3	AD1	4	AD2
5	AD3	6	AD4
7	AD5	8	AD6
9	AD7	10	GND
11	VCC5	12	AD8
13	AD9	14	AD10
15	AD11	16	AD12
17	AD13	18	AD14
19	AD15	20	GND
21	VCC5	22	AD16
23	AD17	24	AD18
25	AD19	26	AD20
27	AD21	28	AD22
29	AD23	30	GND
31	VCC5	32	AD24
33	AD25	34	AD26
35	AD27	36	AD28
37	AD29	38	AD30
39	AD31	40	GND
41	VCC5	42	C/BE#0
43	C/BE#1	44	C/BE#2
45	C/BE#3	46	PAR
47	FRAME#	48	TRDY#
49	IRDY#	50	GND
51	VCC5	52	STOP#
53	DEVSEL#	54	PERR#
55	SERR#	56	PREQ#
57	GNT#	58	IDSEL
59	GND	60	GND
61	PCLK	62	N/C
63	RESET	64	LOCK#
65	INTA#	66	INTB#
67	INTC#	68	INTD#



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