User's Manual

3302430

Warning

Internal components contain very delicate Integrated Circuits (IC). To protect your system against damage form static electricity, you should always follow the following precautions when handling it :

1. Disconnect your system from the power source when you want to work on the inside

2. Hold the parts by their edges and try not to touch the IC chips, leads or circuitry

3. Use a grounded wrist strap when handling computer components.

4. Place components on a grounded antistatic pad whenever components are separated from the system

5. FCC - 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 interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

6. EC Declaration of Conformity - This device complies with EC Directive 89/336/EEC and 73/23/ECC for a digital device. It has been tested and found to comply with EN55022 Class A, EN61000-3-2, EN61000-3-3, EN55024 and EN60950. This is a Class A product. In a demestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Table of Contents

Introduction

The SBC is based on Intel 845GV chipset that combines DDR 266/200 MHz FSB, with ATA IDE up to UltraDMA/100 IDE technologies and integrated VGA feature with 64MB shared memory for 2D/3D graphics capabilities in a single package. Its onboard 10Base-T/100Base-TX Fast Ethernet, optional Gigabit Fast Ethernet, CRT display controller, and an additional daughter board supporting Flat LVDS Panel, Flat TMDS Panel and TV-out by adding communication and multimedia features to its powerfull function.

The range of CPU including Intel® Pentium® 4 ™processors are supported up to 3.06GHz at 533MHz FSB by significantly increasing the bandwidth available for multiproceesor servers, while memory is expandable to 2GB DDR SDRAM.

The Intel 845GV chipset consists of the 845GV GMCH Northbridge and ICH4 Southbridge, that includes the extremely stable and innovative intel extreme graphics technology and supports 6 USB 2.0 ports for high speed data transmission. Other exclusive features include onboard DiskOnChip®+ 2000 socket for memory up to 576MB and Compact Flash Disk as well.

Specifications

General Specifications

- CPU : Socket 478 FC-PGA2 Pentium®4, 512K with 400/533 MHz FSB and up to 3.06GHz

- Chipset : Intel 845GV and 82801 DB ICH4 PCI memory bus, PCI bus at 33 Mhz and UltraATA/100 IDE interfaces

- BIOS : AWARD® Flash BIOS Green&Soft Off function version 6.0, LS120, multiple boot function

- Green Function : power saving supported in BIOS. DOZE / SUSPEND modes, ACPI & APM FWH 4 MB

- L2 Cache : Integrated on CPU

- DRAM Memory : Supports DDR266 SDRAM up to 2GB in two 184-pin DIMM sockets

- Enhanced IDE : Supports two ports with four ATAPI devices up to UltraDMA transfer 100 MB/sec

- Watchdog Timer : 254-level timer generates RESET or NMI when your application loses control over the system.

- Real-time Clock : built-in chipset with lithium battery backup for 5 years of data retention. CMOS data backup of BIOS setup and BIOS default.

- High Drive ISA64 bus : ISA Add-on; 64mA high drive buffer supports

- USB : Onboard 2 x USB ver 2.0 ports

High Speed Multi I/O

- Chipset   : Windbond W83627HF

- Serial Ports : one internal high speed RS-232C port COM1 (10-pin box header), one internal high speed RS-232C/422/485 port COM2 (jumper selectable, 10-pin box header). Both with 16C550 compatible UART and 16 byte FIFO.

- SIR Interface : onboard IrDA TX/RX port (5-pin header)

- Floppy Disk Drive Interface : 2 floppy disk drives, 5¼" (360 KB or 1.2 MB) and 3½" (720 KB, 1.44 MB or 2.88 MB).

- Bi-directional Parallel Port : SPP, EPP and ECP mode.

- Keyboard and Mouse Connectors : external PS/2 KB/Mouse port (2-in-1 mini DIN) onboard AT Keyboard port (5-pin box header)

Network Interface Controller

• Chipset : 1 x Intel 82562ET, 10/100 Mbps & 1 x Intel 82540EM 1000 Mbps autoswitching

• Connector : 2 x external RJ-45 with LEDs on bracket

Display Controller

• Chipset : Intel 845GV with 2D/3D engines Supports shared memory up to 64MB SDRAM

• Display Type : CRT (VGA, SVGA, XGA, SXGA) and LCD (optional, see LCD Daughterboard) Type

• Connectors : external DB15 for CRT on bracket

• LCD Display Daughterboard (optional) : supported LVDS Panel interface with daughter board

Solid State Disk

• DiskOnChip Package : Single Chip Flash Disk in 32-pin DIP JEDEC

• Capacity : up to 576 MByte

• Data Reliability : ECC/EDC error correction

• Compact Flash socket: for Type I/II Flash card

System Monitoring and Alarm

• Chipset : Winbond W83627HF

For CPU & System Temperature, System Voltage and Cooling Fan RPM

Environmental and Power

• Power Requirements : +5 V @ 2.82 A (typical), +12 V @ 1.98A (typical), -12 V @ 0.14A (typical); (FC-PGA2 P4 3GHz at 533 FSB with 1G DDR266 SDRAM)

• CPU Power : onboard PWM switching power supply for autodetects CPU core voltage

• System Monitoring and Alarm : CPU and System temperature, system voltage and cooling fan RPM.

• Board Dimensions : 338 mm x 122 mm

• Board Weight : 0.6 Kg.

• Operating Temperature : 0 to 60°C (32 to 140°F)
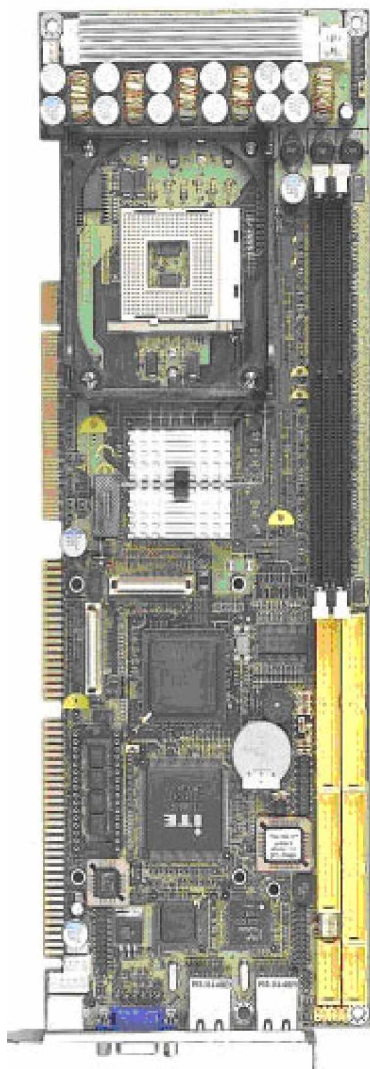
Ordering Codes

3302430A   Full-size PICMG-bus Socket 478 Pentium 4 CPU Card
                  with DDR266, High Drive ISA, CRT SVGA, Single
                  Ethernet

3302430B   Full-size PICMG-bus Socket 478 Pentium 4 CPU Card with
                  DDR266, High Drive ISA, CRT SVGA, Dual Fast Ethernet
                  (single 10/100 Ethernet & single Gigabit Ethernet)
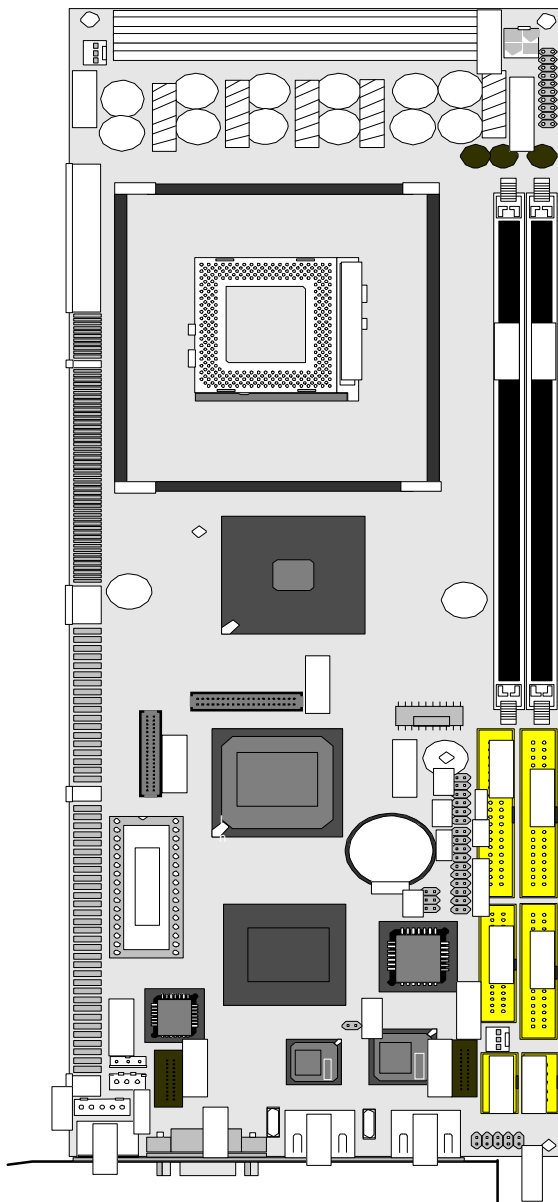
Jumper/Connector Quick Reference

Jumpers

Label	Function
J1	Clear CMOS
J2	Watchdog Output
J4	COM2 RS232/422/485 selected
J8	H/W Monitor Alarm
CN3	Gigabit LAN selected

Connectors

Label	Function
ATX	ATX Feature Connector
ATX12V	ATX 12V Power Connctor for P4
COM1	Serial Port: COM1
COM2	Serial Port: COM2
CPUF1	CPU FAN1 Connector
DIMM1	DDR bank 1/2 184 pin DIMM
DIMM2	DDR bank 3/4 184 pin DIMM
DBC3	Daughter board Connector 3
DBC4	Daughter board Connector 4
DVO	Intel digital Video Output Interface
EKB	External Keyboard Connector
FDD	Floppy Disk Driver Connedctor
IDE1	Primary IDE Connector
IDE2	Secondary IDE Connector
KBM	PS/2 Keyboard & Mouse
LAN1	10/100M LAN Connector
LAN2	10/100/1000M LAN Connector
LPT	Parallel Port
PCI	External PCI connector
SIR	Infrared (IR) Connector
SYSF	Chassis Auxiliary Fan Connector
USB1	USB Port 0,1
VGA	CRT SVGA Connector
WOL	Wake On LAN
JFRONT	Front Panel Connector

CMOS Jumper Settings

CMOS Setup (J1)

Type : J1: onboard 3-pin header

CMOS Setup (J1)	J1	
Keep COMS	1-2	ON
Clear COMS	2-3	ON
Default Setting		
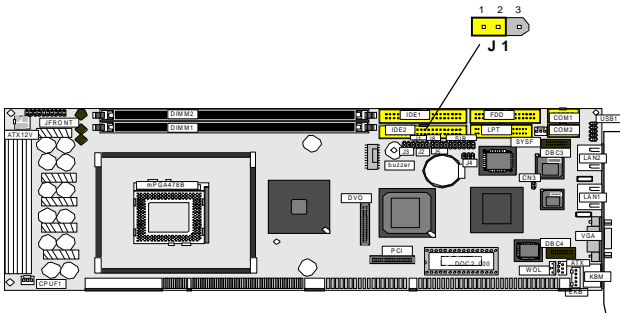
The location for the jumper settings
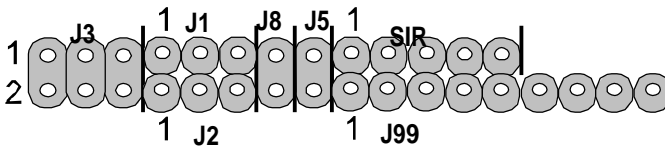
Watchdog Timer

Watchdog Output (J2)

The onboard watchdog timer can be disable by jumper setting or enable for either reboot by system RESET or invoking an NMI (Non-Maskable Interrupt)

Even if enabled by jumper setting upon boot the watchdog timer is always inactive. To initialize or refresh the watchdog timer writing of port 44h is sufficient. To disable the watchdog time read port 44h.

Status	Action
Enable/refresh the Watchdog Timer	I/O Write 044h
Disable the Watchdog Timer.	I/O Read 044h

After the watchdog timer has been initialized by writing port F2, it has to be strobed at preconfigured intervals to keep it from issuing a RESET or NMI.

The watchdog timer timeout intervals are set by software programming.

Mode Setting

Watchdog Mode	J2
Enabled for Active NMI(I/O Channel Check)	1-2
Enabled for System Reset	2-3
Disable Watchdog Timer	None

default setting
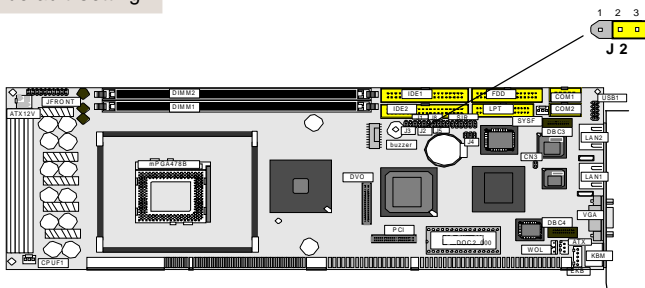
Timeout Values

Timout values are programmed. The watchdog timer supports 254 steps. use the table on the next page to find the hexidecimal value that needs to be passed on to get the correct timer interval. Look subsequntly at the program

~~example how to pass the value to the watchdog timer.~~

Timeout Table

Level	Value	Seconds	Level	Value	Seconds	Level	Value	Seconds
1	1	1	2	2	2	3	3	3
4	4	4	5	5	5	6	6	6
7	7	7	8	8	8	9	9	9
10	A	10	11	B	11	12	C	12
13	D	13	14	E	14	15	F	15
16	10	16	17	11	17	18	12	18
19	13	19	20	14	20	21	15	21
22	16	22	23	17	23	24	18	24
25	19	25	26	1A	26	27	1B	27
28	1C	28	29	1D	29	30	1E	30
31	1F	31	32	20	32	33	21	33
34	22	34	35	23	35	36	24	36
37	25	37	38	26	38	39	27	39
40	28	40	41	29	41	42	2A	42
43	2B	43	44	2C	44	45	2D	45
46	2E	46	47	2F	47	48	30	48
49	31	49	50	32	50	51	33	51
52	34	52	53	35	53	54	36	54
55	37	55	56	38	56	57	39	57
58	3A	58	59	3B	59	60	3C	60
61	3D	61	62	3E	62	63	3F	63
64	40	64	65	41	65	66	42	66
67	43	67	68	44	68	69	45	69
70	46	70	71	47	71	72	48	72
73	49	73	74	4A	74	75	4B	75
76	4C	76	77	4D	77	78	4E	78
79	4F	79	80	50	80	81	51	81
82	52	82	83	53	83	84	54	84
85	55	85	86	56	86	87	57	87
88	58	88	89	59	89	90	5A	90
91	5B	91	92	5C	92	93	5D	93
94	5E	94	95	5F	95	96	60	96
97	61	97	98	62	98	99	63	99
100	64	100	101	65	101	102	66	102
103	67	103	104	68	104	105	69	105
106	6A	106	107	6B	107	108	6C	108
109	6D	109	110	6E	110	111	6F	111
112	70	112	113	71	113	114	72	114
115	73	115	116	74	116	117	75	117
118	76	118	119	77	119	120	78	120
121	79	121	122	7A	122	123	7B	123

Timeout Table

Level	Value	Seconds	Level	Value	Seconds	Level	Value	Seconds
124	7C	124	125	7D	125	126	7E	126
127	7F	127	128	80	128	129	81	129
130	82	130	131	83	131	132	84	132
133	85	133	134	86	134	135	87	135
136	88	136	137	89	137	138	8A	138
139	8B	139	140	8C	140	141	8D	141
142	8E	142	143	8F	143	144	90	144
145	91	145	146	92	146	147	93	147
148	94	148	149	95	149	150	96	150
151	97	151	152	98	152	153	99	153
154	9A	154	155	9B	155	156	9C	156
157	9D	157	158	9E	158	159	9F	159
160	A0	160	161	A1	161	162	A2	162
163	A3	163	164	A4	164	165	A5	165
166	A6	166	167	A7	167	168	A8	168
169	A9	169	170	AA	170	171	AB	171
172	AC	172	173	AD	173	174	AE	174
175	AF	175	176	B0	176	177	B1	177
178	B2	178	179	B3	179	180	B4	180
181	B5	181	182	B6	182	183	B7	183
184	B8	184	185	B9	185	186	BA	186
187	BB	187	188	BC	188	189	BD	189
190	BE	190	191	BF	191	192	C0	192
193	C1	193	194	C2	194	195	C3	195
196	C4	196	197	C5	197	198	C6	198
199	C7	199	200	C8	200	201	C9	201
202	CA	202	203	CB	203	204	CC	204
205	CD	205	206	CE	206	207	CF	207
208	D0	208	209	D1	209	210	D2	210
211	D3	211	212	D4	212	213	D5	213
214	D6	214	215	D7	215	216	D8	216
217	D9	217	218	DA	218	219	DB	219
220	DC	220	221	DD	221	222	DE	222
223	DF	223	224	E0	224	225	E1	225
226	E2	226	227	E3	227	228	E4	228
229	E5	229	230	E6	230	231	E7	231
232	E8	232	233	E9	233	234	EA	234
235	EB	235	236	EC	236	237	ED	237
238	EE	238	239	EF	239	240	F0	240
241	F1	241	242	F2	242	243	F3	243
244	F4	244	245	F5	245	246	F6	246

247	F7	247	248	F8	248	249	F9	249
250	FA	250	251	FB	251	252	FC	252
253	FD	253						

Programming Example

The following program is an examples of how to enable, disable and refresh the Watchdog timer:

```
WDT_EN_RF       equ     044h

WDT_DIS         equ     044h

WT_Enable       push AX          ; Save AX,DX
                push DX
                mov DX,WDT_EN_RF        ; Enable Timer
                mov AX,INTERVAL ; Set Timeout Value
                out DX,AX
                pop DX                  ; Restore DX,AX
                pop AX
                ret

WT_Refresh      push AX          ; Save AX,DX
                push DX
                mov DX,WDT_EN_RF        ; Refresh Timer
                mov AX,INTERVAL ; Set Timout Value
                out DX,AX
                pop DX                  ; Restore DX,AX
                pop AX
                ret

WT_Disable      push AX          ; Save AX,DX
                push DX
                mov DX,WDT_DIS  ; Disable Timer
                in AX,DX
                pop DX                  ; Restore DX,AX
                pop AX
                ret

WT_Disable      push AX          ; save AX,DX
                push DX
                mov DX,WDT_DIS  ; Disable Timer
                in AX,DX
                pop DX                  ; restore DX,AX
                pop AX
                ret
```

Serial Port Selection (RS232C/422/485)

RS-232/422/485 Mode select (J4)

RS-422/485 Mode on COM2

The onboard COM2 port can be configured to operate in RS-422 or RS-485 modes. RS-422 modes differ in the way RX/TX is being handled. Jumper J4 switches between RS-232 or RS-422/485 mode. When J4 is set to RS-422 or 485 mode, there will be only +12V output left while J4 is set. All of the RS-232/422/485 modes are available on COM2.

J4 Selection	1-2	3-4	5-6
RS-232	Close	Open	Open
RS-422	Open	Close	Open
RS-485	Open	Open	Close

Default setting RS-232

J4
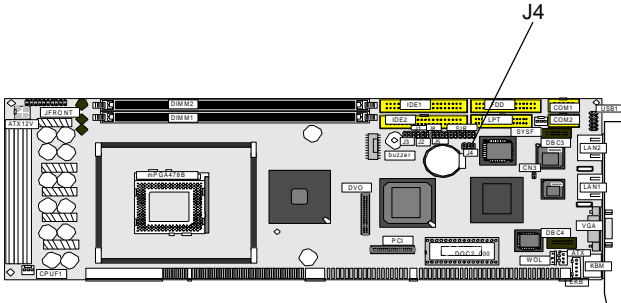
Hardware monitor Alarm

Hardware monitor Alarm: J8

Hardware monitor alarm can be selected enable or disable by jumper (J8). There are three main functins for this item: Voltage/CaseOpen, Fan/Temperature and CPU/Memory.
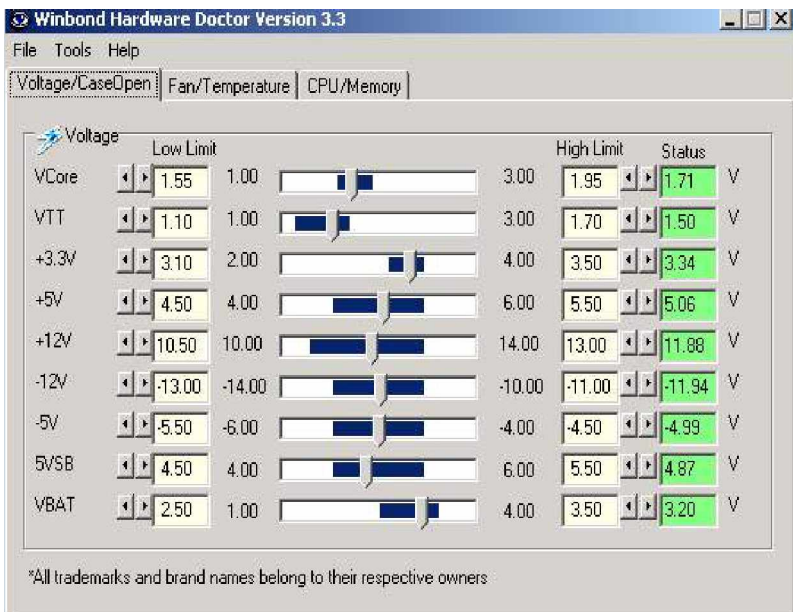
Dual Fast Ethernet Connectors

LAN Port

Connector : LAN1, LAN2
Type : external RJ-45 on bracket

Pin Defined	1	2	3	4	5	6	7
LAN1	NC	NC	NC	NC	NC	NC	MDI1-
LAN2	MDI3-	MDI3+	MDI2-	MDI2+	2.5V	2.5V	MDI1-
Pin Defined	8	9	10				
LAN1	MDI1+	MDI0-	MDI0+				
LAN2	MDI1+	MDI0-	MDI0+				

LAN LED Indicator on RJ-45 connector

Indicator : LED
Type : 2 LED

Mode	LED Description
Active Transfer	Yellow LED ON (flash)
10 MB mode	Green LED OFF
100MB mode	Green LED ON
1000MB mode	Orange LED ON
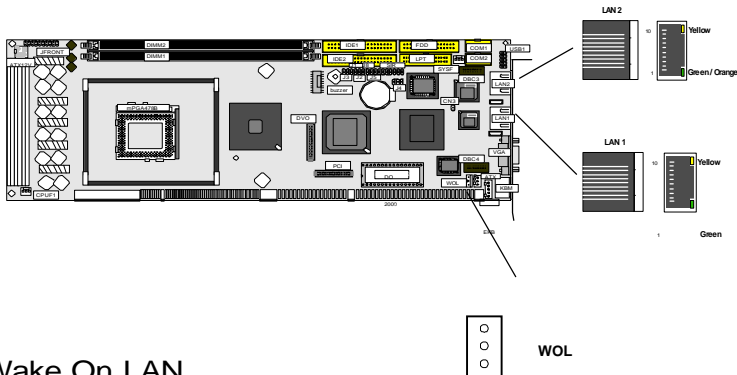
Wake On LAN

Connector: WOL
Type : onboard 3-pin wafer connector

Pin	Description
1	5V_SB
2	GND
3	WOL_CTL

POWER CONNECTOR

ATX Feature Connector

ATX Feature Connector:ATX1

ATX12V
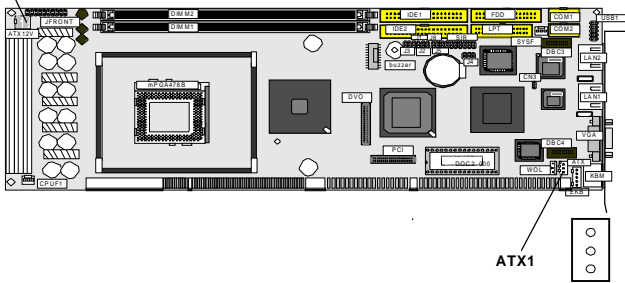
ATX1

Type : onboard 3-pin Wafer connector

Pin	Description
1	PS-ON
2	GND
3	5VSB

P4 Power Connector

Connector : ATX12V
Type : onboard 4-pin Wafer connector

P4 Power Connector

+12V 3   1 GND
+12V 4   2 GND

Pin	Description
1	GND
2	GND
3	+12V
4	+12V

CPU Fan Connector

Connector : CPUF1
Type : onboard 3-pin wafer connector

Pin	Description
1	GND
2	+12V
3	FAN_CTL
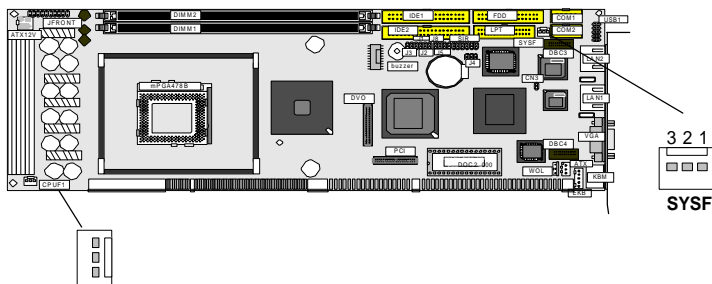
Chassis Auxilary Fan Connector

Connector : SYSF1
Type : onboard 3-pin header

Pin	Description
1	GND
2	+12V
3	FAN_CTL

Switches and Indicators
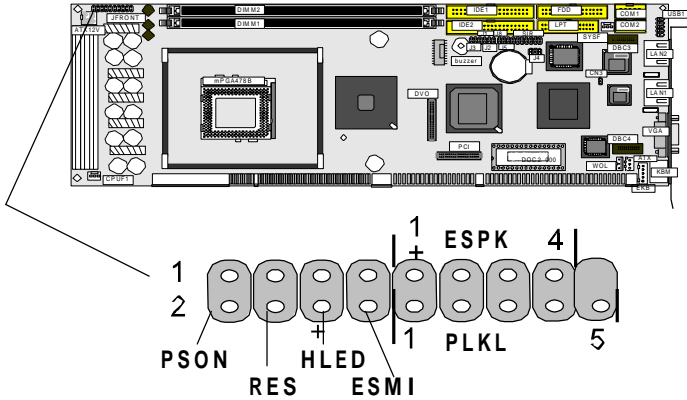
Connector : JFRONT1
Type : onboard 17-pin header

Pin	Jumper	Description
1-2	PSON	ATX soft power switch
3-4	RES	reset function
5-6	HLED	Hard Disk LED
7-8	ESMI	external SMI
9,11,13,15	ESPK	exteranal speaker
10,12,14,16,18	PLKL	power LED & Keyboard Lock

PLKL and ESPK Connector

Connector : PLKL
Power LED can be indicated when the CPU card is on or off. And keyboard lock can be used to disable the keyboard function so the PC will not respond by any input.

PLKL		ESPK	
Pin	Description	Pin	Description
1	LED power (+5V)	1	+5V
2	NC	2	NC
3	GND	3	Internal buzzer
4	Keyboard Lock	4	Speak out
5	GND		

Compact Flash Disk

Installation Instructions

1. Make sure the Single Board Computer is powered OFF.

2. Plug the Compact Flash TypeI/II device into its socket. Verify the direction is correct on Secondary IDE which is located in the back of SBC.

3. Powre up the system
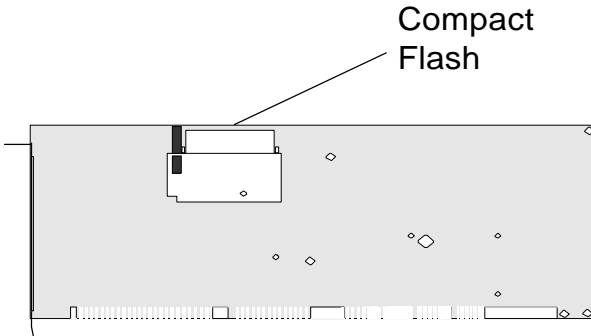
Compact
Flash

For more information on Compact Flash disk, visit Pretech Web site at

http:// www.pretech.com

where you can find the utilities manual, data sheets and application notes. In addition, you can find the latest Compact Flash disk utilities.

Interface Connectors HDD, FDD

Floppy Disk Drive (FDD)
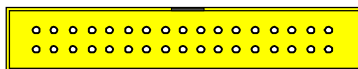
Connector : FDD
Type : Onboard 34-pin box header

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

Enhanced IDE Connector
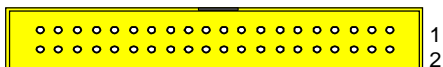
Connector : IDE1 and IDE2
Type : Two onboard 40-pin box headers, primary and secondary IDE

Pin	Description	Pin	Description
1	#RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC/(Vcc)
21	REQ	22	GND
23	#IOW	24	GND
25	#IOR	26	GND
27	#IORDY	28	IDESEL
29	#DACK	30	GND
31	IRQ	32	NC
33	ADDR1	34	CBLID
35	ADDR0	36	ADDR2
37	#CS0	38	#CS1(#HD SELET1)
39	#ACT	40	GND

Peripheral Port

Parallel Port

Connector : LPT
Type : onboard 26-pin box header

13 [box header diagram] 1
26   14
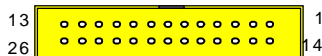
LPT1

	Pin	Description		Pin	Description
	1	#STROBE		14	#AUTO FEED
	2	DATA0		15	#ERROR
	3	DATA1		16	#INITIALIZE
	4	DATA2		17	#SELECT INPUT
	5	DATA3		18	GND
	6	DATA4		19	GND
	7	DATA5		20	GND
	8	DATA6		21	GND
	9	DATA7		22	GND
	10	#ACKNOWLEDGE		23	GND
	11	BUSY		24	GND
	12	PAPER EMPTY		25	GND
	13	SELECT		26	GND

USB Ports

Connector: USB1
Type:onboard Two 10-pin box headers for four USB ports

USB 1

Pin	Description	Pin	Description
1	VCC	2	VCC
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	GND
9	GND	10	N/C

SIR

Connector : SIR
Type : onboard 5-pin header (please see Page 8)
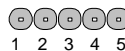
1 2 3 4 5
SIR

	Pin	Description	Pin	Description
	1	Vcc	2	NC
	3	IRRX	4	GND
	5	IRTX		

CRT SVGA

Connector : VGA1
Type : external 15-pin D-sub female connector on bracket

VGA1
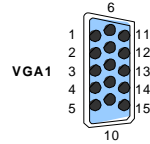
Pin	Description	Pin	Description	Pin	Description
1	RED	6	GND	11	N C
2	GREEN	7	GND	12	VDDAT
3	BLUE	8	GND	13	HSYNC
4	N C	9	Vcc	14	VSYNC
5	GND	10	GND	15	VDCLK

AT Keyboard

EKB

Connector : EKB
Type : Onboard 5-pin header
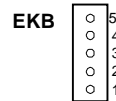
Pin	Description	Pin	Description
1	CLK	2	DATA
3	NC	4	GND
5	NC		

Note: ATKB1doesn't provide Vcc power pin on pin-5, that is, ATKB1 cannot connect to AT keyboard directly. ATBK1 supports AT keyboard with passive backplane.

PS/2 Keyboard & Mouse

Connector: KBM
Type: external 6-pin Mini DIN connector on bracket
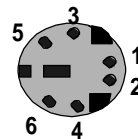
Pin	Description	Pin	Description
1	KB-DATA	2	MS-DATA
3	GND	4	VCC
5	KB-CLK	6	MS-CLK

Note: KB1 supports PS/2 keyboard directly, and PS/2 mouse suppoted with the additional PS2 1-to-2 cable in the standard packing.

COM1 & COM2 for RS-232 Port

Connector : COM1 & COM2
Type : onboard 10-pin box header
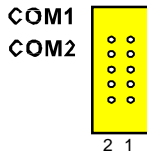
Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

COM2 Port with RS-232C Mode

Connector : COM2
Type : onboard 10-pin box header
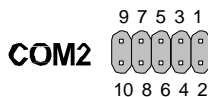
Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	GND

COM2 Port with RS-422/485 Mode

Connector : COM2
Type : onboard 10-pin box header

RS-422 Mode

Pin	Description	Pin	Description
1	TX+	2	TX-
3	NC	4	NC
5	NC	6	NC
7	NC	8	RX+
9	RX-	10	NC

System Resources

Interrupt Assignment

IRQ Address	Description
0	System Timer
1	Keyboard (or PS/2 Keyboard)
2	Programmable Interrupt Controller
3	Serial Port 2 (COM2)
4	Serial Port 1 (COM1)
5	USB & IRQ Holder for PCI Steering
6	Floppy controller
7	Parallel Port 1
8	Real-Time Clock
9	SCI IRQ used by ACPI bus
10	Ethernet & ACPI IRQ Holder for PCI IRQ Steering
11	Ethernet & ACPI IRQ Holder for PCI IRQ Steering
12	PS/2 Mouse
13	Numeric data processor
14	Primary IDE Controller
15	Secondary IDE Controller

I/O Address Space

Adress	Description
0000 - 000F	DMA Controller
0000 - 0CF7	PCI bus
0010 - 001F	Motherboard Resources
0020 - 0021	PIC
0022 - 003F	Motherboard Resources
0040 - 0043	System Timer
0044 - 005F	Motherboard Resources
0060 - 0060	Keyboard
0061 - 0061	Systems Speaker
0062 - 0063	Motherboard Resources
0064 - 0064	Keyboard
0065 - 006F	Motherboard Resources
0070 - 0073	System CMOS / Real time clock
0074 - 007F	Motherboard Resources

0080 - 0090	DMA Controller
0091 - 0093	Motherboard Resources
0094 - 009F	DMA Controller
00A0 - 00A1	PIC
00A2 - 00BF	Motherboard Resources
00C0 - 00DF	DMA Controller
00E0 - 00EF	Motherboard resources
00F0 - 00FF	Numeric Data Processor
0170 - 0177	Seoncdary IDE Channel
01F0 - 01F7	Primary IDE Channel
0274 - 0277	ISAPNP READ Data Port
0279 - 0279	ISAPNP Read Data Port
02F8 - 02FF	COM2
0376 - 0376	Seoncdary IDE Channel
0378 - 037F	Printer Port
03B0 - 03BB	Intel 82845GV Graphics Controller
03C0 - 03DF	Intel 82845GV Graphics Controller
03F0 - 03F5	Floppy Disk Controller
03F6 - 03F6	Primary IDE Channel
03F7 - 03F7	Floppy Disk Controller
03F8 - 03FF	C0M1
0400 - 04BF	Motherboard Resources
04D0 - 04D1	Motherboard Resources
0500 - 051F	Intel 82801DB/DBM SMBus Controller
0778 - 077B	Printer Port (LPT1)
0A78 - 0A7B	Motherboard resources
0B78 - 0B7B	Motherboard resources
0BBC - 0BBF	Motherboard resources
0D00 - 0FFF	PCI bus
0E78 - 0E78	Motherboard resources
0F78 - 0F78	Motherboard resources
0FBC - 0FBF	Motherboard resources
C000 - C03F	Intel Pro/100 M Desktop Adapter
C400 - C43F	Intel 82540EM Based Network Connection
D000 - D01F	Intel 82801DB/DBM USB Universal Host Controller24C4
D400 - D41F	Intel 82801DB/DBM USB Universal Host Controller24C7
D800 - D81F	Intel 82801DB/DBM USB Universal Host Controller24C2
F000 - F00F	Intel 82801DB Ultra ATA Controller

PCI Bus Map

Functino	Device ID	INT#	GNT#
LAN1	AD20	INTE	
LAN2	AD21	INTF	GNTE
Bridge	AD22		GNTF
PCI slot 1	AD31	INTB,C,D,A	GNTA
PCI slot 2	AD30	INTC,D,A,B	GNTB
PCI slot 3	AD29	INTD,A,B,C	GNTC
PCI slot 4	AD28	INTA,B,C,D	GNTD

AWARD BIOS Setup

The SBC uses the Award PCI/ISA BIOS ver 6.0 for the system configuration. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options which could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The Main Menu will be displayed at this time.

```
          Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features       ▶ PC Health Status

  ▶ Advanced BIOS Features       ▶ Frequency/Voltage Control

  ▶ Advanced Chipset Features      Load Optimized Defaults

  ▶ Integrated Peripherals         Set Password

  ▶ Power Management Setup         Save & Exit Setup

  ▶ PnP/PCI Configurations         Exit Without Saving

  Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←  : Select Item
  F10 : Save & Exit Setup

              Time, Date, Hard Disk Type...
```

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you 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.

Setup Items

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

Standard CMOS Features
Use this menu for basic system configuration.

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

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP / PCI Configuration
This entry appears if your system supports PnP / PCI.

PC Health Status
This entry appears CPU temperature for the systeml.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

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.

Set Password
Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.

Exit Without Save
Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Standard CMOS Features
 ┌──────────────────────────────────────────────┬──────────────────────┐
 │ Date (mm:dd:yy)         Wed, Apr  9 2003      │      Item Help       │
 │ Time (hh:mm:ss)         17 : 56 : 24          ├──────────────────────┤
 │                                               │ Menu Level    ▶      │
 │ ▶ IDE Primary Master                          │                      │
 │ ▶ IDE Primary Slave                           │ Change the day, month,│
 │ ▶ IDE Secondary Master                        │ year and century     │
 │ ▶ IDE Secondary Slave                         │                      │
 │                                               │                      │
 │ Drive A                 [1.44M, 3.5 in.]      │                      │
 │ Drive B                 [None]                │                      │
 │ Floppy 3 Mode Support   [Disabled]            │                      │
 │                                               │                      │
 │ Video                   [EGA/VGA]             │                      │
 │ Halt On                 [All Errors]          │                      │
 │                                               │                      │
 │ Base Memory                  640K             │                      │
 │ Extended Memory            65472K             │                      │
 │ Total Memory                1024K             │                      │
 └──────────────────────────────────────────────┴──────────────────────┘
 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values              F7: Optimized Defaults
```

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

Date
The BIOS determines the day of the week from the other date information; this field is for information only.

Time
The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the « or (key to move to the desired field . Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

IDE Primary & Secondary Master/Slave
Options are in sub menu (see page 29)

Drive A, B
Select the correct specifications for the diskette drive(s) installed in the computer.

None :	No diskette drive installed
360K ;	5.25 in 5-1/4 inch PC-type standard drive
1.2M ;	5.25 in 5-1/4 inch AT-type high-density drive
720K ;	3.5 in 3-1/2 inch double-sided drive
1.44M ;	3.5 in 3-1/2 inch double-sided drive
2.88M ;	3.5 in 3-1/2 inch double-sided drive

Floopy 3 Mode Support   3 mode Floppy drives supoort three different disk formats, 1.44MB/ 1.2MB/ 720KB. It allow the system to support the Japanese 1.2MB floppy disk format as well as the standard 1.44MB and 720KB disk formats. If you need to use the Japanese 1.2MB disk format, you must enable the feature by selecting either DriverA, DriveB or Both (if you have two 3 mode floppy drivers). However if you only have a standard floppy drive, disable this feature or you floppy drive many not function property.

Video   Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

No errors	POST does not stop for any errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.

IDE Harddisk Setup (submenu)

```
          CMOS SETUP UTILITY - Copyright (C) 1984-2001 Award Software
                            IDE Primary Master
 ┌──────────────────────────────────────────────┬─────────────────────┐
 │                                                │                     │
 │   IDE HDD Auto-Detection   Press Enter         │      Item Help      │
 │                                                │                     │
 │                                                │                     │
 │   IDE Primary Master       [Auto]              │  Menu Level ▶▶      │
 │   Access Mode              [Auto]              │                     │
 │                                                │                     │
 │   Capacity                 0 MB                │                     │
 │                                                │                     │
 │   Cylinder                 0                   │                     │
 │   Head                     0                   │                     │
 │   Precomp                  0                   │                     │
 │   Landing Zone             0                   │                     │
 │   Sector                   0                   │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 └──────────────────────────────────────────────┴─────────────────────┘
 ↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-SAfe Defaults F7:Optimized Defaults
```

IDE HDD Auto-detection
Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

IDE Secondary Master
Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !

Capacity
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
Normal, LBA, Large or Auto Choose the access mode for this hard disk

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

Cylinder   Min = 0   Max = 65535
Set the number of cylinders for this hard disk.

Head   Min = 0   Max = 255
Set the number of read/write heads

Precomp   Min = 0   Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

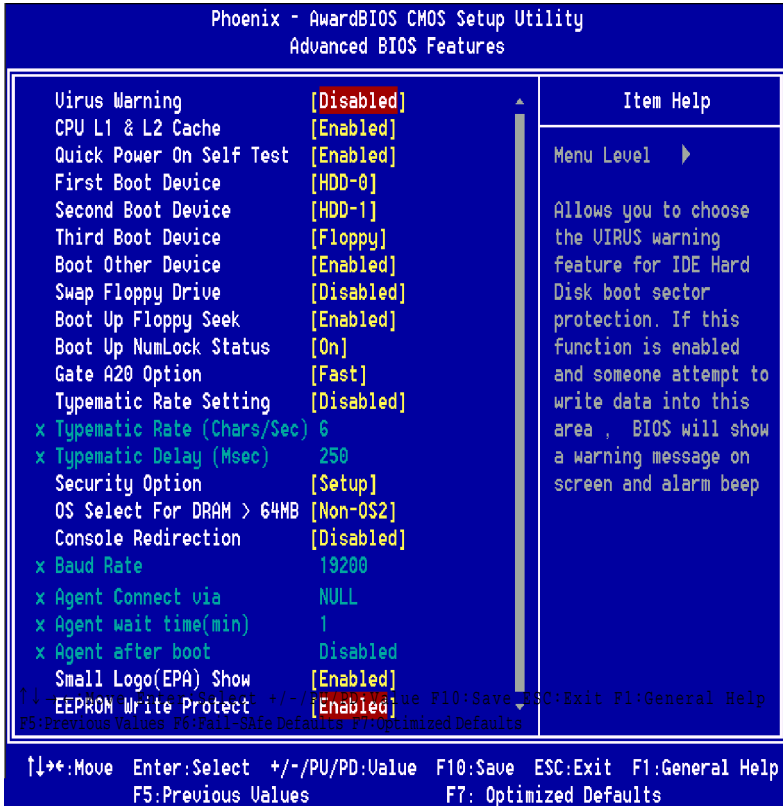Landing zone   Min = 0   Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

Sector   Min = 0   Max = 255
Number of sectors per track

We recommend that you select Type "AUTO" for all drives. The BIOS will auto-detect the hard disk drive and CD-ROM drive at the POST stage.

If your hard disk drive is a SCSI device, please select "None" for your hard drive setting.

BIOS Features Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced BIOS Features

   Virus Warning              [Disabled]      ▲      Item Help
   CPU L1 & L2 Cache          [Enabled]
   Quick Power On Self Test   [Enabled]          Menu Level    ▶
   First Boot Device          [HDD-0]
   Second Boot Device         [HDD-1]             Allows you to choose
   Third Boot Device          [Floppy]           the VIRUS warning
   Boot Other Device          [Enabled]          feature for IDE Hard
   Swap Floppy Drive          [Disabled]         Disk boot sector
   Boot Up Floppy Seek        [Enabled]          protection. If this
   Boot Up NumLock Status     [On]               function is enabled
   Gate A20 Option            [Fast]             and someone attempt to
   Typematic Rate Setting     [Disabled]         write data into this
 x Typematic Rate (Chars/Sec) 6                  area , BIOS will show
 x Typematic Delay (Msec)     250                a warning message on
   Security Option            [Setup]            screen and alarm beep
   OS Select For DRAM > 64MB  [Non-OS2]
   Console Redirection        [Disabled]
 x Baud Rate                   19200
 x Agent Connect via           NULL
 x Agent wait time(min)        1
 x Agent after boot            Disabled
   Small Logo(EPA) Show       [Enabled]
   EEPROM Write Protect       [Enabled]

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

Virus Warning
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 beep.

Enabled   Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 & L2 Cache
These two categories speed up memory access. However, it depends on
CPU/chipset design. Enabled : Enable cache, Disabled : Disable cache

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

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 choices are : Floppy, LS/ZIP, HDD,
SCSI, CDROM, Disabled.

Swap Floppy Drive
If the system has two floppy drives, you 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: Enabled/Disabled.

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 you enter setup.

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

Setup   The system will boot, but access to Setup will be denied if the

correct password is not entered at the prompt.

Note   To disable security, select PASSWORD SETTING at Main Menu and then you 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 you can enter Setup 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.

Console Redirection
To set the BIOS to use the serial port. Select "Enable" or "Disable" to access this function.

Baud Rate
Specify Baud Rate of console redirction. There are different speed selections, 9600/19200/38400/57600/115200. The default setting is 19200.

Agent Connect via
The direct connection for console redirection.

Agent wait time (min)
The timeout setting for connection, 1/2/4/8.

Agent after boot
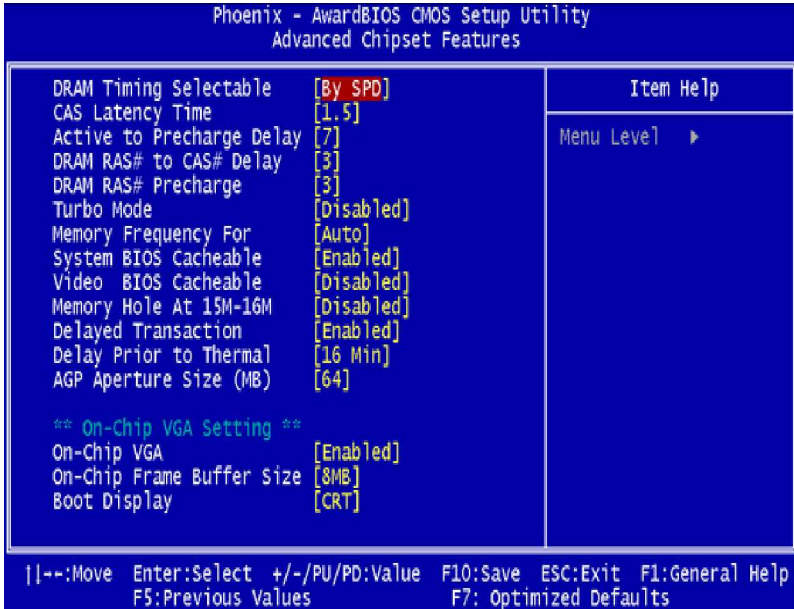Keep Agent running after OS boot. You can choose "Disable" or "Enable" for this function.

Small Logo(EPA) Show
Select Enabled if your system has a small Logo (EPA) show. If you have no small logo show, select "Disabled" in this field.

EEPROM Write Protect
Select Enabled or Disable to run this feature.

Chipset Features Setup

```
          Phoenix - AwardBIOS CMOS Setup Utility
                Advanced Chipset Features

   DRAM Timing Selectable   [By SPD]     ┌──────────────────┐
   CAS Latency Time         [1.5]        │    Item Help     │
   Active to Precharge Delay [7]         ├──────────────────┤
   DRAM RAS# to CAS# Delay  [3]          │ Menu Level    ►  │
   DRAM RAS# Precharge      [3]          │                  │
   Turbo Mode               [Disabled]   │                  │
   Memory Frequency For     [Auto]       │                  │
   System BIOS Cacheable    [Enabled]    │                  │
   Video  BIOS Cacheable    [Disabled]   │                  │
   Memory Hole At 15M-16M   [Disabled]   │                  │
   Delayed Transaction      [Enabled]    │                  │
   Delay Prior to Thermal   [16 Min]     │                  │
   AGP Aperture Size (MB)   [64]         │                  │
                                         │                  │
   ** On-Chip VGA Setting **            │                  │
   On-Chip VGA              [Enabled]    │                  │
   On-Chip Frame Buffer Size [8MB]       │                  │
   Boot Display             [CRT]        └──────────────────┘

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

DRAM Timing Selectable
The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

CAS Latency Time
Select the number of cycles it takes to change the CAS address after CAS has been initiated (asserted) aimed at a target address (location) in DRAM.

Active to Precharge Delay
This field specifies the idle cycles before precharging an idle bank. Settings: 7,6,5.

DRAM RAS# to CAS# Delay
This field let's 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.

DRAM RAS# Precharge
Select the number of CPU clocks allocated for the Row Address Strobe (RAS#) signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

Turbo Mode
To accelerate the memory transfer rate. Select "Enabled" or "Disabled" to run
this feature.

Memory Frequency For
This item allows you to select two types of memory frequence. The default
setting is "Auto".

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.

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.

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
requirement.

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delay
transactions cycles. Select Enabled to support compliance with PCI specifica-
tion version2.1.

Delayed Prior to Thermal
When the CPU temperature reaches a factory preset level, a thermal monitor-
ing mechanism will be enabled following the appropriate timing delay specified
in this field. With the thermal monitoring enabled, clock modulation controlled
by the processor's internal thermal sensor is also activated to kepp the
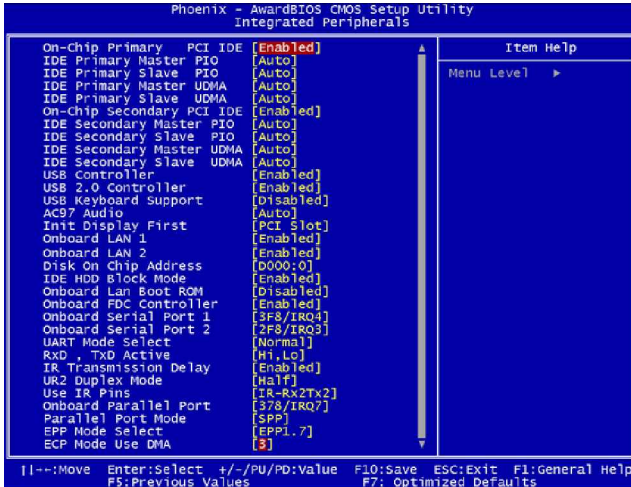processor within allowable temperature limit.
Setting options: 4Min, 8Min, 16Min, 32Min

AGP Apereture Size (MB)
Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture
is a portion of the PCI memory address range dedicated for graphics memorey
address spac. Host cycles that hit the aperture range are forwarded to the
AGP without any translation.

Integrated Peripherals

```
                Phoenix - AwardBIOS CMOS Setup Utility
                      Integrated Peripherals
┌──────────────────────────────────────────────┬──────────────────────┐
│  On-Chip Primary   PCI IDE  [Enabled]       ▲ │      Item Help       │
│  IDE Primary Master PIO     [Auto]            │                      │
│  IDE Primary Slave  PIO     [Auto]            │ Menu Level    ►      │
│  IDE Primary Master UDMA    [Auto]            │                      │
│  IDE Primary Slave  UDMA    [Auto]            │                      │
│  On-Chip Secondary PCI IDE  [Enabled]         │                      │
│  IDE Secondary Master PIO   [Auto]            │                      │
│  IDE Secondary Slave  PIO   [Auto]            │                      │
│  IDE Secondary Master UDMA  [Auto]            │                      │
│  IDE Secondary Slave  UDMA  [Auto]            │                      │
│  USB Controller             [Enabled]         │                      │
│  USB 2.0 Controller         [Enabled]         │                      │
│  USB Keyboard Support       [Disabled]        │                      │
│  AC97 Audio                 [Auto]            │                      │
│  Init Display First         [PCI Slot]        │                      │
│  Onboard LAN 1              [Enabled]         │                      │
│  Onboard LAN 2              [Enabled]         │                      │
│  Disk On Chip Address       [D000:0]          │                      │
│  IDE HDD Block Mode         [Enabled]         │                      │
│  Onboard Lan Boot ROM       [Disabled]        │                      │
│  Onboard FDC Controller     [Enabled]         │                      │
│  Onboard Serial Port 1      [3F8/IRQ4]        │                      │
│  Onboard Serial Port 2      [2F8/IRQ3]        │                      │
│  UART Mode Select           [Normal]          │                      │
│  RxD , TxD Active           [Hi,Lo]           │                      │
│  IR Transmission Delay      [Enabled]         │                      │
│  UR2 Duplex Mode            [Half]            │                      │
│  Use IR Pins                [IR-Rx2Tx2]       │                      │
│  Onboard Parallel Port      [378/IRQ7]        │                      │
│  Parallel Port Mode         [SPP]             │                      │
│  EPP Mode Select            [EPP1.7]          │                      │
│  ECP Mode Use DMA           [3]             ▼ │                      │
├──────────────────────────────────────────────┴──────────────────────┤
│ ││─←:Move  Enter:Select +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│               F5:Previous Values          F7: Optimized Defaults     │
└──────────────────────────────────────────────────────────────────────┘
```

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

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

IDE Function Setup

Primary & Secondary Master/Slave PIO
These four PIO fields let you set a PIO mode (0-4) for each of four IDE
devices. When under "Auto" mode, the system automatically set the best
mode for each device

Primary & Secondary Master/Slave UDMA
When set to "Auto" mode, the system will detect if the hard drive supports
Ultra DMA mode.
Onboard Device
USB Controller
Select "Enabled" if your system contains a Universal Serial Bus (USB)
controller and you have USB peripherals.

USB 2.0 Controller
Select "Enabled" if your system contains a Universal Serial Bus (USB)
controller ver 2.0 and you have USB 2.0 peripherals.

USB Keyboard Support
Select "Enable" if your system contains a Universal Serial Bus (USB) control-
ler and you have USB keyboard.

AC97 Audio
Select "Enabled" to activate audio function

Init Display First
Initailize the "PCI slot" or " Onboard AGP" video display before initializing any
other display device on the system.

Onboard LAN 1 / LAN 2
This item allows to "Enabled" or "Disabled" Onboard LAN function.

DiskOnChip Address
This item shows the address of DiskOnChip. The default setting is d000.

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

Onboard LAN Boot ROM
Select "Enabled" to activate the Lan Boot ROM function

Onboard FDC Controller
Select "Enabled" to activate the on-board FDD
Select "Disabled" to activate an add-on FDD

Onboard Serial Port 1 & 2
Select an address and corresponding interrupt for the first/second serial port.
The default value for the first serial port is "3F8/IRQ4" and the second serial
port is "2F8/IRQ3".

UART Mode Select
This item allows you to select UART mode. The choices: IrDA, ASKIR, Normal.

RxD, TxD Active
This item allows you to determine the active of RxD, TxD. The choices: "Hi,Hi",
"Lo,Lo", "Lo,Hi", "Hi,Lo".

IR Transmission Delay
This item allows you to enable/disable IR transmission delay. The
Choices:Enable, Disabled.

UR2 Duplex Mode
This item allows you to select the IR half/full duplex function.

Use IR Pins
This item allows you to select IR transmission routes, IR-Rx2Tx2, RxD2 and TxD2.

Onboard Parallel Mode
Select an operating mode for the parallel port. Mode options are 3BC/IRQ7, 378/IRQ7, 278/IRQ5, and Disable.

Parallel Port EPP Type
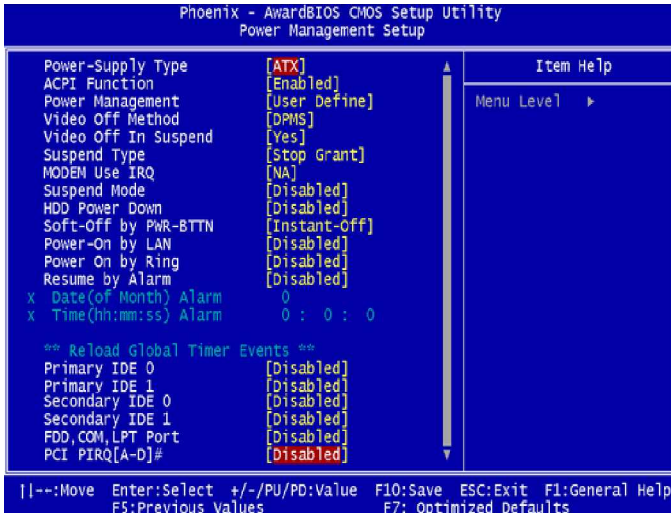Select a EPP Type if parallel Port is set as SPP,EPP, ECP,and ECP+EPP.

EPP Mode Select
Select a EPP Mode Type: EPP1.7 or EPP1.9.

ECP Mode Use DMA
Select a DMA channel if parallel Mode for using ECP mode: 3 or 1.

Power Management Setup

Power-Supply Type
This items allows you to choose "ATX" or "AT" power supplier.

ACPI Function
Select Enabled only if your computer's operating system supports ACPI (the Advanced Configuration and Power Interface) specification. Currently, Windows 98 and Windows2000 support ACPI.

Power Management
There are 4 selections for Power Management, 3 of which have fixed mode :

Disabled (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.,

Max. Power Saving   Maximum power management -- ONLY AVAILABLE FOR SL CPU's.. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 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.

Video Off Method
This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	cause the system to turn off the vertical and horizontal synchronization signals and writes blanks to the screen.
Blank Screen	This option only writes blanks to the screen.
DPMS	Initial display power management signaling.HDD Power Down is always set independently

Video Off In Suspend

Controls what causes the display to be switched off
Suspend -> Off   Always On   All Mode -> Off

Suspend Type
S1 (POS) Power On suspend
All devices are powered up except for the clock synthesizer. The Host and PCI clocks are inactive and PIIX4 provides control signals and 32-kHz Suspend Clock (SUSCLK) to allow for DRAM refresh and to turn off the clock synthe- sizer. The only power consumed in the system is due to DRAM Refresh and leakage current of the powered devices. When the system resumes from POS, PIIX4 can optionally resume without resetting the system, can reset the processor only, or can reset the entire system. When no reset is performed, PIIX4 only needs to wait for the clock synthesizer and processor PLLs to lock before the system is resumed. This takes typically 20 ms.

S3 (STR) Suspend To RAM
Power is removed from most of the system components during STR, except the DRAM. Power is supplied to Suspend Refresh logic in the Host Controller, and RTC and Suspend Well logic in PIIX4. PIIX4 provides control signals and 32-kHz Suspend Clock (SUSCLK) to allow for DRAM refresh and to turn off the clock synthesizer and other power planes.

Modem Use IRQ
Name the interrupt request (IRQ) assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Suspend Mode
When the suspend mode has been enabled after the selected period of system inactivity, all devices except CPU will be shut down. The default setting is "Disabled".

HDD Power Down
When enabled, an Advanced power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If the Max. Power Saving is not enabled, this will be preset to No.

Soft-OFF by PWR-BTTN
The field defines the power-off mode when using an ATX power supply. The Instant-Off mode means powering off immediately when pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or resume by ring activity when press for less than four seconds. The default is 'Instant-Off'.

Power-ON by LAN
There are two options can be selected: [Enabled] & [Disabled].

Power-ON by Ring
There are two options can be selected: [Enabled] & [Disabled].

Resume by Alarm

Wake Up Events

Setting an event on each device listed to awaken the system from a soft off state.

Power On by PCI Card

Wake Up on LAN/Ring

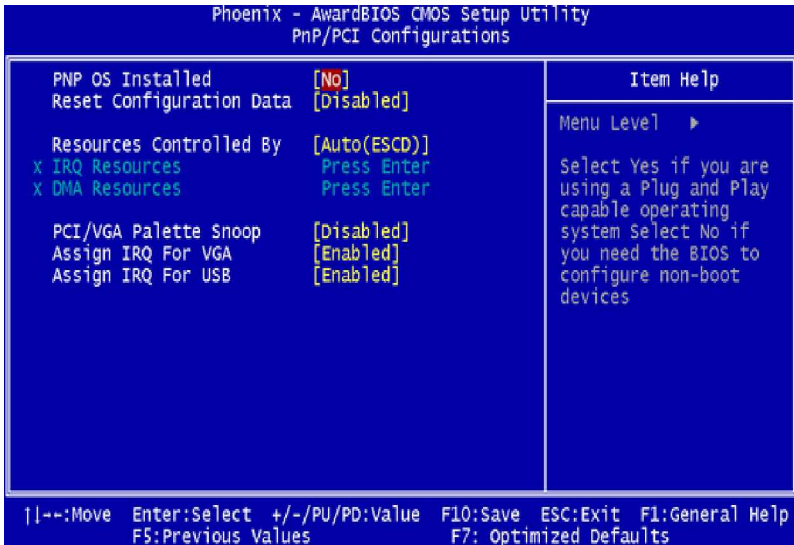RTC Alarm Resume

Date (of Month)

Resume Time (hh:mm:ss)

PnP/PCI Configuration

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     PnP/PCI Configurations
┌──────────────────────────────────────┬──────────────────────────┐
│  PNP OS Installed        [NO]         │        Item Help         │
│  Reset Configuration Data [Disabled]  ├──────────────────────────┤
│                                       │  Menu Level   ▶          │
│  Resources Controlled By  [Auto(ESCD)]│                          │
│ x IRQ Resources           Press Enter │  Select Yes if you are   │
│ x DMA Resources           Press Enter │  using a Plug and Play   │
│                                       │  capable operating       │
│  PCI/VGA Palette Snoop    [Disabled]  │  system Select No if     │
│  Assign IRQ For VGA       [Enabled]   │  you need the BIOS to    │
│  Assign IRQ For USB       [Enabled]   │  configure non-boot      │
│                                       │  devices                 │
│                                       │                          │
│                                       │                          │
│                                       │                          │
│                                       │                          │
│                                       │                          │
├──────────────────────────────────────┴──────────────────────────┤
│ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│          F5:Previous Values          F7: Optimized Defaults      │
└──────────────────────────────────────────────────────────────────┘
```

↑↓→←: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 describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, 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.

PnP OS Installed
Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

Reset Configuration Data
Normally, you leave this field Disabled. Select Enabled to reset ESCD (Extended System Configuration Date) 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 cannot boot.

Resource Controlled By
The Award Play and Play BIOS can automatically configure all the boot and Plug-and-Play compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

IRQ Resources
When resources are controlled manually, assign each system interrupt as one
of the following types, depending on the type of device using the interrupt :

Legacy ISA   Devices compliant with the original PC/AT bus specification,
                   requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP   Device compliant with the Plug and Play standard, whether
                   designed for PCI or ISA bus architecture.

DMA Resources
When resources are controlled manually, assign each system DMA channel as
one of the following types, depending on the type of device using the DMA :

Legacy ISA   Devices compliant with the original PC/AT bus specification,
                   requiring a specific DMA channel.

PCI/ISA PnP   Devices compliant with the Plug and Play standard, whether
                   designed for PCI or ISA bus architecture.

PCI/VGA Palette Snoop
Normally this option is always Disabled! Nonstandard VGA display adapters
such as overlay cards or MPEG video cards may not show colors properly.
Setting Enabled should correct this problem. If this field set Enabled, any I/O
access on the ISA bus to the VGA card's palette registers will be reflected on
the PCI bus. This will allow overlay cards to adapt to the changing palette
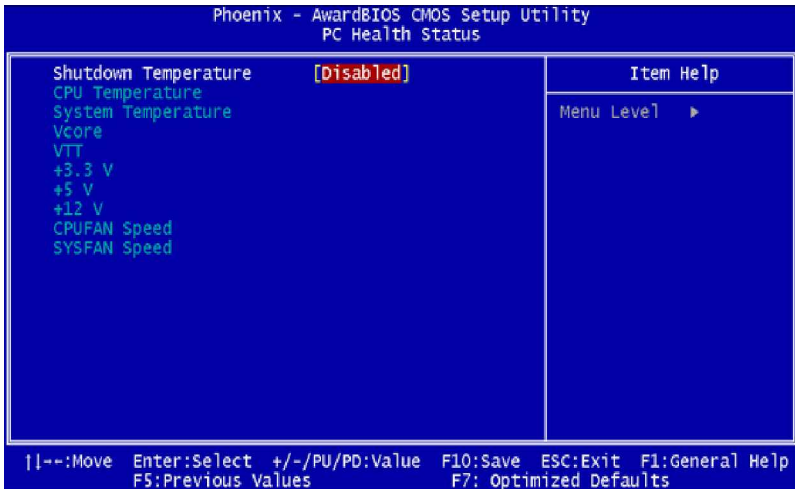colors.

Assign IRQ For VGA
Many high-end graphics accelerator cards now require an IRQ to function
properly. Disabling this feature with such cards will cause improper operation
and/or poor performance. Thus, it's best to make sure you enable this feature if
you are having problems with your graphics accelerator card. However, some
low-end cards don't need an IRQ to run normally. Check your graphics card's
documentation (manual). If it states that the card does not require an IRQ, then
you can disable this feature to release an IRQ for other uses. When in doubt,
it's best to leave it enabled unless you really need the IRQ.

Assign IRQ For USB
Windows 95 will automatically give an IRQ to the USB port even if there is no
USB peripheral connected. Disabling this will free the IRQ.

PC Health Status

```
          Phoenix - AwardBIOS CMOS Setup Utility
                    PC Health Status

   Shutdown Temperature    [Disabled]           Item Help
   CPU Temperature
   System Temperature                      Menu Level    ▶
   Vcore
   VTT
   +3.3 V
   +5 V
   +12 V
   CPUFAN Speed
   SYSFAN Speed




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

This section describes CPU tempeare for the system.

Shutdown Temperature
This item allows you to set up the CPU shutdown Temperature. This item only effective under windows 98 ACPI mode.

CPU Temperature
These fields display the current CPU temperature, if your computer contains a monitoring system.

System Temperature
This field displays the current system temperature.

Vcore
These fields display the current voltage of up to seven voltage input lines, if your computer contiains a monitoring system.

VTT
 One type of CPU voltage

 +3.3V, +5V, +12V
 Show you the voltage of +3.3V, +5V, +12V

CPUFAN Speed
These fields display the current speed of up to three CPU fans, if your computer contains a monitoring system.

System FAN Speed
Show you the current SystemFAN operating speed

Frequency/Voltage Control

```
                Phoenix - AwardBIOS CMOS Setup Utility
                       Frequency/Voltage Control

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




    ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
               F5:Previous Values              F7: Optimized Defaults
```
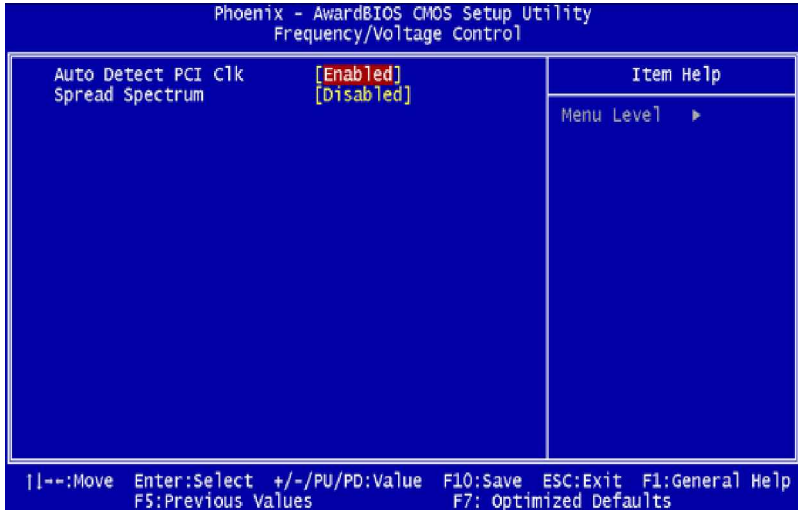
This section describes Frequency and Voltage control for the system.

Auto Detect DIMM/PCI CLK
When enabled, this item will auto detect if the DIMM and PCI socket have devices and will send clock signal to DIMM and PCI devices. When disabled, it will send the clock signal to all DIMM and PCI socket.

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

POST Codes

The following codes are not displayed on the screen. They can only be viewed on the LED display of a so called POST card. The codes are listened in the same order as the according functions are executed at PC startup. If you have access to a POST Card reader, you can watch the system perform each test by the value that's displayed. If the system hangs (if there's a problem) the last value displayed will give you a good idea where and what went wrong, or what's bad on the system board.

CODE	DESCRIPTION OF CHECK
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved

0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial onboard clock generator if Early_Init_Onboard_Generator is defined. See also POST 26h.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W inter-rupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.
24h	Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.

25h	Early PCI Initialization:
	-Enumerate PCI bus number.
	-Assign memory & I/O resource
	-Search for a valid VGA device & VGA BIOS,
	and put it into C000:0
26h	1. If Early_Init_Onboard_Generator is not defined Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.
	2. Init onboard PWM
	3. Init onboard H/W monitor devices
27h	Initialize INT 09 buffer
28h	Reserved
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address.
	2. Initialize the APIC for Pentium class CPU.
	3. Program early chipset according to CMOS setup. Example: onboard IDE controller.
	4. Measure CPU speed.
2Ah	Reserved
2Bh	Invoke Video BIOS
2Ch	Reserved
2Dh	1. Initialize double-byte language font (Optional)
	2. Put information on screen display, including Award title, CPU type, CPU speed, full screen logo.
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard if Early_Reset_KB is defined e.g. Winbond 977 series Super I/O chips. See also POST 63h.
34h	Reserved
35h	Test DMA Channel 0
36h	Reserved
37h	Test DMA Channel 1.
38h	Reserved
39h	Test DMA page registers.
3Ah	Reserved
3Bh	Reserved

3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB Keyboard & Mouse.
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Clear password according to H/W jumper (Optional)
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved

57h	1. Display PnP logo
	2. Early ISA PnP initialization
	-Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO
	2. Initialize Init_Onbaord_AUDIO.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reset keyboard if Early_Reset_KB is not defined.
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call:
	INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices.
	2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller
	2. Set up floppy related fields in 40:hardware.
70h	Reserved

71h	Reserved
72h	Reserved
73h	(Reserved
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	(Optional Feature) Enter AWDFLASH.EXE if: -AWDFLASH.EXE is found in floppy drive. -ALT+F2 is pressed.
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Init HDD write protect.
7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported. - If errors occur, report errors & wait for keys - If no errors occur or F1 key is pressed to continue : wClear EPA or customization logo.
80h	Reserved
81h	Reserved

E8POST.ASM   starts

82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. Switch screen back to text mode
86h	Reserved
87h	NET PC: Build SYSID Structure.
88h	Reserved

89h	1. Assign IRQs to PCI devices
	2. Set up ACPI table at top of the memory.
8Ah	Reserved
8Bh	1. Invoke all ISA adapter ROMs
	2. Invoke all PCI ROMs (except VGA)
8Ch	Reserved
8Dh	1. Enable/Disable Parity Check according to CMOS setup
	2. APM Initialization
8Eh	Reserved
8Fh	Clear noise of IRQs
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache
	2. Program Daylight Saving
	3. Program boot up speed
	4. Chipset final initialization.
	5. Power management final initialization
	6. Clear screen & display summary table
	7. Program K6 write allocation
	8. Program P6 class write combining
95h	Update keyboard LED & typematic rate
96h	1. Build MP table
	2. Build & update ESCD
	3. Set CMOS century to 20h or 19h
	4. Load CMOS time into DOS timer tick
	5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

Howto : Flash the BIOS

To flash your BIOS you'll need

1) a xxxxx.bin file that is a file image of the new BIOS

2) AWDFLASH.EXE a utility that can write the data-file into the BIOS chip.

Create a new, clean DOS 6 bootable floppy with "format a: /s".

Copy flash utility and the BIOS image file to this disk.

Turn your computer off. Insert the floppy you just created and boot the computer. As it boots up, hit the [DEL] key to enter the CMOS setup. Go to "LOAD SETUP (or BIOS) DEFAULTS," and then save and exit the setup program. Continue to boot with the floppy disk.

Type "AWDFLASH" to execute the flash utility. When prompted, enter the name of the new BIOS image and begin the flash procedure. Note: If you reboot now, you may not be able to boot again.

After the flash utility is complete, reboot the system.

What to do when the Award flasher says: Insufficient memory

1. In CMOS Chipset Features Setup, Disable Video Bios Cacheable.

2. Hit Esc, F10, Save and exit.

3. Flash the BIOS and reboot

4. Enter CMOS Chipset Features Setup,and Enable Video Bios Cacheable, hit Esc, F10, Save and reboot.

What if things go wrong

if you use the wrong Flash BIOS or if the writing process gets interrupted, there is a fat chance that your computer won't boot anymore.

How can you recover a corrupt BIOS ?

Boot-block booting (this works only for Award BIOS)

Modern motherboards based on Award BIOS have a boot-block BIOS. This is small area of the BIOS that doesn't get overwritten when you flash a BIOS. The boot-block BIOS only has support for the floppy drive. If you have the AGP video enabled you won't see anything on the screen because the boot-block BIOS only supports an ISA videocard.

If you do not want to change your AGP video setting than proceed as follows:

The boot-block BIOS will execute an AUTOEXEC.BAT file on a bootable diskette. Copy an Award flasher & the correct BIOS *.bin file on the floppy and execute it automatically by putting awdflash *.bin in the AUTOEXEC.BAT file.

Solution 2:   Hot-swapping

1. Replace the corrupt chip by a working one. The working BIOS doesn't have to be written for your board, it just has to give you a chance of booting to DOS.

BIOSs for the same chipset mostly work. (Chipsets that not differ too much also mostly work. (e.g. Triton FX chipset and Triton HX chipset)

2. Boot the system to DOS (with floppy or HD)

3. Be sure that the System BIOS cacheable option in your BIOS is enabled! If so replace (while the computer is powered on) the BIOS chip with the corrupt one. This should work fine with most boards because the BIOS is shadowed in RAM.

4. Flash an appropriate BIOS to the corrupt chip and reboot.

NOTE: Use a flasher from MRBIOS (http://www.mrbios.com). Utilities that come with your motherboard often use specific BIOS-hooks. Because you have booted with a BIOS not written for your motherboard they usually don't work. The MR Flash utilities communicate directly with your Flash Rom and always work. In most cases they flash a non-MRBIOS to your BIOS chip without problems.

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.
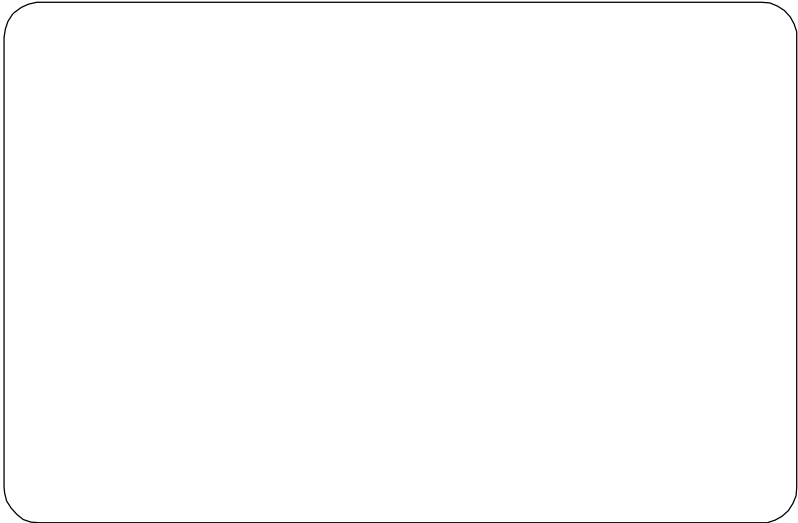
Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business

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