AR-B1665
Socket 370 Pentium III All -In-One EBX Board with Audio, LAN, CRT/LCD, and Mini-PCI User' s Guide

Edition: 1.01
Book Number: AR-B1665-05.0331

Table of Contents

0. PREFACE

0.1 COPYRIGHT NOTICE AND DISCLAIMER

This document is copyrighted, 2002, by Acrosser Technology Co., Ltd. All rights are reserved. No part of this manual may be reproduced, copied, transcribed, stored in a retrieval system, or translated into any language or computer language in any form or by any means, such as electronic, mechanical, magnetic, optical, chemical, manual or other means without the prior written permission or original manufacturer. Acrosser Technology assumes no responsibility or warranty with respect to the content in this manual and specifically disclaims any implied warranty of merchantability or fitness for any particular purpose. Furthermore, Acrosser Technology reserves the right to make improvements to the products described in this manual at any times without notice. Such revisions will be posted on the Internet (WWW.ACROSSER.COM) as soon as possible.

Possession, use, or copy of the software described in this publication is authorized only pursuant to valid written license from Acrosser or an authorized sub licensor.

ACKNOWLEDGEMENTS
Acrosser, AWARD, IBM PC/AT, Windows, MS-DOS…are registered trademarks.
All other trademarks and registered trademarks are the property of their respective owners.

0.2 WELCOME TO THE AR-B1665 CPU BOARD

This guide introduces the Acrosser AR-B1665 CPU Board.
Use information provided in this manual describes this card's functions and features. It also helps you start, set up and operate your AR-B1665. General system information can also be found in this publication.
Please refer to the chapter introduction if you have not already installed this board. Check the packing list before you install and make sure the accessories are completely included.

0.3 BEFORE YOU USE THIS GUIDE

Please refer to the Chapter 1, "Introduction" in this guide, if you have not already installed this AR-B1665. Check the packing list before you install and make sure the accessories are completely included.
AR-B1665 CD provides the newest information regarding the CPU card.   Please refer to the files of the enclosed utility CD.   It contains the modification and hardware & software information, and adding the description or modification of product function after manual printed.

0.4 RETURNING YOUR BOARD FOR SERVICE

If your board requires any services, contact the distributor or sales representative from whom you purchased the product for service information. If you need to ship your board to us for service, be sure it is packed in a protective carton. We recommend that you keep the original shipping container for this purpose.
You can help assure efficient servicing for your product by following these guidelines:
1. Include your name, address, daytime telephone, facsimile number and E-mail.
2. A description of the system configuration and/or software at the time of malfunction.
3. A brief description of the problem occurred.

0.5 TECHNICAL SUPPORT AND USER COMMENTS

Users comments are always welcome as they assist us in improving the quality of our products and the readability of our publications. They create a very important part of the input used for product enhancement and revision.
We may use and distribute any of the information you provide in any way appropriate without incurring any obligation.
You may, of course, continue to use the information you provide.
If you have any suggestions for improving particular sections or if you find any errors on it, please send your comments to Acrosser Technology Co., Ltd. or your local sales representative and indicate the manual title and book number.
Internet electronic mailto:Sales@acrosser.com
acrosser@tp.globalnet.com.tw

0.6 STATIC ELECTRICITY PRECAUTIONS

Before removing the board from its anti-static bag, read this section about static electricity precautions. Static electricity is a constant danger to computer systems. The charge that can build up in your body may be more than sufficient to damage integrated circuits on any PC board. It is, therefore, important to observe basic precautions whenever you use or handle computer components. Although areas with humid climates are much less prone to static build-up, it is always best to safeguard against accidents that may result in expensive repairs. The following measures should be sufficient to protect your equipment from static discharge:

Touch a grounded metal object to discharge the static electricity in your body (or ideally, wear a grounded wrist strap).

When unpacking and handling the board or other system components, place all materials on an anti-static surface.

Be careful not to touch the components on the board, especially the "golden finger" connectors on the bottom of the board.

1. INTRODUCTION

Welcome to the AR-B1665 Single Embedded Board Computer in EBX form factor board. AR-B1665 provides a flexible system that allows users to choose the performance of system as their wish. AR-B1665 supports Socket 370 Pentium III (Coppermine and Tualatin), Intel Celeron, Via C3 processors with speed up to 1.26G with FSB 100/133 /66 MHz. AR-B1665 is equipped with high performance VIA ® advanced chipset CLE266 version CD (North Bridge VT8623-CE plus South Bridge VT8235-CD). This product is designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

AR-B1665 provides one 184 pin DIMM socket that supports up to 1 GB DDR266/DDR200 (PC2100/PC1600) Double Data Rate(DDR) SDRAM. The DDR interface allows zero wait state bursting between the DRAM and the data buffer at 133/100 MHz.

AR-B1665 also provides on board VGA(CRT and 24 bit LCD),one LAN that support 10/100M Base-Tx, AC97 Codec for Audio with an optional small board amplifier(AR-B9425) and six USB 2.0 port with poly fuse protection.

The most eyes popping characteristic of AR-B1665 is its graphic/video accelerator that is integrated into CLE266 North Bridge. It provides internal AGP 4x performance along with 128-bit 2D Graphics Accelerator, 128-bit 3D Graphics Accelerator and DVD playback with MPEG-2 base.

Based on all of the features above, AR-B1665 is an ideal solution for consumers that are looking for high speed performances with flexible option for further upgrade at a reasonable price.
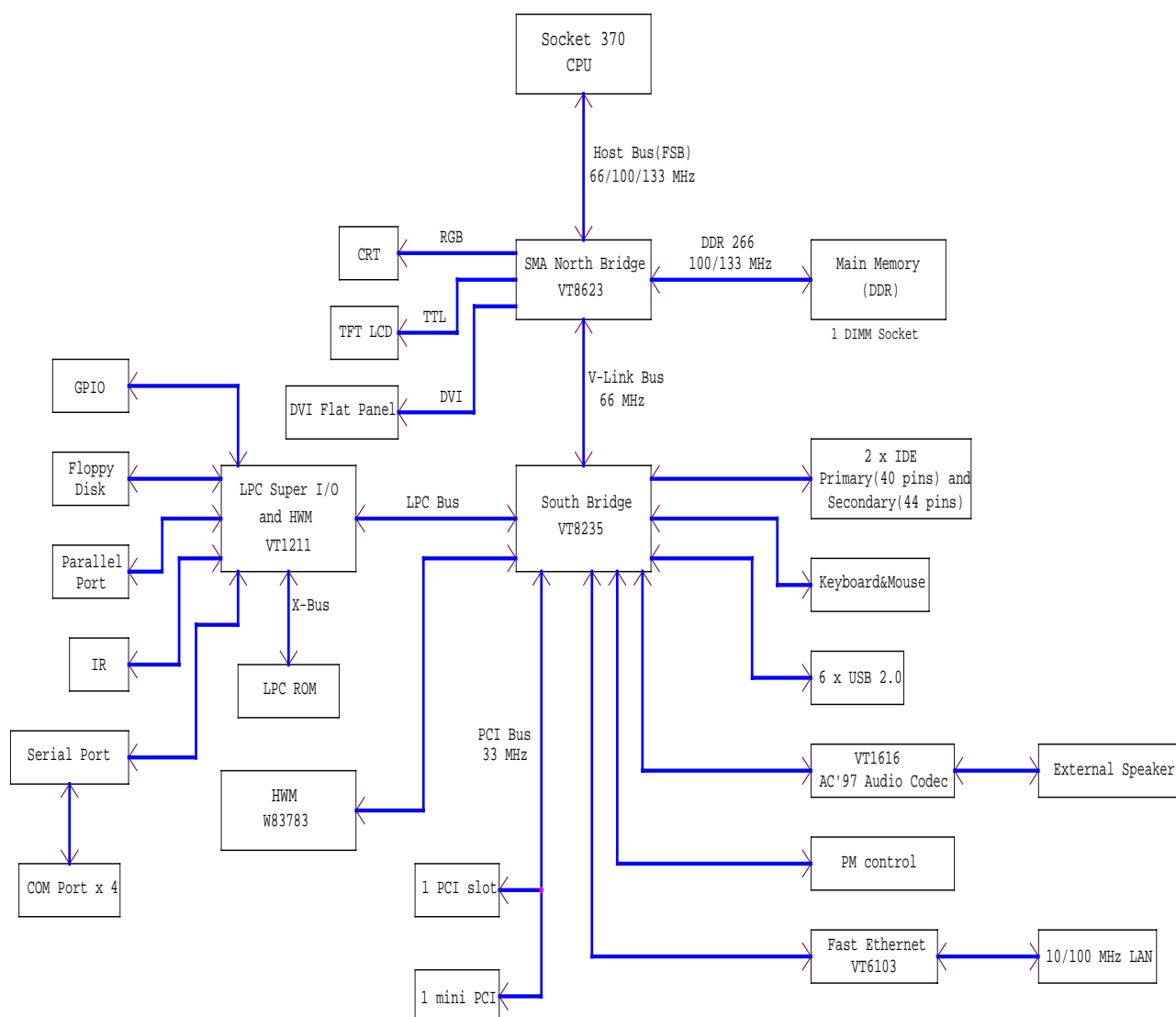
1.1 SPECIFICATIONS

- **CPU:** Socket 370(Pentium III, Intel Celeron, Via C3, Pentium III Tualatin)
- **DMA channels:** 7
- **Interrupt levels:** 15
- **Chipset:** VIA ® CLE266 (VT8623 Integrated 2D ,3D, and MPEG-2 graphics accelerator and VT8235)
- **RAM memory:** Provide one 184 pin DDR SDRAM DIMM socket. The memory capability is up to 1GB.
- **VGA Controller:** Embedded VGA controller, Screen Resolution: up to True Color (32 bit)1280x1024
- **Display Interface:** CRT –2x5x2.00mm pin-header connector
                        LCD – for 24 bit TFT LCD Panel, 2x22x2.00mm pin-header connector
- **Ultra ATA/33/66/100 IDE Interface:** Two PCI Enhance IDE channel. The south bridge VT8235 supports Ultra ATA/33/66/100/133 IDE interface. To support Ultra ATA66/100/133 Hard disk, a specified cable(80-conductor ribbon cable) must be available.
- **Floppy disk drive interface:** 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
- **Series ports:** Four high-speed 16550 compatible UARTs ports with 16-byte send/receive FIFOs
                    COM1,COM2,COM4: On-board one 2x5x2.54mm Box-Header connector. Only RS232.
                    COM3: On-board one 2x5x2.54mm Box-Header connector. Share with RS-485.
- **Parallel Port**: one IEEE1284 compatible Bi-directional ports
- **IrDA port:** Supports IrDA (HPSIR) and ASK (Amplitude Shift Keyed)-IR port multiplexed on COM2.
- **USB port:** Support six USB 2.0 compatible ports.
- **Audio: Onboard AC'97 Codec,** Supports two channel Left/Right Line IN/OUT, and Left/Right speaker out, MIC IN, CD IN.
- **Watchdog timer:** Software programmable 1~60sec.
- **On board Integrated Fast Ethernet :** IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. Fast back-to-back transmission support with minimum interframe spacing.Connected to your LAN through RJ45 connector. Support WOL(Wake On LAN).
- **Keyboard Connector & PS/2 Mouse:** Connector on-board
- **Power Consumption:** +5VSB @0.3A, +5V@5A (Max), +3.3V@3.3A (Max), +12V@0.5A(Max)
- **Operating Temperature:** 0° ~ 60 (CPU needs Cooling Fan)

1.2 PACKING LIST

In addition to this User's Manual, the AR-B1665 package includes the following items:
- The quick setup manual
- 1 AR-B1665 CPU board
- 1 Hard disk drive adapter cable for 3.5" hard disk
- 1 Hard disk drive adapter cable for 2.5" hard disk
- 1 Floppy disk drive adapter cable
- 1 Software utility CD
- 1 Parallel Port interface cable
- 2 RS-232 and 1 PS/2 Mouse & Keyboard interface cable mounted on bracket

2. INSTALLATION

This chapter describes how to install the AR-B1665. At first, the layout of AR-B1665 is shown, and the unpacking information that you should be careful is described. The following lists the jumpers and switches setting for the AR-B1665's configuration.

2.1 AR-B1665'S LAYOUT
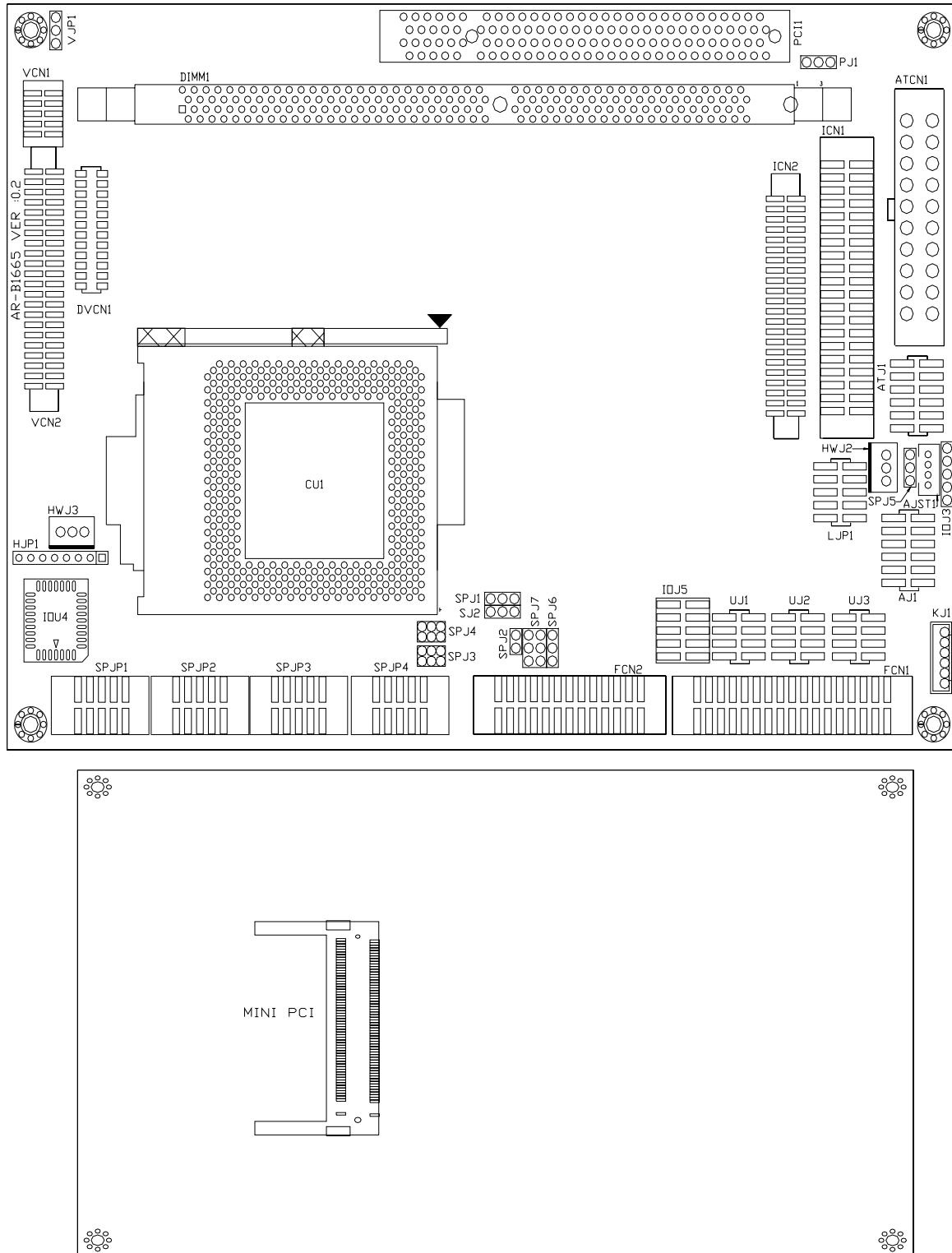
2.2 INSTALLING THE CPU

The AR-B1665 Embedded Board supports a Socket 370 processor socket for Intel Pentium III (FC-PGA/FC-PGA2) and Celeron processors. The Board uses a CPU socket called Socket 370 for easy CPU installation. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

CPU Installation Procedures :

1. Pull the lever sideways away form the socket. Then, raise the lever up to a 90-degree angle.
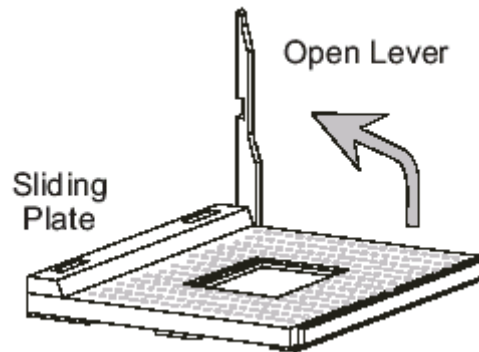
2. Look for the gold arrow. The gold arrow should point towards the end of lever. The CPU will only fit in the correct orientation.
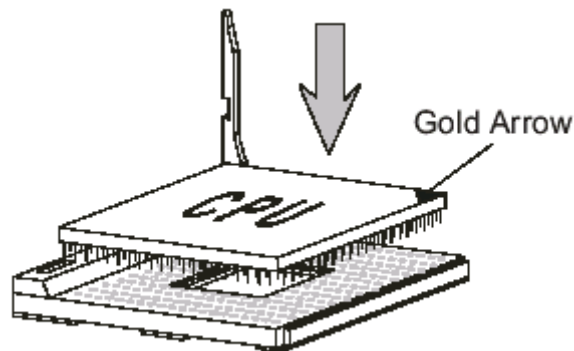
3. Hold the CPU down firmly, and then close the lever to complete the installation.
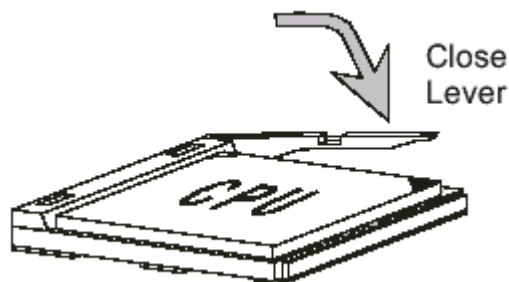
NOTE: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.

2.3 INSTALLING THE MEMORY (DIMM)

The AR-B1665 Embedded Board supports one 168-pin DIMM socket for a maximum total memory of 512MB in SDRAM type. The memory module capacities supported are 64MB, 128MB, 256MB, and 512MB.

Installing and Removing DIMMs
To install the DIMM, locate the memory slot on the Embedded Board and perform the following steps:
Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
To remove the DIMM, press the clips with both hands.

Lock **DIMM**   **Lock**

Lock   **Lock**
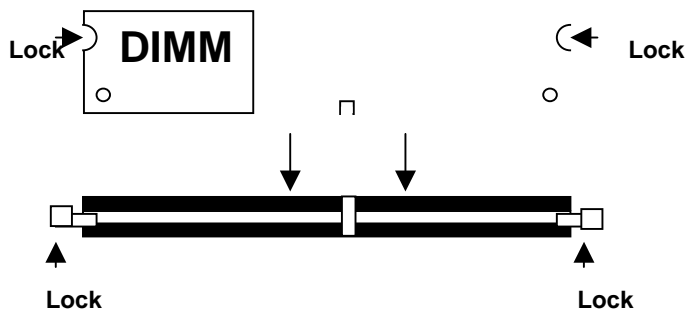
Top View of DIMM Socket

2.4 BATTERY JUMPER (SJ2)

1
2   1-2: ON-BOARD BATTERY (Factory Preset)
3   2-3: CLEAR CMOS

Factory Preset
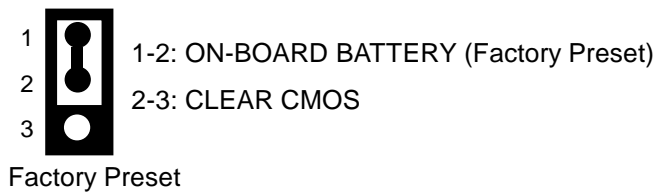
3. CONNECTION

This chapter describes how to connect peripherals, switches and indicators to the AR-B1665 board.

3.1 AUDIO CONNECTOR (AUDIO)
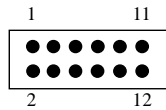
PIN	SIGNAL	PIN	SIGNAL
1	LINEOUTR	2	LINEOUTL
3	GND	4	GND
5	LINEINR	6	LINEINL
7	GND	8	GND
9	MIC	10	BIAS
11	GND	12	+12V

3.2 HARD DISK (IDE) CONNECTOR (IDE0, IDE1)

● **40-Pin hard Disk Connector (IDE0)**

A 40-pin header type connector (IDE0) is provided to interface with up to two embedded hard disk drives (IDE AT bus).   This interface, through a 40-pin cable, allows the user to connect up to two drives in a "daisy chain" fashion. To enable or disable the hard disk controller, please use the BIOS Setup program, which is explained further in chapter 5.   The following table illustrates the pin assignments of the hard disk drive's 40-pin connector.
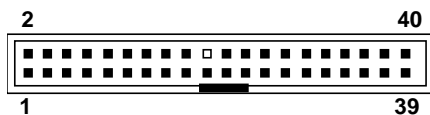
Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N.C
21	PDDREQ	22	GROUND
23	-PDIOW	24	GROUND
25	-PDIOR	26	GROUND
27	PIORDY	28	GROUND
29	-PDDACK	30	GROUND
31	IRQ14	32	N.C
33	PDA1	34	PD66/100
35	PDA0	36	PDA2
37	-PDCS1	38	-PDCS3
39	HLED1	40	GROUND

- **44-Pin Hard Disk Connector (IDE1)**

AR-B1665 also provides IDE interface 44-pin connector to connect with the hard disk device.
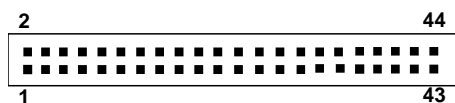
Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N.C
21	SDDREQ	22	GROUND
23	-SOIOW	24	GROUND
25	-SOIOR	26	GROUND
27	SIORDY	28	GROUND
29	-SDDACK	30	GROUND
31	IRQ15	32	N.C
33	SDA1	34	SD66/100
35	SDA0	36	SDA2
37	-SDCS1	38	-SDCS3
39	HLED2	40	GROUND
41	VCC	42	VCC
43	GROUND	44	N.C

3.3 PARALLEL PORT CONNECTOR 1 (LPT)

This port is usually connected to a printer. The AR-B1665 includes an on-board parallel port, and accessed through a 26-pin flat-cable connector. Three modes –SPP, EPP and ECP – are supported.
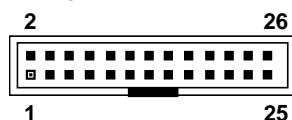
Pin	Signal	Pin	Signal
1	-STB	2	-AFD
3	PD0	4	-ERROR
5	PD1	6	-INIT
7	PD2	8	-SLIN
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	-ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N.C

3.4 SERIAL PORTS
● **COM1 – COM4 VOLTAGE SELECT (SPJ3, SPJ4)**

SPJ3

```
1  ●● 2
3  ●● 4      3-5,4-6 :COM3,COM4 :12V(Factory Preset)
5  ●● 6      1-3,2-4 : 5V
```
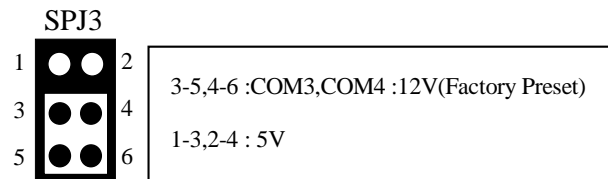
3.5 SERIAL PORT CONNECTOR (COM1, COM2, COM4)
Only RS232

```
9            1      1.DCD   6.CTS
○ ○ ○ ○ ○          2.DSR   7.DTR
○ ○ ○ ○ ○          3.RX    8.RI
10           2      4.RTS   9.GND
                    5.TX    10.NC
```
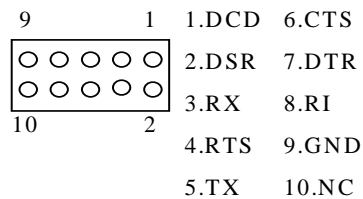
3.6 SERIAL PORT CONNECTOR (COM3)
Used RS232& RS485

```
9            1      1.DCD   6.CTS
○ ○ ○ ○ ○          2.DSR   7.DTR
○ ○ ○ ○ ○          3.RX    8.RI
10           2      4.RTS   9.GND
                    5.TX    10.NC
```

SPJ7   SPJ6   SPJ7   SPJ6
```
1 ●━● ●  3           1 ●  ●━● 3
4 ●━● ●  6           4 ●  ●━● 6
7 ●━● ●  9           7 ●  ●━● 9
```
RS-232   RS-485
Factory Preset
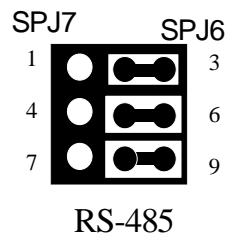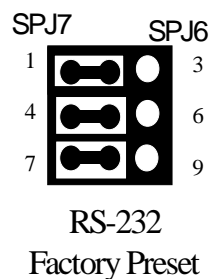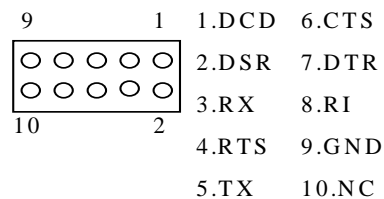
3.7 RS-485 TERMINATOR SELECT (SPJ2)

```
1 ●                  1 ▯
2 ●                  2 ▯
Open                 Closed
                     Factory Preset
```
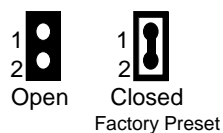
* When there is only one line the setting should be left off (please take off the jumper), if multiple blocks are used on a single line this should be set to "ON"(place a jumper) in order to properly terminate the connection for better transmission

3.8 RS-485 HEADER (SPJ1)

```
○ ○ ○    1 N485+
1 2 3    2 N485-
         3 GND
```
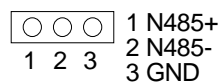
3.9 TOUCH SCREEN CONNECTOR (TSC)

```
┌─────────────┐  1 RXDF
│ ○  ○  ○ │  2 TXDF
└─────────────┘  3 GND
  1  2  3
```
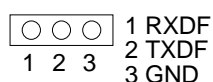
3.10 EXTERNAL KEYBOARD / MOUSE CONNECTOR (KB/MS)

The AR-B1665 provides 6-PIN JST Header and 6-PIN MINI-DIN keyboard/mouse connector.

```
                                  1.MOUSE DATA

                                  2.KB DATA

┌──────────────────┐  3.GND
│ ○ ○ ○ ○ ○ ○ │
└──────────────────┘  4.VCC
  1              6
                                  5.MOUSE CLOCK

                                  6.KB CLOCK
```
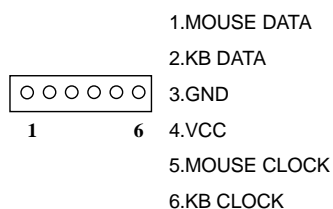
3.11 USB 2.0 CONNECTOR (USB1, USB2, USB3)

```
 2        8      1.VCC      2.GND
┌──────────┐
│ ● ● ● ● │   3.DATA1-   4.DATA2+
│ ● ● ● ● │
└──────────┘   5.DATA1+   6.DATA2-
 1        7
                7.GND      8.VCC
```
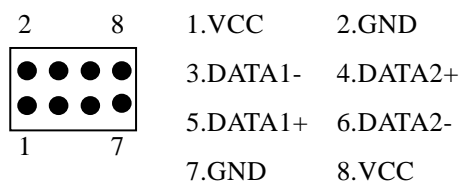
3.12 INFRARED CONNECTOR (IR)

The AR-B1665 built-in IrDA port which support Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. When use the IrDA port have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM 2. Then the normal RS-232 COM 2 will be disabled.

```
                          1. VCC
┌────────────────┐
│ ○ ○ ○ ○ ○ │  2.NC
│ ▲             │
└────────────────┘
 1              5  3.IR DATA RECEIVER

                          4.GND

                          5. IR DATA TRANSFER
```
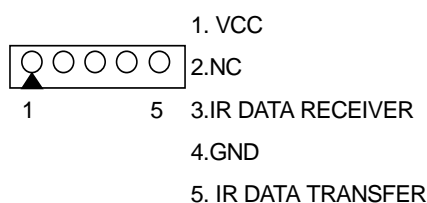
3.13 CPU FAN POWER CONNECTOR (FAN1, FAN2)

The AR-B1665 provides CPU cooling Fan connector. CPU connectors can supply 12V/500mA to the cooling fan.

```
┌──────────┐  1.  GND
│ ○  ○  ○ │
└──────────┘  2.  +12V
  3  2  1
                  3.  SENSE
```
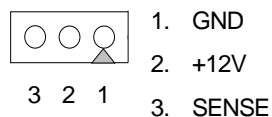
3.14 ETHERNET LAN CONNECTOR (LAN)

It is able to collocate with AR-B9450B (optional)

2   10

●●●●●
●●●●●

1   9
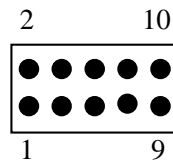
PIN	SIGNAL	PIN	SIGNAL
1	LED1+	2	LED1-
3	RX+	4	RX-
5	LED2-	6	GROUND
7	LED2+	8	GROUND
9	TX+	10	TX-

3.15 CRT CONNECTOR (CRT)

AR-B1665 built-in 15-pin VGA connector directly to your CRT monitor.

2   10

●●●●●
●●●●●

1   9

1.RED   2.GND
3.GREEN   4.GND
5.BLUE   6.GND
7.VSYNC   8.SPCLK
9.HSYNC   10.SPD
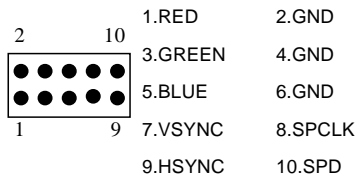
3.16 FLOPPY PORT CONNECTOR (FDD)

The AR-B1665 provides a 34-pin header type connector for supporting up to two floppy disk drives.
To enable or disable the floppy disk controller, please use the BIOS Setup program.

2   34

■■■■■■■■■■■■■■■■■
■■■■■■■■■■■■■■■■■

1   33
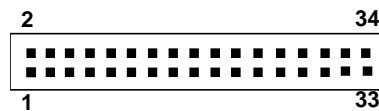
PIN	Signal	PIN	Signal
1-33(odd)	GROUND	18	DIRECTION
2	DRVEN 0	20	-STEP
4	N.C.	22	-WRITE DATA
6	N.C.	24	-WRITE GATE
8	-INDEX	26	-TRACK 0
10	-MOTOR ENABLE A	28	-WRITE PROTECT
12	-DRIVE SELECT B	30	-READ DATA
14	-DRIVE SELECT A	32	-SIDE 1 SELECT
16	-MOTOR ENABLE B	34	DISK CHANGE

3.17 GPIO CONNECTOR (GPIO)

2   10

○○○○○
○○○○○

1   9

1.GPIO1   2.GPIO2
3.GPIO3   4.GPIO4
5.GPIO5   6.GPIO6
7.GPIO7   8.GPIO8
9.GND   10.VCC
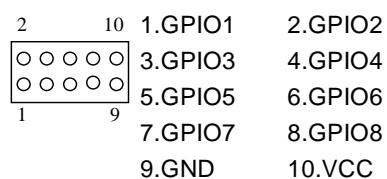
● Users could test GPIO function under 'Debug' program as follow:

GPO Example	
o 4e 87	;Extended Functions Enable Register
o 4e 87	;Extended Functions Enable Register
o 4e 29	;select CR29
o 4f 80	;(Define the PINs as GPIO or Game Port 1) "80" Pin121 ~ 128 set as GPIO
o 4e 07	;EFIR=EFER (Extended Functions Index Register) point to Logical Device Number Reg.
o 4f 07	;EFDR=EFIR+1 (select logical device 7,GPIO in logical device 7)
o 4e 30	;select CR30 (Active or inactive)
o 4f 01	;set 01 (Active)　　00 (inactive)
o 4e f0	;select CRF0 (Set the PINs be GPO or GPI Function)
o 4f 00	;set the PINs be GPO
o 4e f2	;select CRF2 (Output High / Low)
o 4f 00	;set the PINs be all Low Level (FF=all High Level)
o 4e f1	;select CRF1
o 4f 07	;set the output to be 07
o 4e aa	;exit EFER
q	;Quit debug

GPI Example	
o 4e 87	;Extended Functions Enable Register
o 4e 87	;Extended Functions Enable Register
o 4e 29	;select CR29
o 4f 80	;(Define the PINs as GPIO or Game Port 1) "80" Pin121 ~ 128 set as GPIO
o 4e 07	;EFIR=EFER (Extended Functions Index Register) point to Logical Device Number Reg.
o 4f 07	;EFDR=EFIR+1 (select logical device 7,GPIO in logical device 7)
o 4e 30	;select CR30 (Active or inactive)
o 4f 01	;set 01 (Active)　　00 (inactive)
o 4e f0	;select CRF0 (Set the PINs be GPO or GPI Function)
o 4f ff	;set the PINs be GPI
o 4e f1	;select CRF1 (Set the PINs be Read only)
i 4f	;Show the PINs Value
q	;Quit debug

3.18 ATX POWER CONNECTOR (ATX)

```
20                      11
┌─────────────────────┐
│○○○○○○○○○○│
│○○○○○○○○○○│
└─────────────────────┘
10                       1
```

1. 3.3V	11. 3.3V
2. 3.3V	12. -12V
3. GND	13 GND
4. 5V	14 PS-ON
5. GND	15. GND
6. 5V	16. GND
7. GND	17. GND
8. PW-OK	18. –5V
9. 5VSB	19. 5V
10. 12V	20 5V
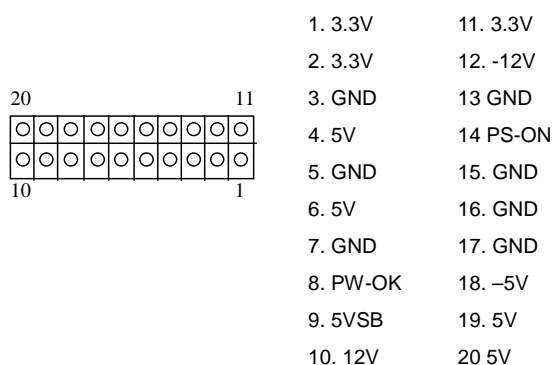
3.19 LCD CONNECTOR (LCD)
■ *24-Bits LCD PANEL CONNECTOR (LCD)*

```
2                              44
┌──────────────────────────────┐
│ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ │
│ □ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ │
└──────────────────────────────┘
1                              43
```
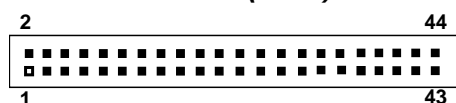
PIN	Signal	PIN	Signal	PIN	Signal
1	GND	16	G0	31	R3
2	SFCLK	17	G1	32	R4
3	GND	18	G2	33	R5
4	HSYNC	19	G3	34	GND
5	VSYNC	20	GND	35	LCDVCC
6	GND	21	G4	36	LCDVCC
7	B0	22	G5	37	+12V
8	B1	23	G6	38	+12V
9	B2	24	G7	39	GND
10	B3	25	(PD21)	40	GND
11	B4	26	(PD20)	41	DE
12	B5	27	GND	42	ENBLT
13	GND	28	R0	43	GND
14	B6	29	R1	44	ENVDD
15	B7	30	R2		

3.20 LCD SELECT (NJ1)

1: LCD (Factory Preset)

0: DVI

Factory Preset

3.21 VOLTAGE SELECT (VJP1)
■ *LCD*

1
2
3
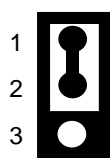
1-2: 5V (Factory Preset)

2-3: 3.3V

Factory Preset

3.22 PANEL CONNECTOR (PANEL)

```
2        1 0
□ ● ● ● ●
□ ● ● ● ●
1         9
```
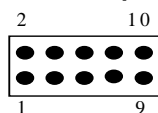
🟥 **POWER LED**
  1. VCC
  3. PLED

🟥 **POWER BUTTON**
  5. GND
  6. PWRBTN

🟥 **HARD DISK LED**
  2. VCC
  4. HD-LED

🟥 **RESET BUTTON**
  9. GND
  10. RSTSW

3.23 PCI SLOT (PCI 1)
3.24 MINI PCI SLOT (MPCI 2)
3.25 PCI SELECT (PJ1)

```
3  ○   2-3 When riser card is applied,
2           Please set 2-3 close
1      1-2 Support one PCI card (Factory Preset)
```

Factory Preset
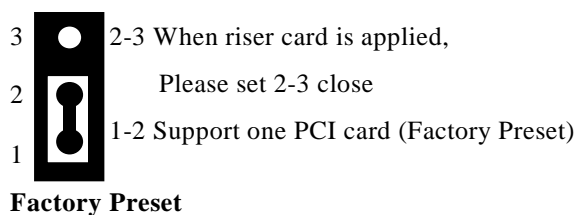
3.26 CPU SETTING SYSTEM BUS CLOCK (CKSW1)

```
1  2
□ □
OFF
```
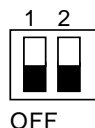
1	2	CPU
OFF	OFF	133
OFF	ON	100
ON	ON	66

3.27 CD IN CONNECTOR (CDIN)

```
○ ○ ○ ○
▲
1  2  3  4
```

  1.CD INL
  2.GND
  3.CD INR
  4.NC
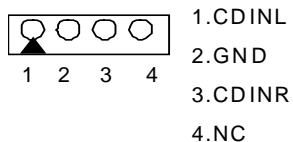
3.28 DDR SDRAM SOCKET 184 PIN (DIMM)
3.29 DVI/TV

```
2                    26
○○○○○○○○○○○○○
○○○○○○○○○○○○○
1                    25
```
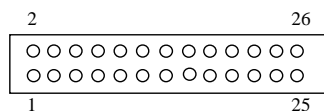
Optional (For Future Application)

4. WATCHDOG TIMER

This section describes the use of Watchdog Timer. AR-B1665 is equipped with a programmable time-out period watchdog timer that enable user to reset the system after a time out occur. Users can use simple program to enable the watchdog timer, and program the timer in range of seconds or minutes, with maximum 255 seconds/minutes. Once you enable the watchdog timer, the program will start the count down and when counting down to zero the system will generate a reset signal to reset the system.

4.1 WATCHDOG TIMER SETTING

The watchdog timer is a circuit that maybe be used from your program software to detect crash or hang up.
The Watchdog timer is automatically disabled after reset. Once you enabled the watchdog timer, your program should trigger the watchdog timer every time before it times out. After you trigger the watchdog timer, the timer will be set to zero and start to count again. If your program fails to trigger the watchdog timer before times out, it will generate a reset pulse to reset the system .

Please refer to the following table in order to properly program Watchdog function

Users could test watchdog function under 'Debug' program as follows:

C:>debug	
o 4e 87	;Extended Functions Enable Register
o 4e 87	;Extended Functions Enable Register
o 4e 07	;EFIR=EFER (Extended Functions Index Register) point to Logical Device Number Reg.
o 4f 08	;EFDR=EFIR+1 (select logical device 8, Watchdog)
o 4e f3	;select register F3(to select Watchdog count mode ;seconds or minutes)
o 4f 05	;write 05 to CRF3(for minutes) ,default is 01(second)
o 4e f4	;select CRF4 (to set Watchdog Timer Value)
o 4f 02	;set the Watchdog timer to 2 minutes. (00 to disable, max FF)
o 4e aa	;exit EFER
q	;Quit debug

5. BIOS CONSOLE

This chapter describes the AR-B1665 BIOS menu displays and explains how to perform common tasks needed to get up and running, and presents detailed explanations of the elements found in each of the BIOS menus.   The following topics are covered:
- Main
- Advanced
- Peripherals
- Boot
- PC Health
- Exit

5.1 MAIN

The BIOS is a program used to initialize and set up the I/O system of the computer, which includes the ISA bus and connected devices such as the video display, diskette drive, and the keyboard. The BIOS provides a menu-based interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

The BIOS default values ensure that the system will function at its normal capability. In the worst situation the user may have corrupted the original settings set by the manufacturer.

After the computer is turned on, the BIOS will perform diagnostics on the system and display the size of the memory that is being tested. Press the [Del] key to enter the BIOS Setup program, and then the main menu will show on the screen.

The BIOS Setup main menu includes some options.   Use the [Up/Down] arrow key to highlight the option that you wish to modify, and then press the [Enter] key to select the option and configure the functions.
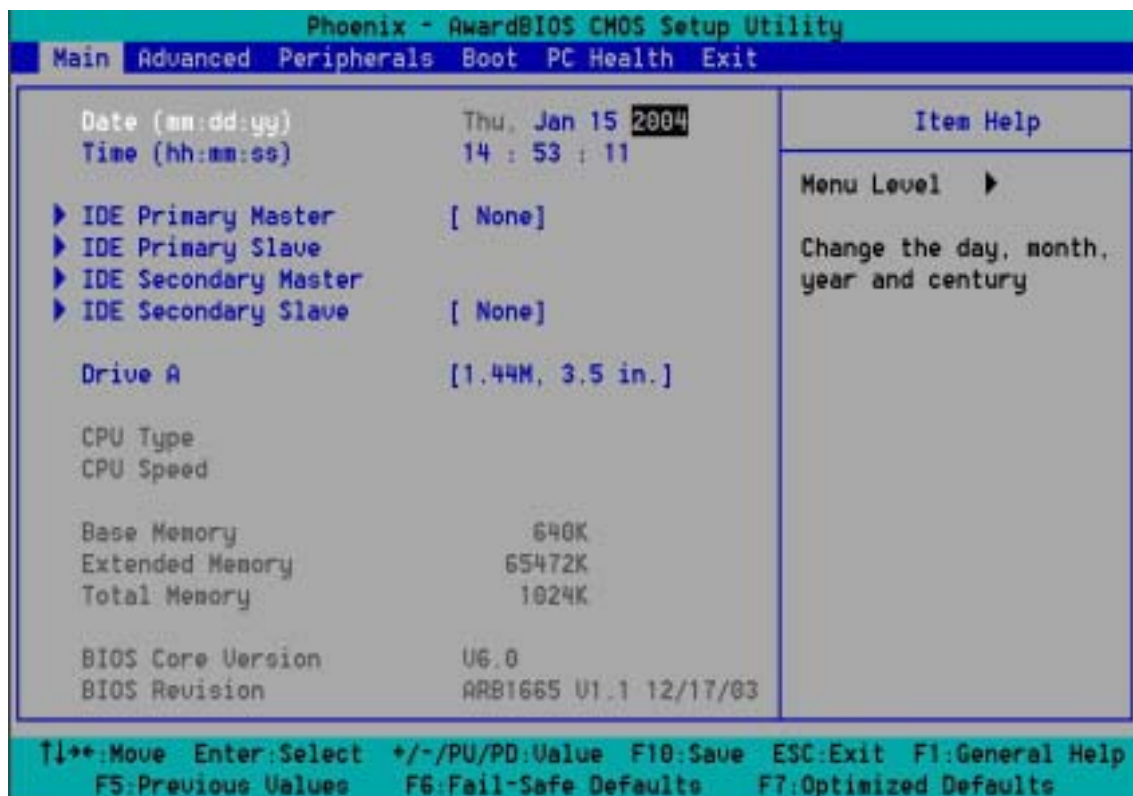
Main Menu

The <Main> option allows you to record some basic system hardware configuration and set the system clock and error handling.   If the CPU board is already installed in a working system, you will not need to select this option anymore.

Date & Time Setup

Highlight the <Date> field and then press the [Page Up] /[Page Down] or [+]/[-] keys to set the current date.   Follow the month, day and year format.

Highlight the <Time> field and then press the [Page Up] /[Page Down] or [+]/[-] keys to set the current date.   Follow the hour, minute and second format.

The user can bypass the date and time prompts by creating an AUTOEXEC.BAT file.   For information on how to create this file, please refer to the MS-DOS manual.

Hard Disk Setup

The BIOS supports various types for user settings, The BIOS supports <Pri Master>, <Pri Slave>, <Sec Master> and   <Sec Slave> so the user can install up to two hard disks.   For the master and slave jumpers, please refer to the hard disk's installation descriptions and the hard disk jumper settings in section three of this manual.

Floppy Setup

The <Main> option records the types of floppy disk drives installed in the system.

To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left-or right-arrow key.

5.2 ADVANCED

The <Advanced > option consists of configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference.   Some entries here are required by the CPU board's design to remain in their default settings.
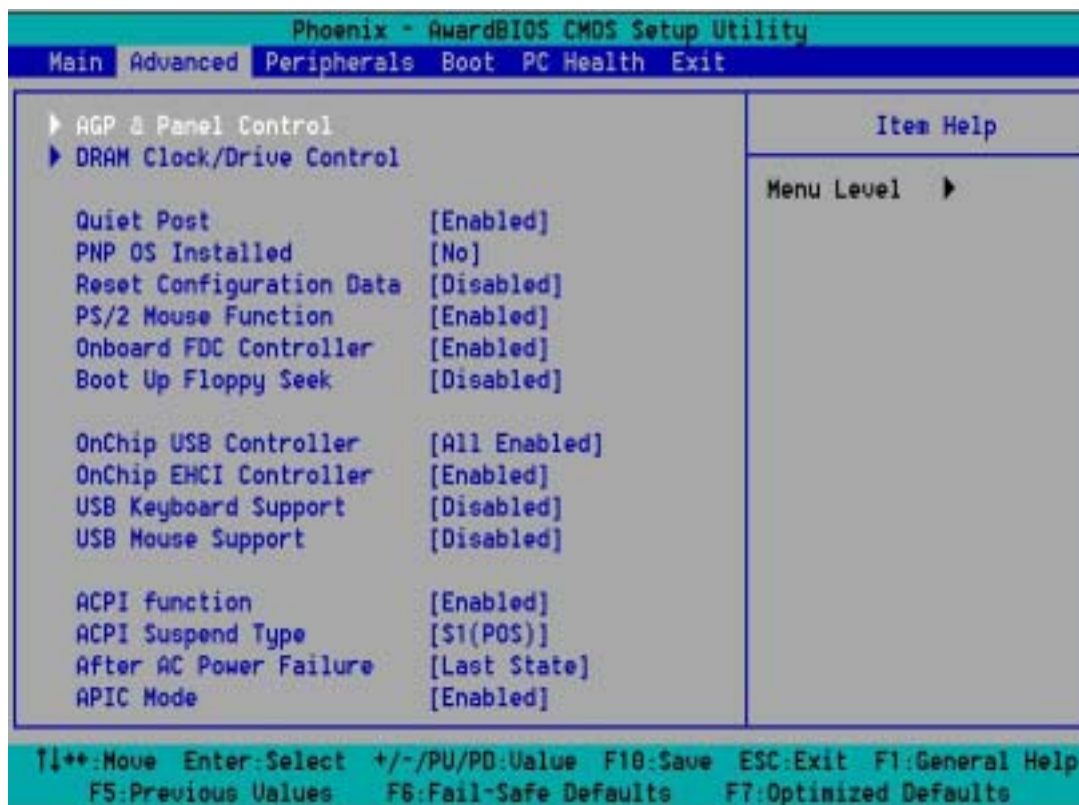
Advanced

Quick Post

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

These options determine where the system looks first for an operating system.

PS/2 Mouse Function
The setting of Enabled allows the system to detect a PS/2 mouse on boot up.   If detected, IRQ12 will be used for the PS/2 mouse.   IRQ 12 will be reserved for expansion cards if a PS/2 mouse is not detected.   Disabled will reserve IRQ12 for expansion cards and therefore the PS/2 mouse will not function.

Onboard FDC Controller
Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field.
The settings are: Enabled and Disabled.

Boot Up Floppy Seek
During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

On Chip USB Controller
This option can enable USB Ports or Disabled USB function.

USB Keyboard Support
This option can enable or Disabled USB keyboard function.

USB Mouse Support
This option can enable or Disabled USB mouse function.

ACPI Function
This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled .

ACPI Suspend Type
This item will set which ACPI suspend type will be used.
S1 (POS)
The S1 sleeping state is low wake-up latency sleeping state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
S3 (STR)
The S3 state is a low wake-up latency sleeping sate where all system context is lost expect system memory. CPU, cache, and chipset context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context.

After AC Power Failure
This option enable the End User to define if the system will be power-on once the AC Power is given.
The Options:
1. Power Off (Always Power Off, must press Power Button to boot)
2. Power On (Auto Power On when AC power is on)
3. Last State (Depend on the Last State of the system).

5.3 PERIPHERALS

This option controls the configuration of the board's chipset. Control keys for this screen are the same as for the previous screen.

```
         Phoenix - AwardBIOS CMOS Setup Utility
   Main  Advanced  Peripherals  Boot  PC Health  Exit

      VIA AC97 Audio           [Auto]          ┌─────────────────┐
      VIA OnChip LAN           [Enabled]       │   Item Help     │
      Onboard Serial Port 1    [3F8/IRQ4]      ├─────────────────┤
      Onboard Serial Port 2    [2F8/IRQ3]      │ Menu Level   ▶  │
      UART Mode Select         [Normal]        │                 │
      RxD , TxD Active         [Hi,Lo]         │                 │
      IR Transmission Delay    [Enabled]       │                 │
      UR2 Duplex Mode          [Half]          │                 │
      Use IR Pins              [IR-Rx2Tx2]     │                 │
      Onboard Serial Port 3    [3E8]           │                 │
      Serial Port 3 Use IRQ    [IRQ4]          │                 │
      Onboard Serial Port 4    [2E8]           │                 │
      Serial Port 4 Use IRQ    [IRQ3]          │                 │
      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    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Peripherals

VIA AC97 Audio
This item allows you to decide to Enabled, Disabled the AC'97 Audio .

VIA OnChip LAN
This item allows you to decide to Enabled, Disabled the OnBoard LAN .

OnBoard Serial Port 1
OnBoard Serial Port 2
OnBoard Serial Port 3
OnBoard Serial Port 4
These options enable the serial port 1,2,3,and 4 on the AR-B1665 .

UART Mode Select
The item allows you to determine which InfraRed (IR) function of the onboard I/O chip, this function uses.

OnBoard Parallel Port
This option enables the parallel port on the AR-B1665.

Parallel Port Mode
This option specifies the parallel port mode.   ECP and EPP are both bi-directional data transfer schemes that adhere to the IEEE 284 specifications.

5.4 BOOT

Phoenix - AwardBIOS CMOS Setup Utility

Main Advanced Peripherals **Boot** PC Health Exit

		Item Help
First Boot Device	[CDROM]	
Second Boot Device	[HDD]	Menu Level ▶
Third Boot Device	[Disabled]	
Boot Other Device	[Enabled]	Select Your Boot Device Priority

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

Boot

System Thermal
> If set to ***Enable***, the system will alarm when the system temperature is beyond the critical temperature.

Thermal Active Temperature
> Set the critical temperature.

Thermal Slow Clock Ratio
> This item is to set up the Operating Frequency of system clock in power saving mode, to set a suitable clock frequency ratio, which between standard CPU clock and CPU clock in power saving mode when the temperature is beyond the critical temperature.

Power Button Function
> Define the Power Button Function, if set to ***On/Off*** , the Power Button will act immediately as soon as the Power Button being released. If we set to ***Suspend,*** the Power Button will act after it being press for 4 seconds.
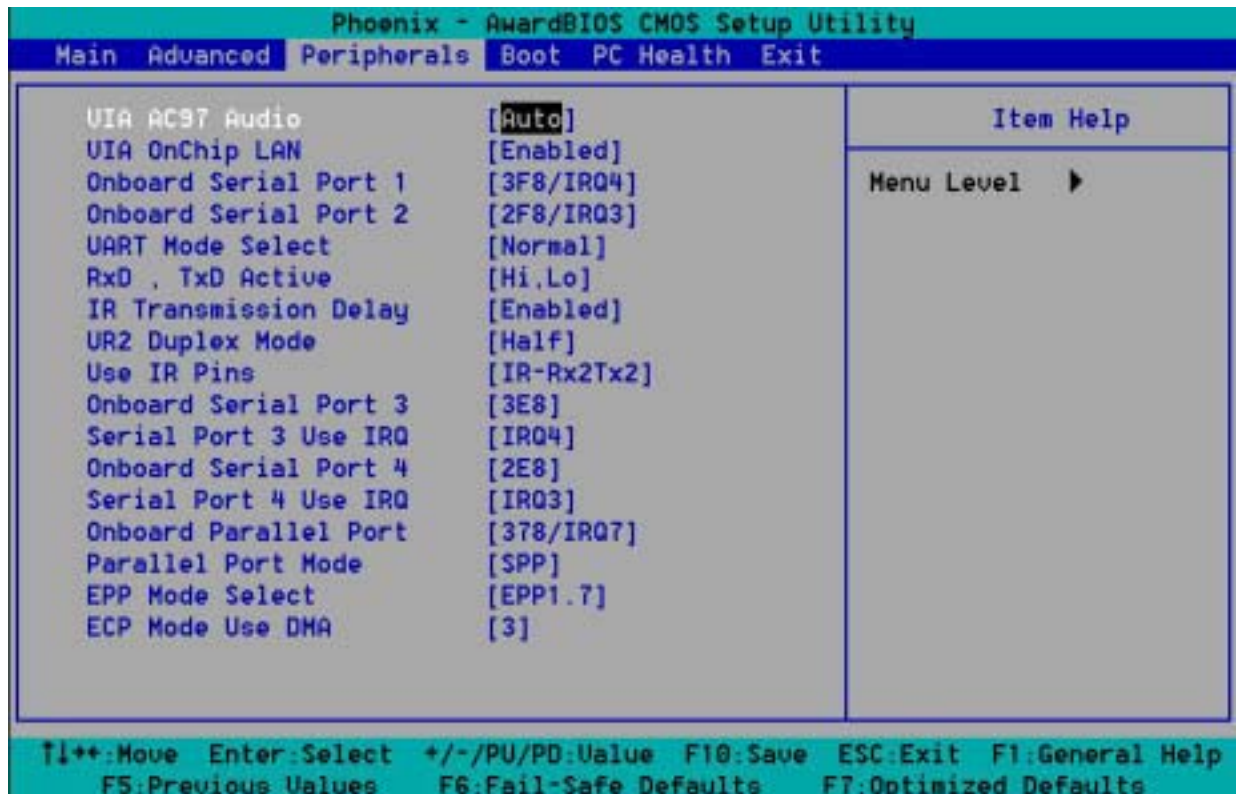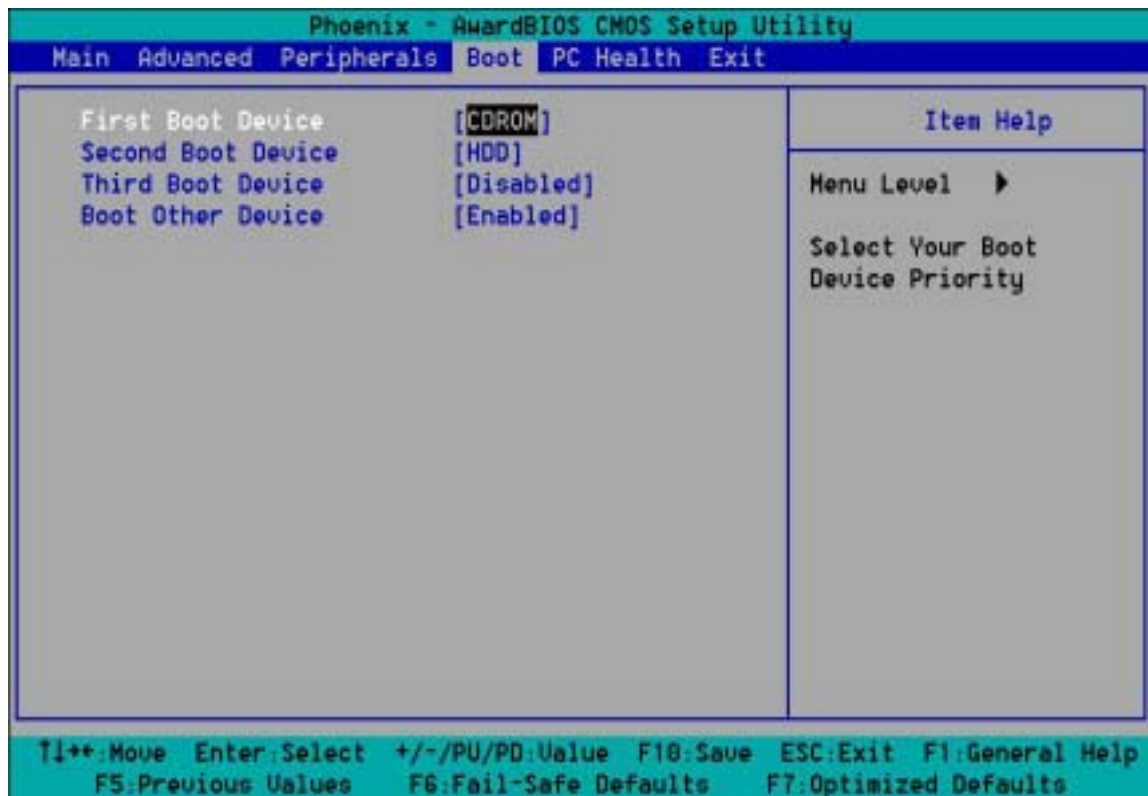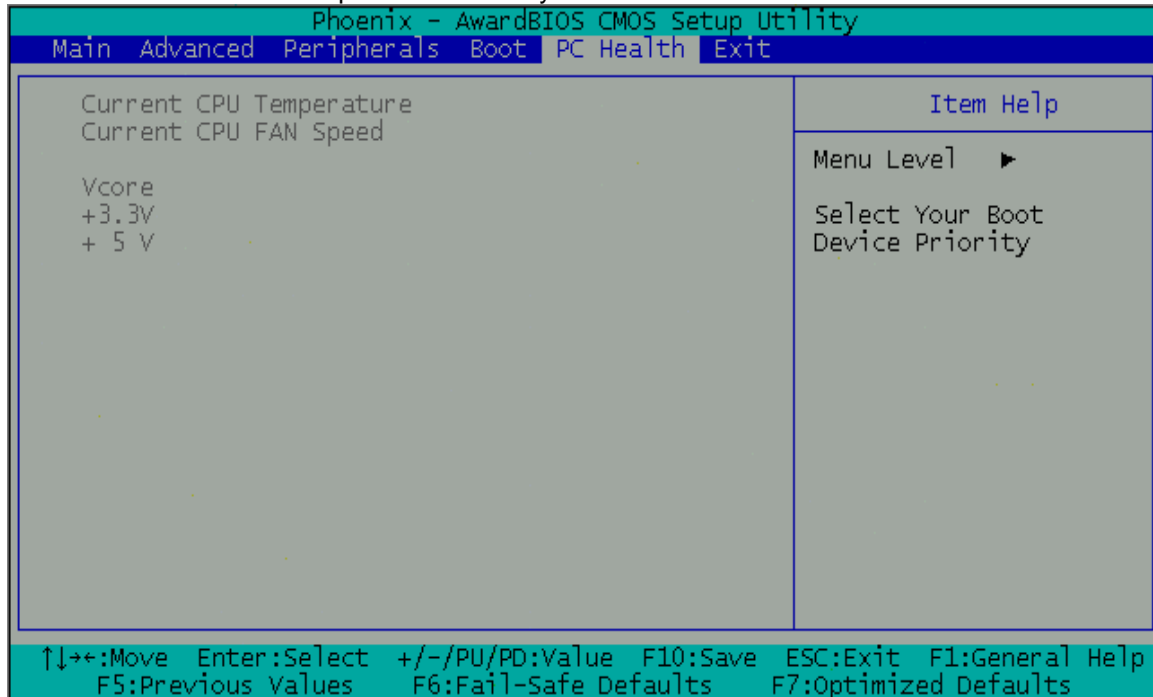
Restore on AC/Power Loss
> This option enable the End User to define if the system will be power-on once the AC Power is given.
> The Options:
> 1. Power Off (Always Power Off, must press Power Button to boot)
> 2. Power On (Auto Power On when AC power is on)
> 3. Last State (Depend on the Last State of the system)

5.5 PC HEALTH

This section is used to configure power management features.   This <Power management Setup>
option allows you to reduce power consumption.   This feature turns off the video display and shuts
down the hard disk after a period of inactivity.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
    Main   Advanced   Peripherals   Boot  PC Health  Exit

       Current CPU Temperature                          Item Help
       Current CPU FAN Speed
                                               Menu Level    ►
       Vcore
       +3.3V                                   Select Your Boot
       + 5 V                                   Device Priority










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

PC Health

Current CPU Temp.

The onboard hardware monitor automatically detects and displays the CPU temperatures.
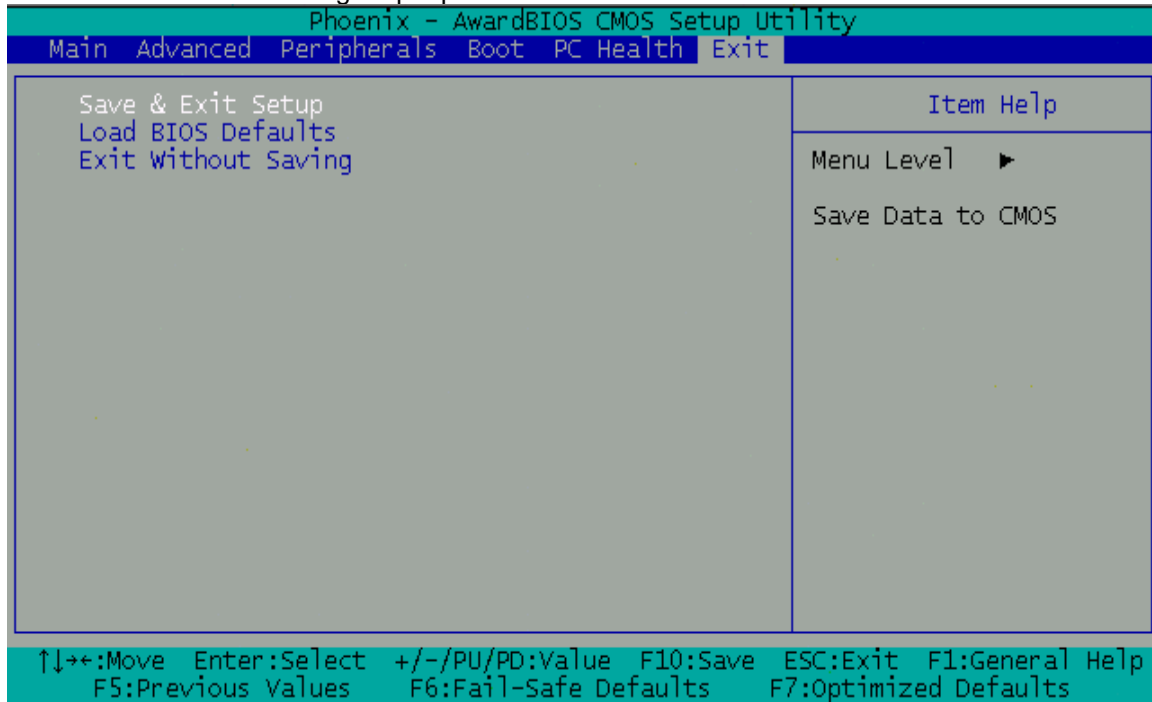
Current CPUFAN1 Speed

The onboard hardware monitor automatically detects and displays the CPU fan Speeds in rotations
per-minute (RPM). If any of the fans is not connected to the Motherboard, that field shows N/A.

This Section allows User to view some hardware information of the system, include Temperatures, Fan Speed, and
Voltages.

5.6 EXIT

This section is used to configure peripheral features.

```
                   Phoenix - AwardBIOS CMOS Setup Utility
   Main  Advanced  Peripherals  Boot  PC Health  Exit

      Save & Exit Setup                              Item Help
      Load BIOS Defaults
      Exit Without Saving                   Menu Level    ►

                                            Save Data to CMOS




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

Exit

Save & Exit Setup

Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS. Type "N" will return to Setup Utility.

Load BIOS Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features, which the System automatically detects.

Exit Without Saving

Type "Y" will quit the Setup Utility without saving to RTC CMOS.
Type "N" will return to Setup Utility.

5.7 BIOS UPDATE

The BIOS program instructions are contained within computer chips called FLASH ROMs that are located on your system board.   The chips can be electronically reprogrammed, allowing you to upgrade your BIOS firmware without removing and installing chips.

The AR-B1665 provides the FLASH BIOS update function for you to easily to update to a newer BIOS version. Please follow these operating steps to update to new BIOS:

Step 1:	Turn on your system and don't detect the CONFIG.SYS and AUTOEXEC.BAT files.
Step 2:	Insert the FLASH BIOS diskette into the floppy disk drive.
Step 3:	In the MS-DOS mode, you can type the FLASH826 program. A:\>FLASH826
Step 4:	Press [ALT+F], The <File> box will show the following message, this message will be highlighted. BIOS Filename Loading … . After typing in the File name you must press<ENTER> or press <ESC> to exit.
Step 5:	And then please enter the file name to the <Enter File Name> box. And the <Message> box will show the following notice. Are you sure to write the BIOS into flash ROM?
Step 6:	Press the <Enter> key to update the new BIOS. Then the <Message> box will show the <Programming now …>.
Step 7:	When the BIOS update is successful, the message will show <Flash ROM Update Completed - Pass>.

APPENDIX A. ADDRESS MAPPING

IO Address Map

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports.
040-05F	Timer control registers.
060-06F	Keyboard interface controller
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
250-258	Super I/O
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

Memory Map:

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/ EGA / CGA / MONOCHROME adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFF	System BIOS ROM
0100000-FFFFFFF	System extension memory

APPENDIX B. INTERRUPT REQUEST (IRQ)

SETTING	HARDWARE USING THE SETTING
00	System timer
01	Standard 101/102-Key or Microsoft Natural Keyboard
02	Programmable interrupt controller
03	Serial Port (COM2)
04	Serial Port (COM1)
05	IRQ Holder for PCI Steering
06	Floppy Disk Controller
07	Parallel Port (LPT1)
08	RTC clock
09	ACPI
12	PS/2 Compatible Mouse Port
13	Numeric data processor
14	Primary IDE controller
15	Secondary IDE controller