USER MANUAL

VB7008

Mini-ITX embedded board

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Notice 1

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Notice 3

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CE

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Battery Recycling and Disposal

- ☐ Only use the appropriate battery specified for this product.
- ☐ Do not re-use, recharge, or reheat an old battery.
- ☐ Do not attempt to force open the battery.
- ☐ Do not discard used batteries with regular trash.
- ☐ Discard used batteries according to local regulations.

Safety Precautions

- ☐ Always read the safety instructions carefully.
- ☐ Keep this User's Manual for future reference.
- ☐ All cautions and warnings on the equipment should be noted.
- ☐ Keep this equipment away from humidity.
- ☐ Lay this equipment on a reliable flat surface before setting it up.
- ☐ Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- ☐ Place the power cord in such a way that people cannot step on it.
- ☐ Always unplug the power cord before inserting any add-on card or module.
- ☐ If any of the following situations arises, get the equipment checked by authorized service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment has not worked well or you cannot get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- ☐ Do not leave this equipment in an environment unconditioned or in a storage temperature above 60°C (140°F). The equipment may be damaged.
- ☐ Do not leave this equipment in direct sunlight.
- ☐ Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- ☐ Do not place anything over the power cord.
- ☐ Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating

Box Contents and Ordering Information

VB7008-16

- ☐ 1 x VB7008 embedded board (with C7®-D 1.6 GHz NanoBGA2 processor)
- ☐ 1 x I/O bracket
- ☐ 1 x SATA cable

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1. Product Overview

The VIA VB7008 Mini-ITX mainboard is an entry-level native x86 mainboard designed mainly for embedded and thin client applications. It can also be used for various domain applications such as desktop PC, industrial PC, etc. The mainboard is based on the VIA VX900 MSP (Media System Processor) chipset that features the VIA C-9 HD DX9 with 2D/3D graphics and video accelerators for rich digital media performance.

The VIA VB7008 includes a secure and power efficient VIA C7®-D 1.6 GHz NanoBGA2 processor. The VIA C7®-D NanoBGA2 processor includes the VIA Padlock Security Engine, VIA StepAhead™ Technology Suite, VIA PowerSaver, and VIA CoolStream™ technology.

The VIA VB7008 has one 1066 MHz DDR3 DIMM slot that support up to 4 GB memory size. The VIA VB7008 provides support for high fidelity audio with its included VIA VT1708S High Definition Audio codec. In addition it supports two SATA 3Gb/s storage devices.

The VIA VB7008 is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies. The VIA VB7008 is fully compatible with Microsoft® and Linux operating systems.

1.1. Key Features and Benefits

1.1.1. VIA C7®-D 1.6GHz NanoBGA2 Processor

The VIA C7®-D NanoBGA2 is a 32-bit processor in x86 platform using a 90 nanometer process technology. It is the world's first Carbon Free processor and perfectly fit for embedded system applications. Packed into an ultra compact NanoBGA2 package (measuring 21mm x 21mm), it delivers an energy-efficient yet powerful performance, with cool and quiet operation.

1.1.2. VIA VX900 MSP Chipset

The VIA VX900 media system processor is designed to enable high quality digital video streaming and DVD playback. The VIA VX900 features VIA C-9 HD DX9 with 2D/3D graphics and video accelerators, DDR3 1066 MHz support, motion compensation and dual display support to ensure a rich overall entertainment experience.

1.1.3. Modular Expansion Options

The VIA VB7008 ensures long-term usability with its support for industry standard expansion options. Its support for legacy PCI expansion cards helps to smooth and reduce the costs of transitioning to newer expansion technologies. The VIA VB7008 enables companies to slowly roll out upgrades as necessary instead of having to replace everything all at once. This ensures that companies using the VB7008 obtain the maximum benefits from its past investments in PCI expansion cards.

1.2. Product Specifications

- Processor
  - VIA C7®-D 1.6 GHz NanoBGA2
  - Supports 800MHz Front Side Bus
  - 21 mm x 21 mm FCBGA

- Chipset
  - VIA VX900 MPS chipset
  - 31 mm x 31 mm FCBGA

- System Memory
  - 1 x DIMM slot supporting DDR3 1066 MHz
  - Supports up to 4 GB memory size

- Graphics
  - Integrated VIA C-9 HD DX9 3D/2D Graphics and Video Processor
  - MPEG-2, VC-1 and H.264 video decoding acceleration
  - DirectX 9 support

- Onboard Peripherals
  - Serial ATA
    - 2 SATA connectors
    - Supports up to 3 Gb/s
  - Onboard LAN
    - VIA VT6130 PCIe Gigabit Ethernet controller
  - Onboard HDTV
    - VIA VT1625 HDTV encoder (manufacturing option)
  - Onboard Audio
    - VIA VT1708S High Definition Audio Codec
  - Onboard Super I/O
    - Fintek F71869E Super I/O controller
    - Supports up to two COM ports

- Onboard I/O Connectors
  - 3 x USB 2.0 pin header for 6 USB ports (including 2 optional port)
  - 2 x SATA 2.0 HDD connectors
  - 1 x Composite + S-Video out pin header supported by VT162 (manufacturing option)
  - 1 x Front audio pin header for Line-out and MIC-in
  - 1 x PS/2 Keyboard and Mouse pin header

- 1 x Front panel pin header
- 1 x CPU fan connector
- 1 x System fan connector
- 1 x COM pin header
- 1 x LPC pin header
- 1 x LPT pin header
- 1 x SPDIF connector
- 1 x SMBus pin header
- 1 x Temperature sensor pin header
- 1 x SIR pin header
- 1 x SPI pin header
- 1 x PCI slot
- 1 x Clear CMOS jumper
- 1 x COM voltage select jumper
- 1 x SATA DOM voltage select jumper
- 1 x Buzzer
- 1 x ATX (20-pin) power connector

- **Back Panel I/O**
  - 1 x HDMI® port
  - 1 x VGA port
  - 1 x COM port
  - 1 x RJ45 (GigaLAN) port
  - 2 x USB 2.0 ports
  - 1 x PS/2 Keyboard port
  - 1 x PS/2 Mouse port
  - 1 x Audio port stack with Line-in, Line-out, MIC-in (Horizontal, Smart 5.1 support)

- **BIOS**
  - Award BIOS
  - 8 Mbit SPI flash memory

- **Supported Operating System**
  - Windows 7
  - Windows Embedded Standard 7
  - Windows Embedded Standard
  - Windows XP
  - Windows CE
  - Linux

- System Monitoring & Management
  - Wake-on-LAN
  - Keyboard and Mouse Power-on
  - Timer Power-on
  - System voltage monitoring
  - AC power failure recovery

- Operating Conditions
  - Operating Temperature
    - 0°C up to 50°C
  - Operating Humidity
    - 0% ~ 95% (relative humidity; non-condensing)

- Form Factor
  - Mini-ITX (4-layer)
  - 17 cm x 17 cm

- Compliance
  - CE
  - FCC
  - RoHS

Notes

1. As the operating temperature provided in the specifications is a result of the test performed in VIA's chamber, a number of variables can influence this result. Please note that the working temperature may vary depending on the actual situation and environment. It is highly suggested to execute a solid testing and take all the variables into consideration when building the system. Please ensure that the system runs well under the operating temperature in terms of application.

1.3. Layout Diagram

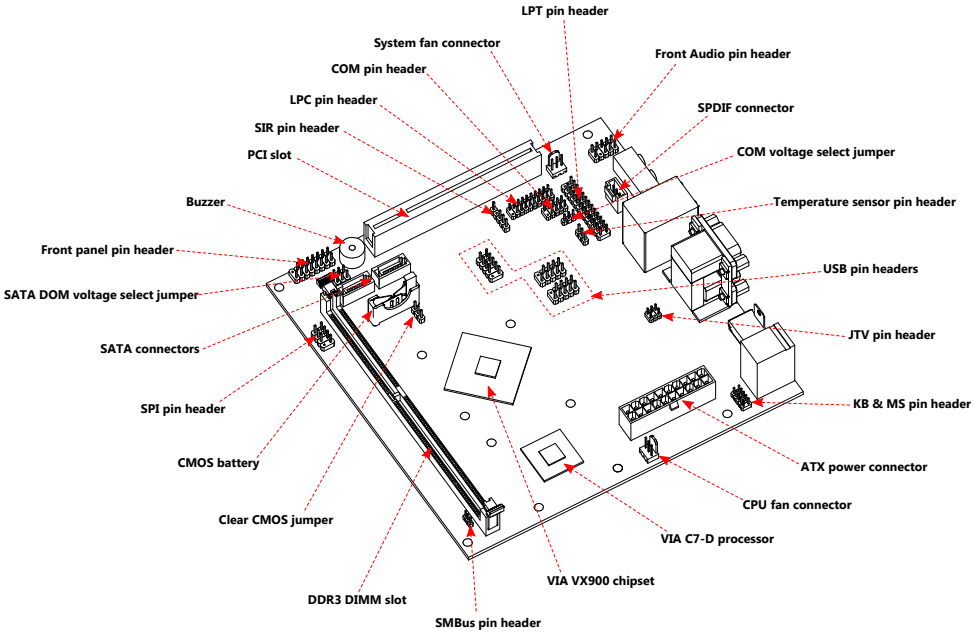


Figure 1: Layout diagram of the VB7008 mainboard (top view)

1.4. Product Dimensions

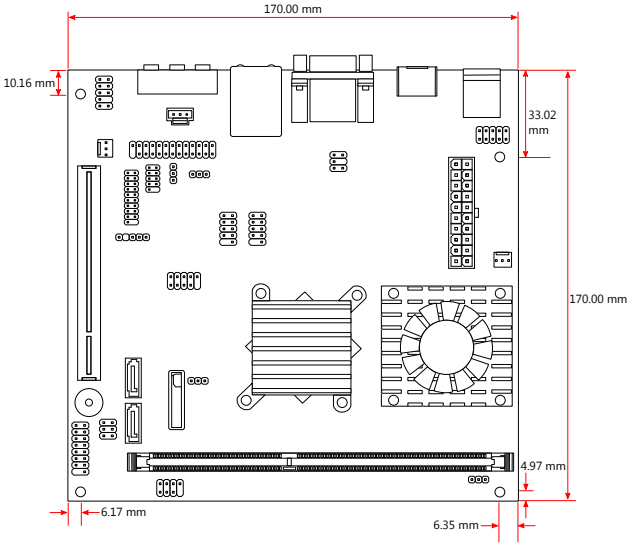


Figure 2: Mounting holes and dimensions of the VB7008 mainboard

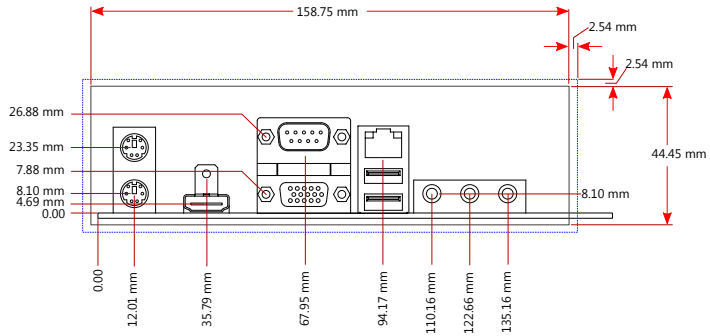


Figure 3: External I/O port dimensions of the VB7008 mainboard

1.5. Height Distribution

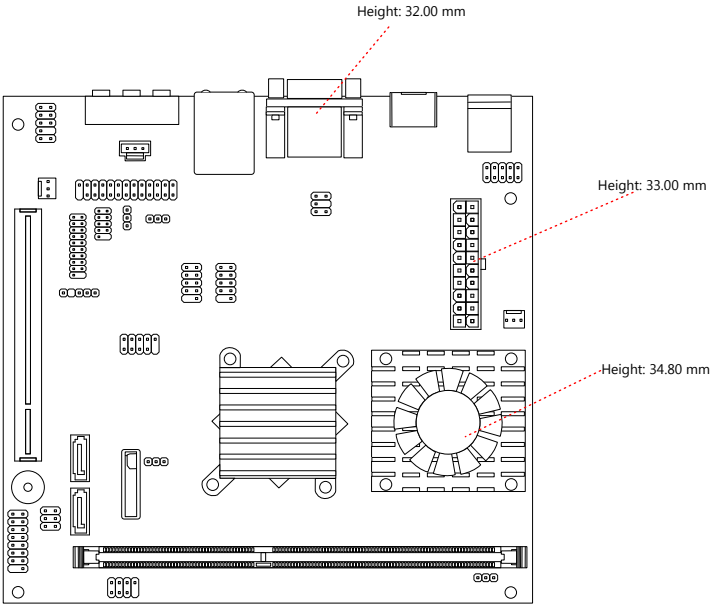


Figure 4: Height distribution of the VB7008 mainboard

2. I/O Interface

The VIA VB7008 has a wide selection of interfaces integrated into the board. It includes a selection of frequently used ports as part of the external I/O coastline.

2.1. External I/O Ports

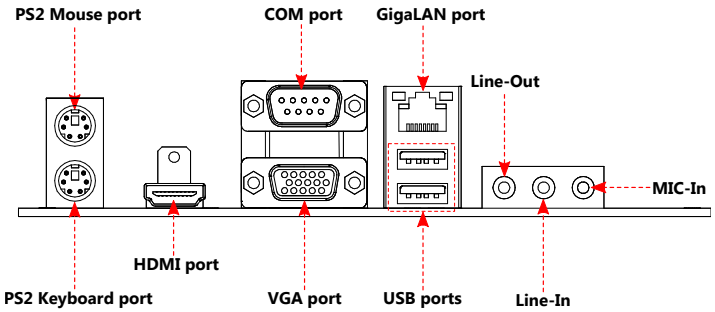


Figure 5: External I/O ports

2.1.1. PS/2 Port

The mainboard has two integrated PS/2 ports for keyboard and mouse. Each port is using the 6-pin Mini-DIN connector. The color purple is use for a PS/2 keyboard while the color green is use for a PS/2 mouse. The pinout of the PS/2 port are shown below.

Pin	Signal
1	Data
2	NC
3	Ground
4	+5V
5	Clock
6	NC

Table 1: PS/2 port pinout

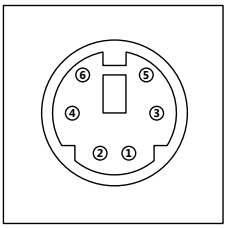


Figure 6: PS/2 port pinout diagram

2.1.2. HDMI® Port

The integrated 19-pin HDMI® port uses an HDMI® Type A receptacle connector. The HDMI® (High Definition Multimedia Interface) port is for connecting the high definition video and digital audio. It allows you to connect the digital video devices which utilize a high definition video signal. The pinout of the HDMI® port is shown below.

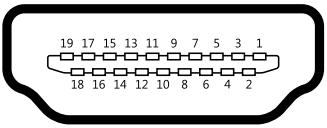


Figure 7: HDMI® port pinout diagram

Pin	Signal	Pin	Signal
1	TX2+	2	Ground
3	TX2-	4	TX1+
5	Ground	6	TX1-
7	TX0+	8	Ground
9	TX0-	10	TXC+
11	Ground	12	TXC-
13	key	14	key
15	DDCSCL	16	DDCSDA
17	Ground	18	+5V
19	Hot Plug Detect		

Table 2: HDMI® port pinout

2.1.3. VGA Port

The integrated 15-pin VGA port uses a female DE-15 connector. The VGA port is for connecting to analog displays. The pinout of the VGA port is shown below.

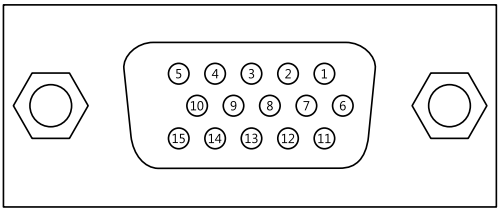


Figure 8: VGA port pinout diagram

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V
10	NC
11	NC
12	SDA
13	HSync
14	VSync
15	SCL

Table 3: VGA port pinout

2.1.4. COM Port

The integrated 9-pin COM port uses a male DE-9 connector. The COM (COM1) port supports the RS-232 standard. The pinout of the COM port is shown below.

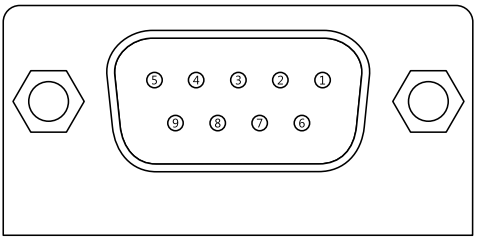


Figure 9: COM port pinout diagram

Pin	Signal	Pin	Signal
1	DCD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

Table 4: COM port pinout

2.1.5. USB 2.0 Port

There are two integrated USB 2.0 ports in VB7008 mainboard. The USB-interface port gives complete Plug and Play and hot swap capability for external devices and it complies with USB UHCI, rev. 2.0. Each USB port is using the USB Type A receptacle connector. The pinout of the typical USB port is shown below.

Pin	Signal
1	+5VSUS
2	Data-
3	Data+
4	Ground

Table 5: USB port pinout

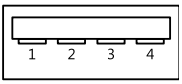


Figure 10: USB port pinout diagram

2.1.6. RJ45 LAN port: Gigabit Ethernet

The integrated 8-pin Gigabit Ethernet port is using an 8 Position 8 Contact (8P8C) receptacle connector (commonly referred to as RJ45). The pinout of the Gigabit Ethernet port is shown below.

Pin	Signal
1	Signal pair 1+
2	Signal pair 1-
3	Signal pair 2+
4	Signal pair 3+
5	Signal pair 3-
6	Signal pair 2-
7	Signal pair 4+
8	Signal pair 4-

Table 6: Gigabit Ethernet port pinout

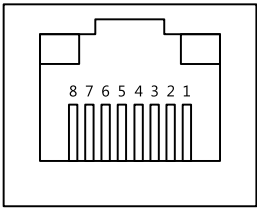


Figure 11: Gigabit Ethernet port pinout diagram

The RJ-45 port has two individual LED indicators located on the front side to show its Active/Link status and Speed status.

	Link LED (Left LED on RJ-45 connector)	Active LED (Right LED on RJ-45 connector)
Link Off	Off	Off
Speed_10Mbit	The LED is always On in either Green or Orange colors	Flash in Yellow color
Speed_100Mbit	The LED is always On in Green color	Flash in Yellow color
Speed_1000Mbit	The LED is always On in Orange color	Flash in Yellow color

Table 7: Gigabit Ethernet LED color definition

2.1.7. Audio Ports

There are three audio jack receptacles integrated into a single stack on the I/O coastline. Each receptacle can fit a 3.5 mm Tip Ring Sleeve (TRS) connector to enable connections to Line-Out Line-In, and MIC-in. The Line-Out jack is for connecting to external speakers or headphones. The Line-In jack is for connecting an external audio devices such as CD player, tape player and etc.. The MIC-In jack is for connecting to a microphone.

Wiring	Line-Out	Line-In	MIC-In
Tip	Left channel	Left channel in	Left channel
Ring	Right channel	Right channel in	Right channel
Sleeve	Ground	Ground	Ground

Table 8: Audio jack receptacle pinout

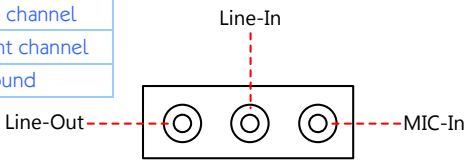


Figure 12: Audio jack receptacle stack

2.2. Onboard Connectors

2.2.1. ATX Power Connector

The mainboard has a 20-pin ATX power connector onboard. The ATX power connector is labeled as "ATX_POWER1". The pinout of the ATX power connector is shown below.

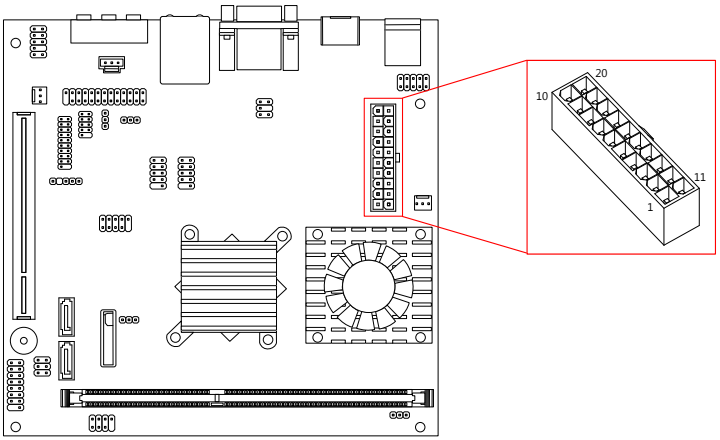


Figure 13: ATX power connector

Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	Power Supply On
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	Power OK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

Table 9: ATX power connector pinout

2.2.2. CMOS Battery Slot

The mainboard is equipped with a CMOS battery slot, which is compatible with CR2032 coin batteries. The CMOS battery slot is labeled as "BAT2". When inserting a CR2032 coin battery, be sure that the positive side is facing the locking clip.

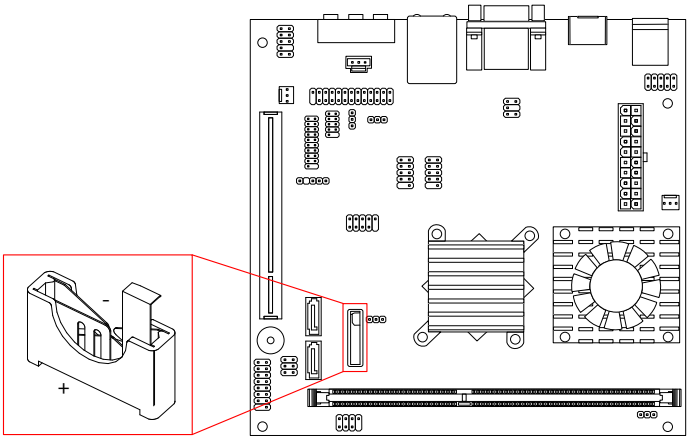


Figure 14: CMOS battery slot

Pin	Signal
1	Ground
2	+3V
3	Ground

Table 10: CMOS battery slot pinout

2.2.3. Front Panel Pin Header

The front panel pin header consists of 15 pins in a 16-pin block. Pin 15 is keyed. The front panel pin header is labeled as "F_PANEL1". It provides access to system LEDs, power, reset, system speaker and HDD LED. The pinout of the front panel pin header is shown below.

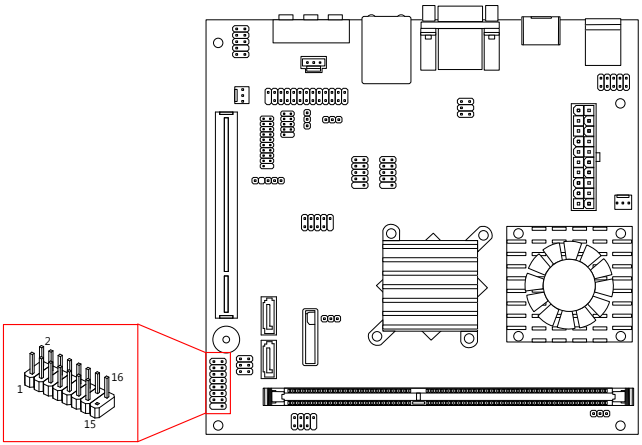


Figure 15: Front panel pin header

Pin	Signal	Pin	Signal
1	+5VDUAL	2	+5V
3	+5VDUAL	4	SATA_LED
5	PWR_LED	6	PWR_BTN
7	+5V	8	Ground
9	NC	10	-RST_SW
11	NC	12	Ground
13	SPEAK	14	+5V
15	key	16	NC

Table 11: Front panel pin header pinout

2.2.4. SMBus Pin Header

The SMBus pin header consists of three pins that allow connecting the SMBus devices. Devices communicate with a SMBus host and/or other SMBus devices using the SMBus interface. It is labeled as "SMBUS". The pinout of the SMBus pin header is shown below.

Pin	Signal
1	SMBCK
2	SMBDT
3	Ground

Table 12: SMBus pin header

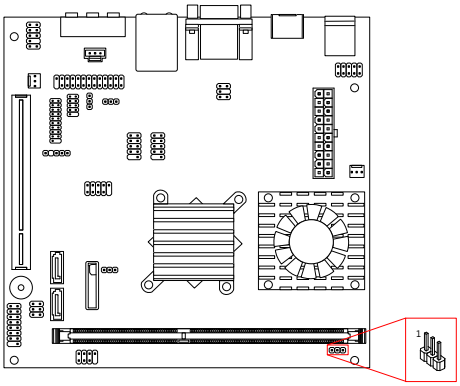


Figure 16: SMBus pin header pinout

2.2.5. CPU and System Fan Connectors

There are two fan connectors on board: one for the CPU and one for the chassis. The fan connector for the CPU is labeled as "CPUFAN1" and the fan connector for the system is labeled as "SYSFAN1". The fans provide variable fan speeds controlled by the BIOS. The pinout of the fan connectors is shown below.

CPU fan (CPUFAN1)	
Pin	Signal
1	FANIN1
2	FANCTL
3	Ground

System fan (SYSFAN1)	
Pin	Signal
1	FANIN2
2	FANCTL
3	Ground

Table 13: Fan connector pinouts

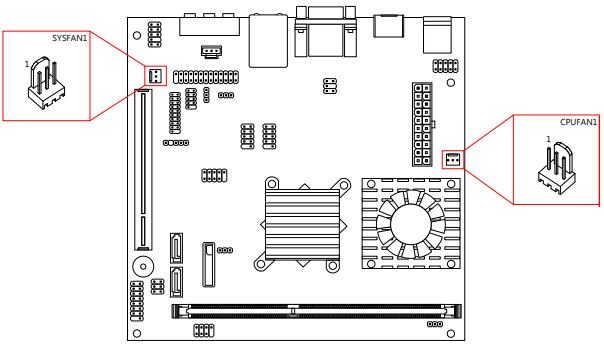


Figure 17: Fan connectors

2.2.6. SATA Connectors

The two SATA connectors on board can support up to 3 Gb/s transfer speeds. The SATA connectors are labeled as "SATA1" and "SATA2". The pinout of the SATA connectors are shown below.

SATA1	
Pin	Signal
1	Ground
2	STXP_1
3	STXN_1
4	Ground
5	SRXN_1
6	SRXP_1
7	Ground

SATA2	
Pin	Signal
1	Ground
2	STXP_2
3	STXN_2
4	Ground
5	SRXN_2
6	SRXP_2
7	SATA2_+5V

Table 14: SATA connector pinouts

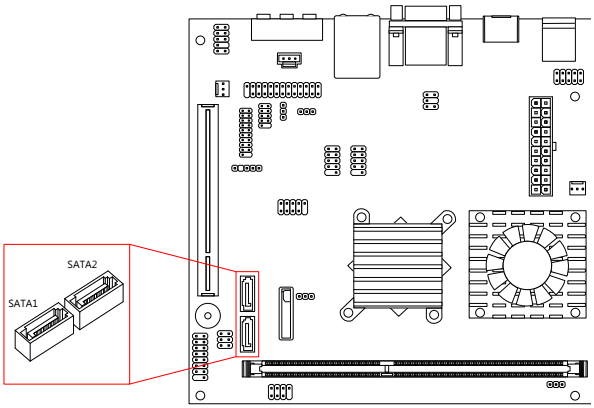


Figure 18: SATA connectors

Note:

If the users want to use the SATA Disk-on-Module flash drive on the board, please use the SATA2 connector.

2.2.7. USB 2.0 Pin Headers

The mainboard has three USB 2.0 pin header blocks that support up to six USB 2.0 ports. The pin header blocks are labeled as "USB_2", "USB_3", and "USB_4". The pinout of the USB pin headers are shown below.

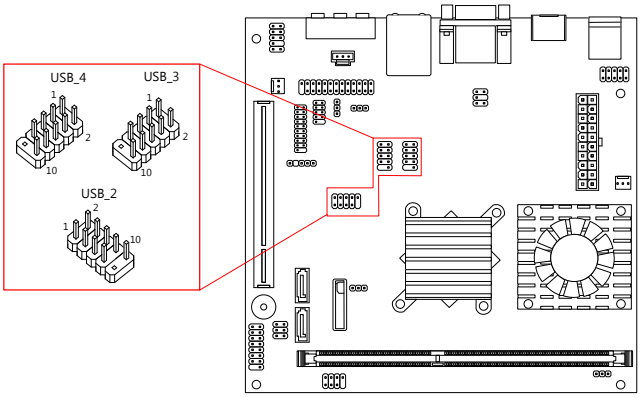


Figure 19: USB pin headers

USB_2			
Pin	Signal	Pin	Signal
1	VUSB2	2	VUSB2
3	USBD_T3-	4	USB_T2-
5	USBD_T3+	6	USB_T2+
7	Ground	8	Ground
9	Key	10	Ground

USB_3			
Pin	Signal	Pin	Signal
1	VUSB4	2	VUSB4
3	USBD_T5-	4	USB_T4-
5	USBD_T5+	6	USB_T4+
7	Ground	8	Ground
9	Key	10	Ground

USB_4			
Pin	Signal	Pin	Signal
1	VUSB6	2	VUSB6
3	USBD_T6-	4	USB_T7-
5	USBD_T6+	6	USB_T7+
7	Ground	8	Ground
9	Key	10	Ground

Table 15: USB pin header pinouts

Note:

Please note that USB_4 is an optional pin header.

2.2.8. COM Pin Header

The mainboard include one onboard COM pin header in addition to the COM port 1 on the external I/O. The onboard COM pin header labeled as "COM2" is used to attach additional COM port that supports RS-232 standard. The pinout of the COM2 pin header is shown below.

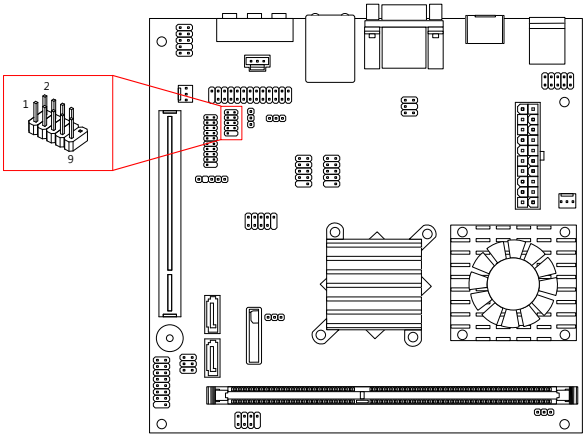


Figure 20: COM pin header

Pin	Signal	Pin	Signal
1	COM_DCD	2	COM_RXD
3	COM_TXD	4	COM_DTR
5	Ground	6	COM_DSR
7	COM_RTS	8	COM_CTS
9	COM_RI	10	key

Table 16: COM pin header pinout

2.2.9. PS/2 Keyboard and Mouse Pin Header

The mainboard has a pin header for a PS/2 keyboard and mouse. The pin header is labeled as "KBMS1". The pinout of the pin header is shown below.

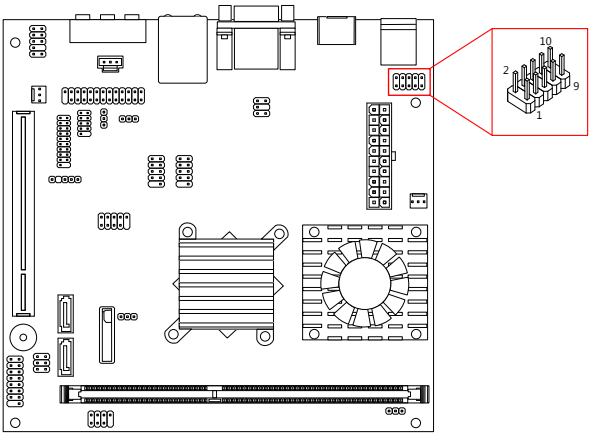


Figure 21: PS/2 keyboard and mouse pin header

Pin	Signal	Pin	Signal
1	+5VDUAL	2	Ground
3	KB_CLK	4	KB_DATA
5	EKBCLK	6	EKBDATA
7	MS_CLK	8	MS_DATA
9	EMSCLK	10	EMSDATA

Table 17: PS/2 keyboard and mouse pin header pinout

Note:

When the pin header is not in use, please short pin 3&5, pin 4&6, pin 7&9 and pin 8&10

2.2.10. Front Audio Pin Header

In addition to the TRS audio jacks on the external I/O coastline, the mainboard has a pin header for Line-Out and MIC-In. The pin header is labeled as "F_AUDIO1". The pinout of the pin header is shown below.

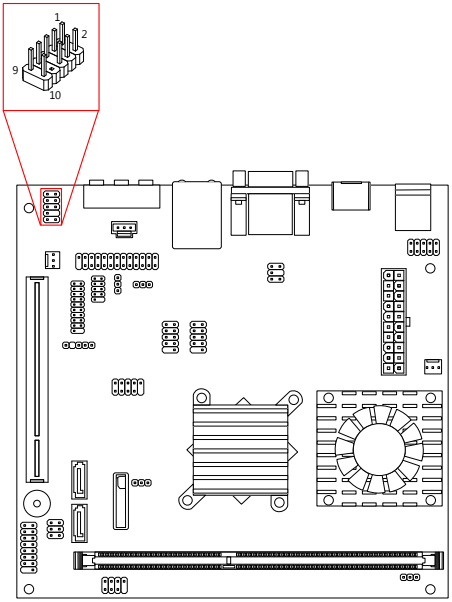


Figure 22: Front audio pin header

Pin	Signal	Pin	Signal
1	MIC2IN_L	2	AGND
3	MIC2IN_R	4	AGND
5	HPOUTR	6	MIC2_JD
7	F_AUDIO_SENSE	8	Key
9	HPOUTL	10	HPOUT_JD

Table 18: Front audio pin header pinout

2.2.11. SPDIF Connector

The mainboard has one 3-pin SPDIF (Sony Philips Digital Interface) connector. The SPDIF output provides digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder. The connector is labeled as "SPDIF1". The pinout of the connector is shown below.

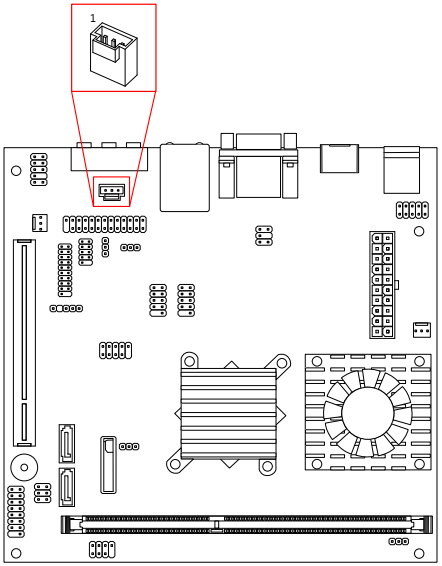


Figure 23: SPDIF connector

Pin	Signal
1	VDD
2	SPDIFO
3	Ground

Table 19: SPDIF connector pinout

2.2.12. SPI Pin Header

The mainboard has one 8-pin SPI pin header. The SPI (Serial Peripheral Interface) pin-header is used to connect to the SPI BIOS programming fixture. The pin header is labeled as "SPI1". The pinout of the pin header is shown below.

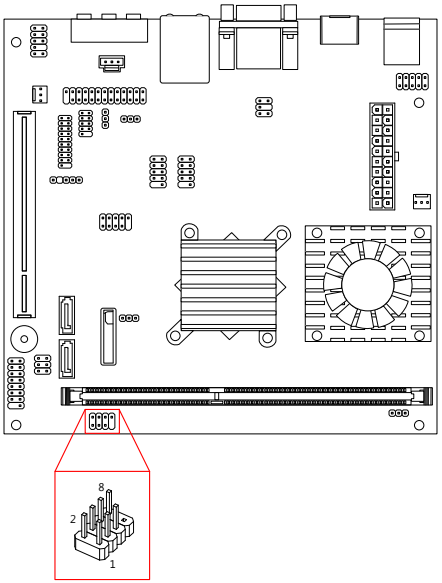


Figure 24: SPI pin header

Pin	Signal	Pin	Signal
1	SPIVCC	2	Ground
3	MSPISS0	4	MSPICLK
5	MSPIDI	6	MSPIDO
7	key	8	-PCIRST

Table 20: SPI pin header pinout

2.2.13. LPC Pin Header

The mainboard has one LPC pin header for connecting LPC devices. The pin header is labeled as "LPC". The pinout of the pin header is shown below.

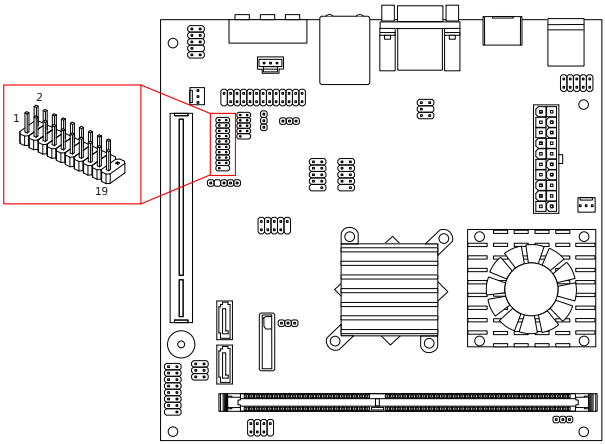


Figure 25: LPC pin header

Pin	Signal	Pin	Signal
1	LAD1	2	LPCIF_33_CLK
3	-PCIRSTX	4	Ground
5	LAD0	6	LPCIF_48_CLK
7	LAD2	8	_LFRAME
9	SERIRQ	10	LAD3
11	-LDRQ1	12	-EXTSMI
13	+5V	14	+3.3V
15	+5V	16	+3.3V
17	Ground	18	Ground
19	Ground	20	NC

Table 21: LPC pin header pinout

2.2.14. LPT Pin Header

The mainboard has one LPT pin header for connecting 25-pin LPT female external connector for parallel port. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) modes. The pin header is labeled as "LPT1". The pinout of the pin header is shown below.

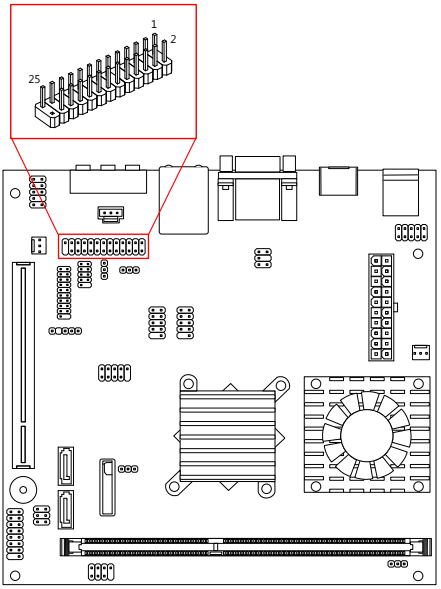


Figure 26: LPT pin header

Pin	Signal	Pin	Signal
1	-LP_STB	2	-LP_AFD
3	LP_D0	4	-LP_ERR
5	LP_D1	6	-LP_INIT
7	LP_D2	8	-LP-SLIN
9	LP_D3	10	Ground
11	LP_D4	12	Ground
13	LP_D5	14	Ground
15	LP_D6	16	Ground
17	LP_D7	18	Ground

19	-LP_ACK	20	Ground
21	LP_BUSY	22	Ground
23	LP_PE	24	Ground
25	LP_SLCT	26	Key

Table 22: LPT pin header pinout

2.2.15. SIR Pin Header

The mainboard has SIR (Serial Infrared) pin header. This pin header is used to connect to a serial infrared module. The pin header is labeled as "SIR1". The pinout of the SIR pin header is shown below.

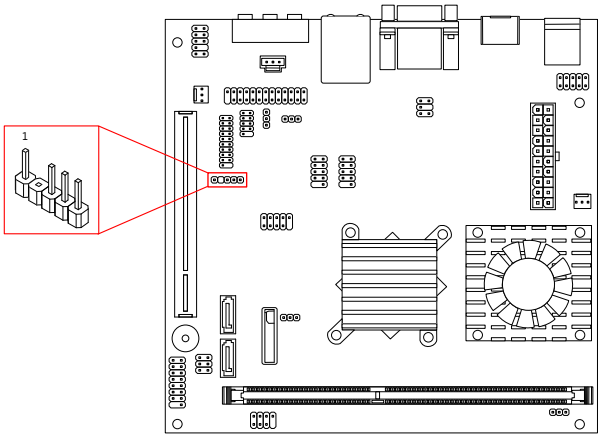


Figure 27: SIR pin header

Pin	Signal
1	+5V
2	NC
3	IRRX
4	Ground
5	IRTX

Table 23: SIR pin header pinout

Note:

Microsoft Windows Vista and Windows 7 do not support the Infrared driver.

2.2.16. Temperature Sensor Pin Header

The mainboard supports a pin header (3-pin) that allows the connection of a temperature sensor cable for detecting the system's internal air temperature. The temperature reading can be seen in the BIOS Setup Utility. The pin header is labeled as "J5". The pin out of the temperature sensor pin header is shown below.

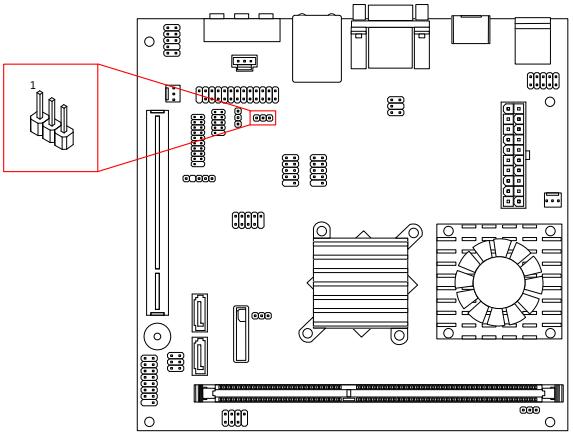


Figure 28: Temperature sensor pin header

Pin	Signal
1	TMPIN2
2	TMPIN2
3	HWMGND

Table 24: Temperature sensor pin header pinout

2.2.17.Composite + S-Video Out Pin Header (optional)

The mainboard provide an optional Composite + S-Video out pin header that allows connecting the TV port/jack connector in order to interface TV monitor or S-Video device to the mainboard. The pin header is labeled as "JTV1". The pinout of the pin header is shown below.

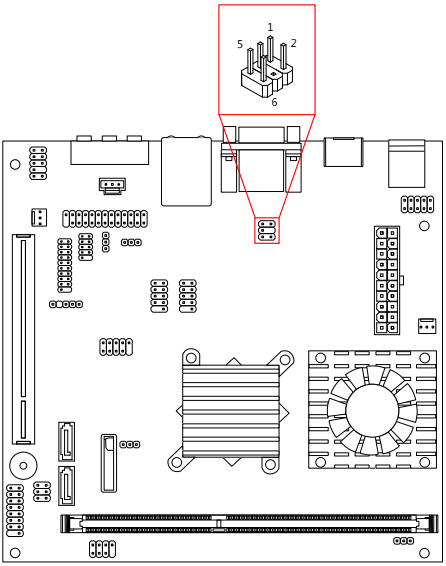


Figure 29: Composite + S-Video pin header

Pin	Signal	Pin	Signal
1	CVBS	2	Ground
3	CHROMA	4	key
5	LUMA	6	Ground

Table 25: Composite + S-Video pin header pinout

3. Jumpers

3.1. Clear CMOS Jumper

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. To reset the CMOS settings, set the jumper on pins 2 and 3 while the system is off. Return the jumper to pins 1 and 2 afterwards. Setting the jumper while the system is on will damage the mainboard. The default setting is on pins 1 and 2.

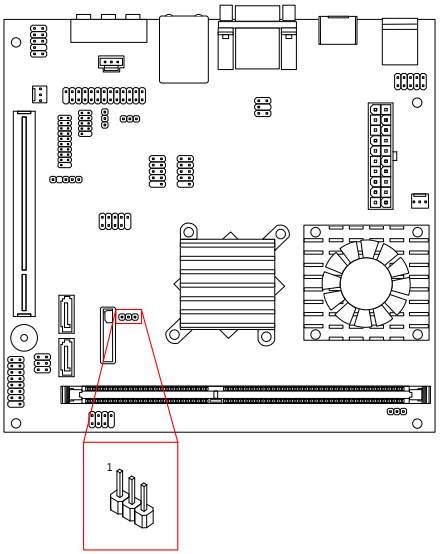


Figure 30: CLEAR CMOS jumper

Setting	Pin 1	Pin 2	Pin 3
Regular (default)	On	On	Off
Clear CMOS	Off	On	On

Table 26: CLEAR CMOS jumper settings

Note:

Except when clearing the RTC RAM, never remove the cap from the CLEAR_CMOS jumper default position. Removing the cap will cause system boot failure. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

3.2. COM2 Voltage Select Jumper

The additional COM port (available through the onboard COM2 pin header, see page 25) can support both +5V and +12V. The COM2 voltage select pin jumper is a selector to determine the input voltage of COM2 pin header connector. The voltage can be either +5V or +12V. +5V is the default setting. The pin jumper is labeled as "J6". The jumper settings are shown below.

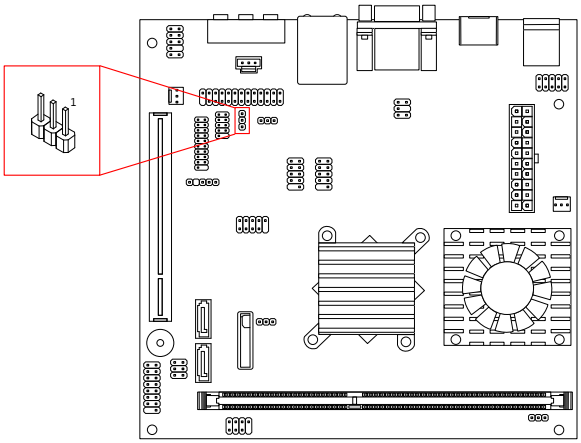


Figure 31: COM2 voltage select jumper

Setting	Pin 1	Pin 2	Pin 3
+5V	On	On	Off
+12V	Off	On	On

Table 27: COM2 voltage select jumper settings

3.3. SATA DOM Voltage Select Jumper

The SATA2 connector (see page 22) can be used to support Disk-on-Module (DOM) flash drive. When the jumper is set, +5V will be delivered to the 7th pin of the SATA2 connector. The pin jumper is labeled as "J2". The jumper settings are shown below.

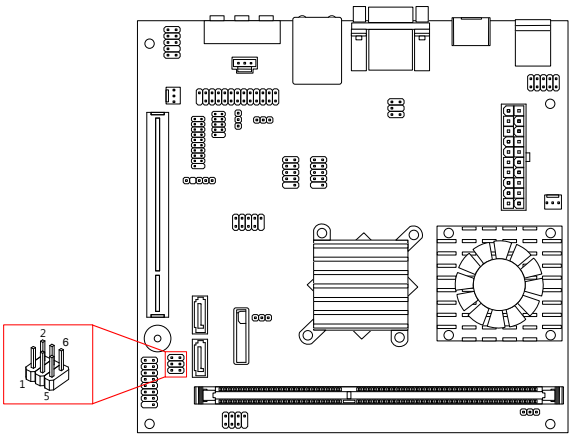


Figure 32: SATA DOM voltage select jumper

SATA2 Setting	Pin 2	Pin 4	Pin 6
DOM support	On	On	Off
Regular (default)	Off	On	On

Table 28: SATA DOM voltage select jumper settings

Note:

The default settings of "SATA DOM Voltage Select Jumper": short pin 3&5 and pin 4&6

4. Expansion Slots

4.1. DDR3 Memory Slots

The mainboard provide one DDR3 DIMM memory slot. The memory slot can accommodate up to 4 GB of 1066 MHz memory. The memory slot is labeled as "DIMM1". The location of the DDR3 memory slot is shown below.

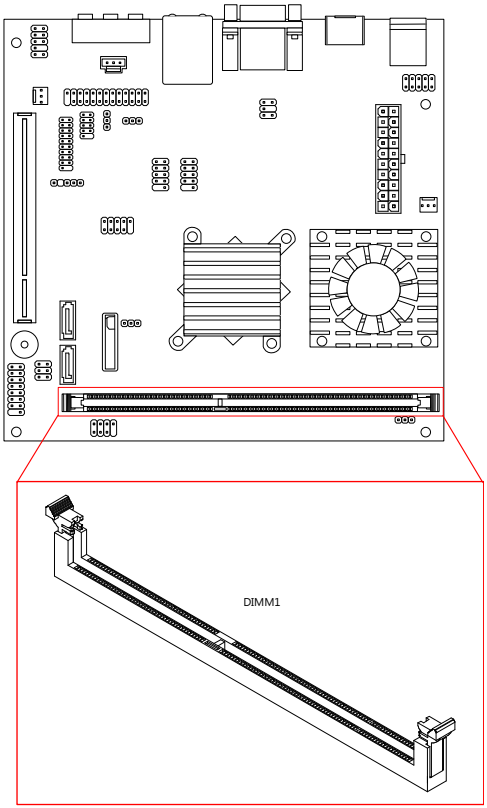


Figure 33: DDR3 memory slots

4.1.1. Installing a Memory Module

Step 1

Disengage the locking mechanism at both ends of the DIMM slot by pressing the retaining clips outward.

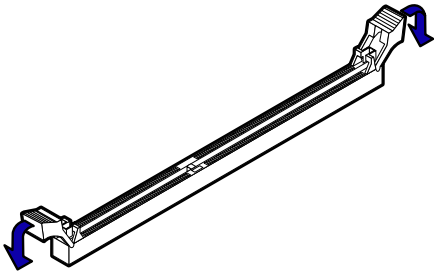


Figure 34: Unlocking the memory DIMM slot

Step 2

Align the notch on the DIMM memory module with the counter part on the DIMM slot.

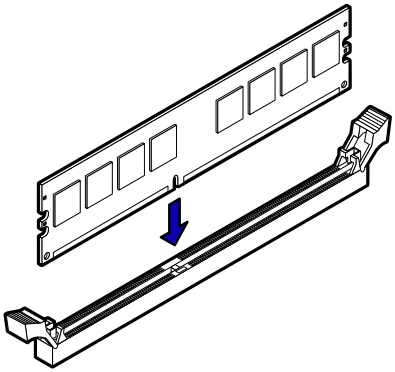


Figure 35: Inserting the memory module

Step 3

Insert the DIMM memory module into the slot and push down at both ends until the locking clips lock the DIMM memory module into place.

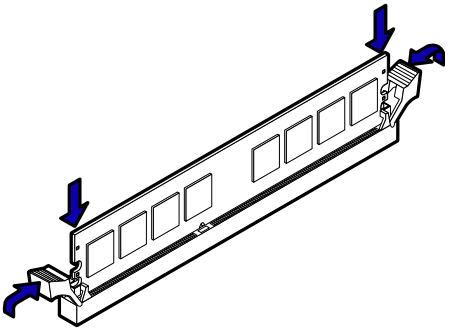


Figure 36: Locking the memory module

4.1.2. Removing a Memory Module

Step 1

To disengage the locking clips, push outward the locking clips on both ends of memory slot. When the locking clips have cleared, the DIMM memory module will automatically pop up. Remove the memory module.

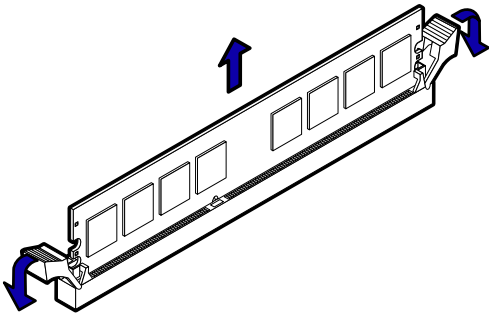


Figure 37: Removing the memory module

4.1.3. PCI Slot

The onboard PCI slot, labeled as "PCI_SLOT1", supports 5V 32-bit PCI cards. It is not compatible with PCI cards requiring 3.3V signaling. The location of the PCI slot is shown below.

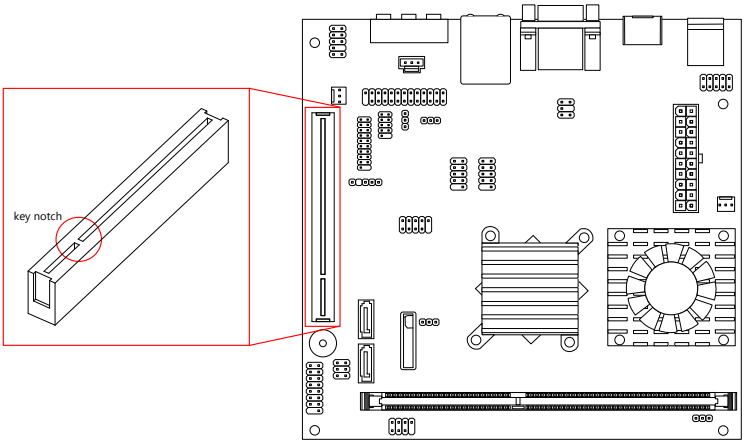


Figure 38: PCI slot

Note:
1. The orientation of PCI card can be changed from vertical to horizontal using a riser card module.
2. When adding or removing expansion card, unplug first the power supply.

5. Hardware Installation

5.1. Installing into a Chassis

The VB7008 can be fitted into any chassis that has the mounting holes compatible with the standard Mini-ITX mounting hole locations. Additionally, the chassis must meet the minimum height requirements for specified areas of the mainboard. If a riser card module is being used, the chassis will need to accommodate the additional space requirements.

5.1.1. Suggested minimum chassis dimensions

The figure below shows the suggested minimum space requirements that a chassis should have in order to work well with the VB7008.

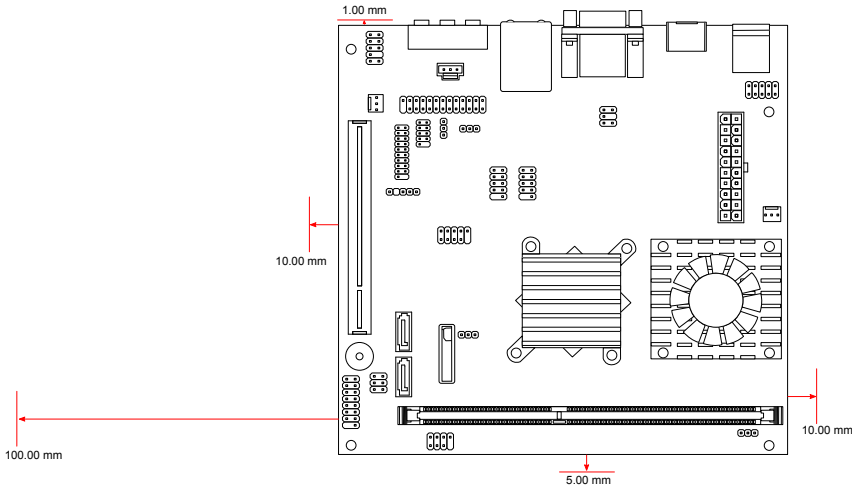


Figure 39: Suggested minimum chassis dimensions

Each side of the mainboard should have a buffer zone from the internal wall of the chassis. The side of the mainboard that accommodates the I/O coastline should have a buffer of 1.00 mm. The side on the opposite end of the I/O

coastline should have a buffer of at least 5.00 mm. The two sides adjacent to the I/O coastline should have at least a 10.00 mm buffer.

For the side that is close to the PCI slot, the buffer should be at least 100.00 mm if a riser card module will be used.

5.1.2. Suggested minimum chassis height

The figure below shows the suggested minimum height requirements for the internal space of the chassis. It is not necessary for the internal ceiling to be evenly flat. What is required is that the internal ceiling height must be strictly observed for each section that is highlighted. The highest part of the ceiling will be above the PCI slot.

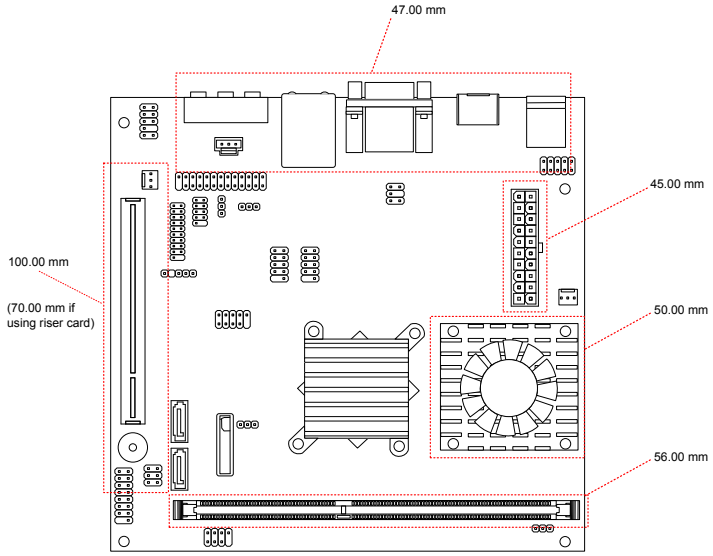


Figure 40: Suggested minimum internal chassis ceiling height

5.1.3. Suggested keepout areas

The figure below shows the areas of the mainboard that is highly suggested to leave unobstructed.

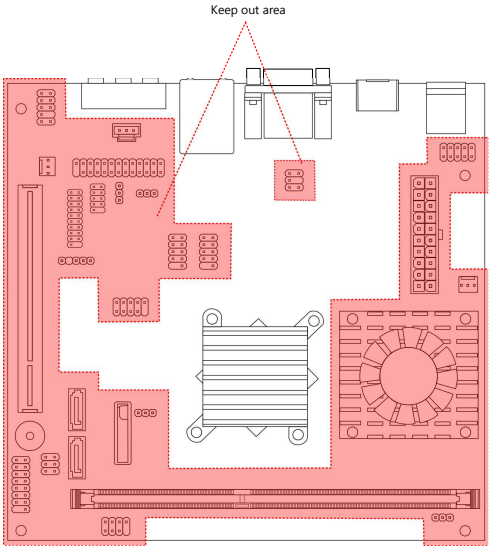


Figure 41: Suggested keepout areas

6. BIOS Setup Utility

6.1. Entering the BIOS Setup Utility

Power on the computer and press **Delete** during the beginning of the boot sequence to enter the BIOS Setup Utility. If the entry point has passed, restart the system and try again.

6.2. Control Keys

Up Move up one row

Down Move down one row

Left Move to the left in the navigation bar

Right Move to the right in the navigation bar

Enter Access the highlighted item / Select the item

Esc Jumps to the Exit screen or returns to the previous screen

Page up / +[1] Increase the numeric value

Page down / -[1] Decrease the numeric value

F1 General help[2]

F5 Restore the previous CMOS value

F7 Load optimized defaults

F10 Save all the changes and exit

Note:

1. Must be pressed using the 10-key pad.
2. The General help contents are only for the Status Page and Option Page setup menus.

6.3. Navigating the BIOS Menus

The main menu displays all the BIOS setup categories. Use the <**Left**>/<**Right**> and <**Up**>/<**Down**> arrow keys to select any item or sub-menu. Descriptions of the selected/highlighted category are displayed at the bottom of the screen.

The small triangular arrowhead symbol next to a field indicates that a sub-menu is available (see figure below). Press <**Enter**> to display the sub-menu. To exit the sub-menu, press <**Esc**>.

6.4. Getting Help

The BIOS Setup Utility provides a "**General Help**" screen. This screen can be accessed at any time by pressing **F1**. The help screen displays the keys for using and navigating the BIOS Setup Utility. Press **Esc** to exit the help screen.

6.5. Main Menu

The Main Menu contains thirteen setup functions and two exit choices. Use arrow keys to select the items and press <Enter> to accept or enter Sub-menu.

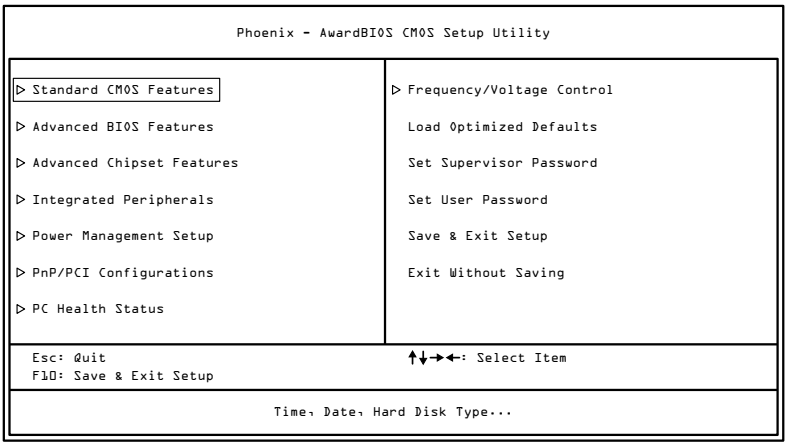


Figure 42: Illustration of the Main menu screen

6.5.1. Standard CMOS Features

Use this menu to set basic system configurations.

6.5.2. Advanced BIOS Features

Use this menu to set the advanced features available on your system.

6.5.3. Advanced Chipset Features

Use this menu to set chipset specific features and optimize system performance.

6.5.4. Integrated Peripherals

Use this menu to set onboard peripherals features.

6.5.5. Power Management Setup

Use this menu to set onboard power management functions.

6.5.6. PnP/PCI Configurations

Use this menu to set the PnP and PCI configurations.

6.5.7. PC Health Status

This menu shows the PC health status.

6.5.8. Frequency/Voltage Control

Use this menu to set the system frequency and voltage control.

6.5.9. Load Optimized Defaults

Use this menu option to load BIOS default settings for optimal and high performance system operations.

6.5.10. Set Supervisor Password

Use this menu option to set the BIOS supervisor password.

6.5.11. Set User Password

Use this menu option to set the BIOS user password.

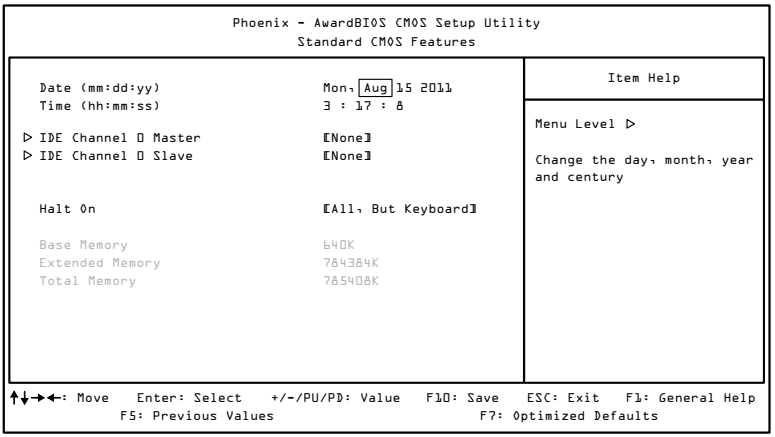
6.5.12. Save & Exit Setup

Save BIOS setting changes and exit setup.

6.5.13. Exit Without Saving

Discard all BIOS setting changes and exit setup

6.6. Standard CMOS Features



6.6.1. Date

The date format is [Day, Month Date, Year]

6.6.2. Time

The time format is [Hour : Minute : Second]

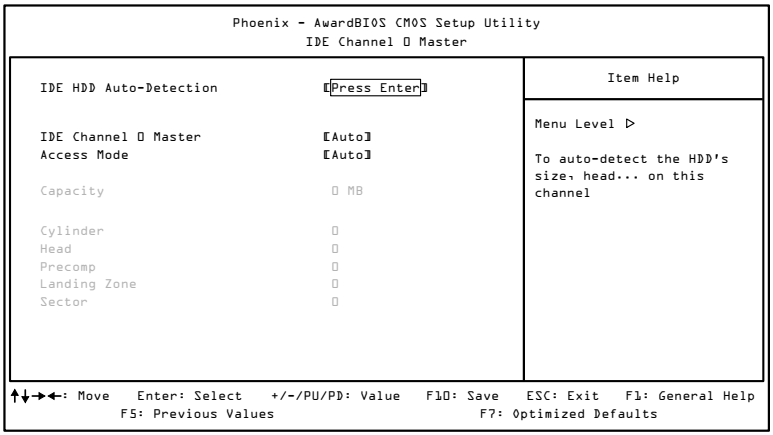
6.6.3. Halt On

Set the system's response to specific boot errors. Below is a table that details the possible settings.

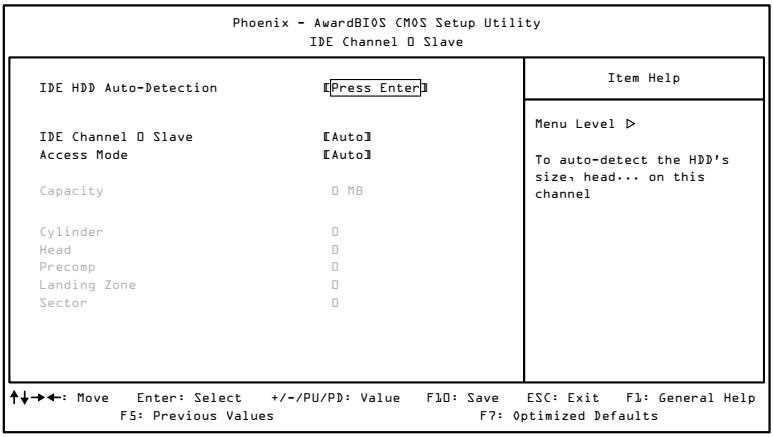
Settings	Description
All Errors	System halts when any error is detected
No Errors	System does not halt for any error
All, But Keyboard	System halts for all non-key errors

6.7. IDE Channels

Channel 0 Master



Channel 0 Slave

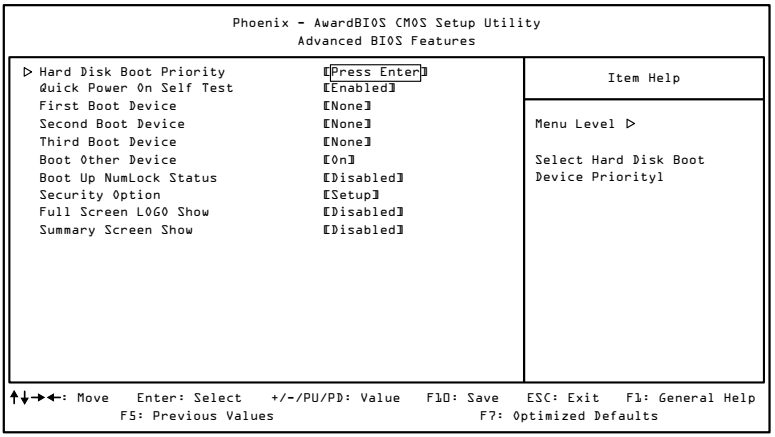


The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select **"Auto"** whenever possible. If you select **"Manual"**, make sure the information is from your hard disk vendor or system manufacturer.

Below is a table that details required hard drive information when using the **"Manual"** mode.

Settings	Description
[storage] Channel	The name of this match the name of the menu. Settings: [None, Auto, Manual]
Access Mode	Settings: [CHS, LBA, Large, Auto]
Capacity	Formatted size of the storage device
Cylinder	Number of cylinders
Head	Number of heads
Precomp	Write precompensation
Landing Zone	Cylinder location of the landing zone
Sector	Number of sectors

6.8. Advanced BIOS Features



The Advanced BIOS Features section includes the following submenus:

☐ Hard Disk Boot Priority

6.8.1. Quick Power On Self-Test

Shortens Power On Self-Test (POST) cycle to enable shorter boot up time.

Settings	Description
Disabled	Standard Power On Self Test (POST)
Enabled	Shorten Power On Self Test (POST) cycle and boot up time

6.8.2. First/Second/Third Boot Device

Set the boot device sequence as BIOS attempts to load the disk operating system.

Settings	Description
Removable	Boot from external drive
Hard Disk	Boot from the HDD
CDROM	Boot from CDROM
Legacy LAN	Boot from network drive
VIA Networking	Boot from network drive
Disabled	Disable the boot device sequence

6.8.3. Boot Other Device

Enables the system to boot from alternate devices if the system fails to boot from the "First/Second/Third Boot Device" lists.

Settings	Description
Disabled	No alternate boot device allowed
Enabled	Enable alternate boot device

6.8.4. Boot Up NumLock Status

Set the NumLock status when the system is powered on.

Settings	Description
Off	Forces keypad to behave as arrow keys
On	Forces keypad to behave as 10-key

6.8.5. Security Option

Selects whether the password is required every time the System boots, or only when you enter Setup.

Settings	Description
Setup	Password prompt appears only when end users try to run BIOS Setup
System	Password prompt appears every time when the computer is powered on and when end users try to run BIOS Setup

6.8.6. Full Screen Logo Show

Show full screen logo during BIOS boot up process.

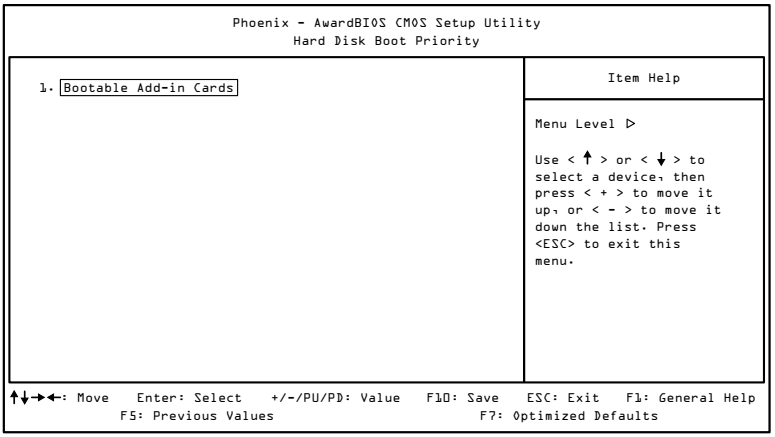
Settings: [Disabled, Enabled]

6.8.7. Summary Screen Show

Show summary screen.

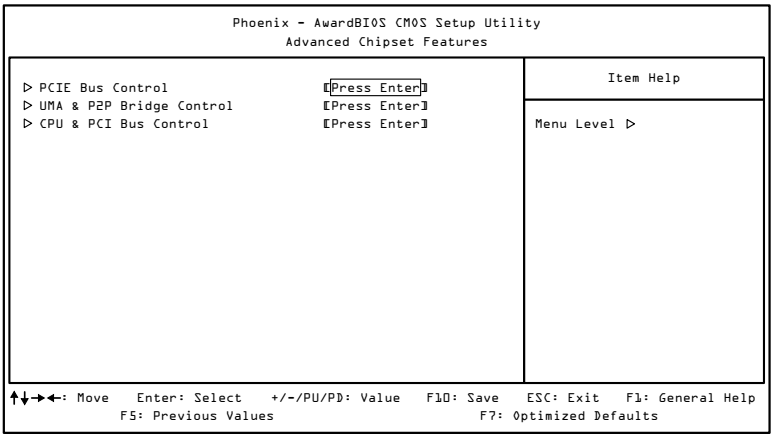
Settings: [Disabled, Enabled]

6.9. Hard Disk Boot Priority



This is for setting the priority of the hard disk boot order when the "Hard Disk" option is selected in the "[First/Second/Third] Boot Device" menu item.

6.10. Advanced Chipset Features



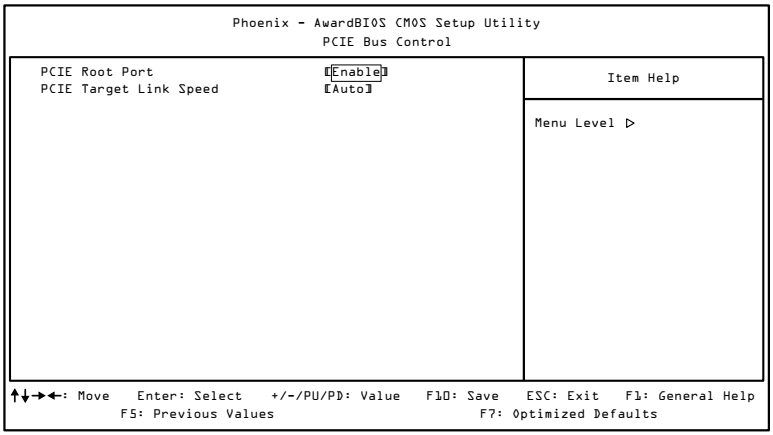
Caution:

The Advanced Chipset Features menu is used for optimizing the chipset functions. Do not change these settings unless you are familiar with the chipset.

The Advanced Chipset Features section includes the following submenus:

- ☐ PCIE Bus Control
- ☐ UMA & P2P Bridge Control
- ☐ CPU & PCI Bus Control

6.11. PCIE Bus Control



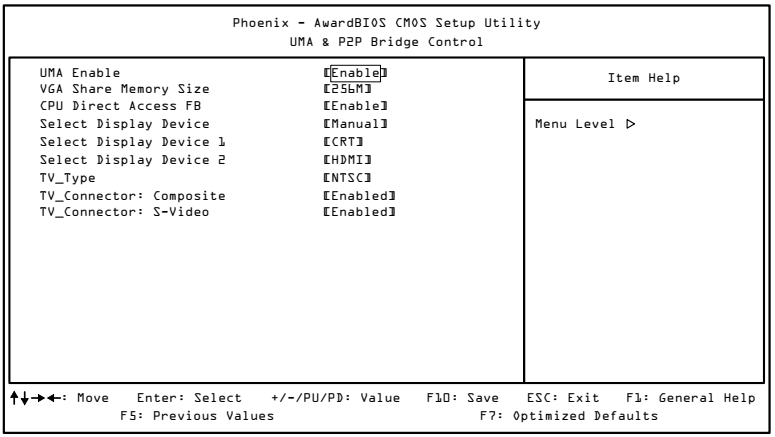
6.11.1. PCIE Root Port

Settings: [Disabled, Enabled]

6.11.2. PCIE Target Link Speed

Settings: [Auto, Force Gen1]

6.12. UMA & P2P Bridge Control



6.12.1. UMA Enable

Settings: [Disabled, Enabled]

6.12.2. VGA Share Memory Size

This setting allows you to select the amount of system memory that is allocated to the integrated graphics processor.

Settings	Description
64M	Minimum amount of memory that can be allocated to the graphics processor.
128M	Maximum amount of memory that can be allocated to the graphics processor if the system memory size is less than 1GB.
256M	Maximum amount of memory that can be allocated to the graphics processor if the system memory size is 1GB but less than 2GB.
512M	Maximum amount of memory that can be allocated to the graphics processor if the system memory size is 2GB or above.

6.12.3. CPU Direct Access FB

Settings: [Disabled, Enabled]

6.12.4. Select Display Device

This setting refers to the type of display being used with the system.
Settings: [Auto, Manual]

6.12.5. Select Display Device 1

This setting refers to the type of display device 1 being used with the system.
Settings: [CRT, TV, HDMI]

6.12.6. Select Display Device 2

This setting refers to the type of display device 2 being used with the system.
Settings: [CRT, TV, HDMI]

6.12.7. TV_Type

This setting refers to the native resolution of the display being used with the system.
Settings: [NTSC, PAL]

6.12.8. TV_Connector: Composite

This setting refers to enable or disable the Composite video interface being used with the system. The default setting is enabled.
Settings: [Enabled, Disabled]

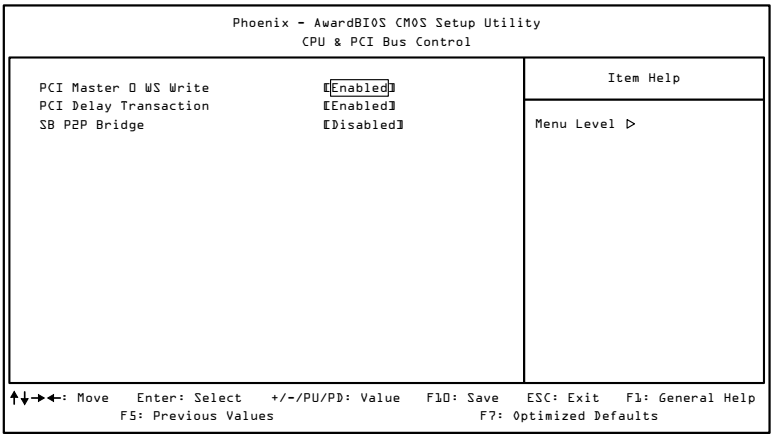
6.12.9. TV_Connector: S-Video

This setting refers to enable or disable the S-Video interface being used with the system. The default setting is enabled.
Settings: [Enabled, Disabled]

Note:

The TV-out function is available as a manufacturing option. The default SKU does not include the TV-out.

6.13. CPU & PCI Bus Control



6.13.1. PCI Master 0 WS Write

Settings: [Enabled, Disabled]

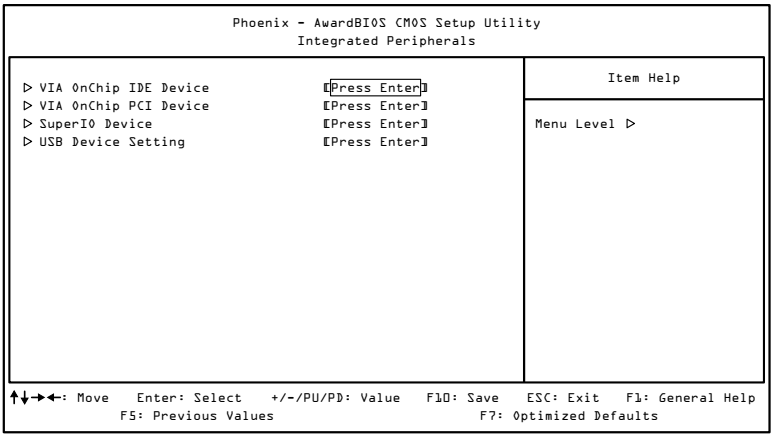
6.13.2. PCI Delay Transaction

Settings: [Disabled, Enabled]

6.13.3. SB P2P Bridge

Settings: [Disabled, Enabled]

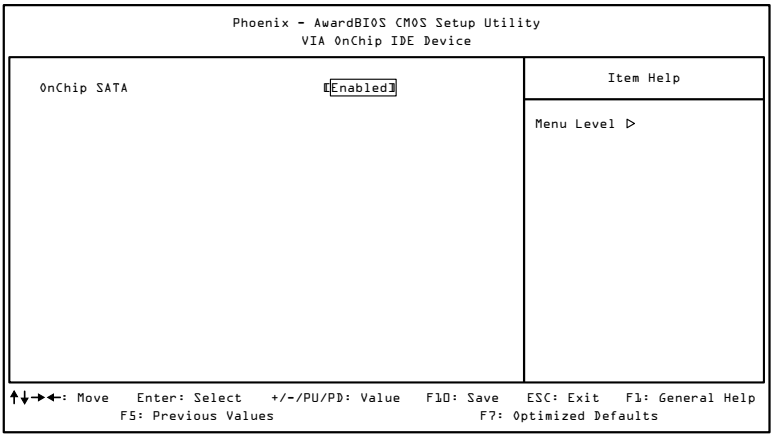
6.14. Integrated Peripherals



The Integrated Peripherals section includes the following submenus:

- ☐ VIA OnChip IDE Device
- ☐ VIA OnChip PCI Device
- ☐ SuperIO Device
- ☐ USB Device Setting

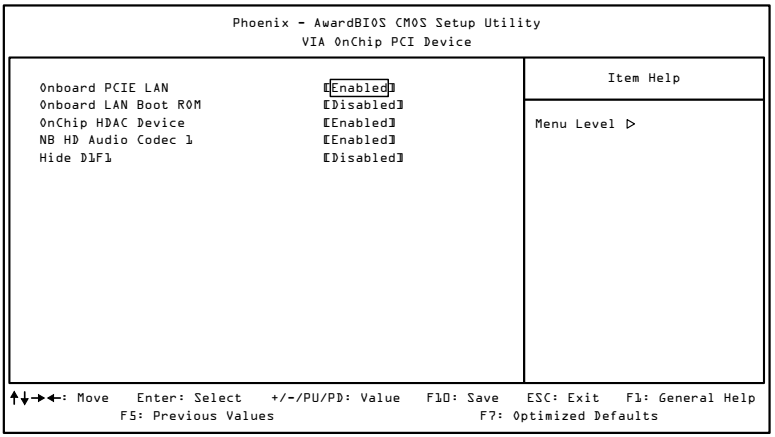
6.15. VIA OnChip IDE Device



6.15.1. OnChip SATA

Settings: [Disabled, Enabled]

6.16. VIA OnChip PCI Device



6.16.1. Onboard PCIE LAN

Settings: [Enabled, Disabled]

6.16.2. OnBoard LAN Boot ROM

Settings: [Enabled, Disabled]

6.16.3. OnChip HDAC Device

Settings: [Enabled, Disabled]

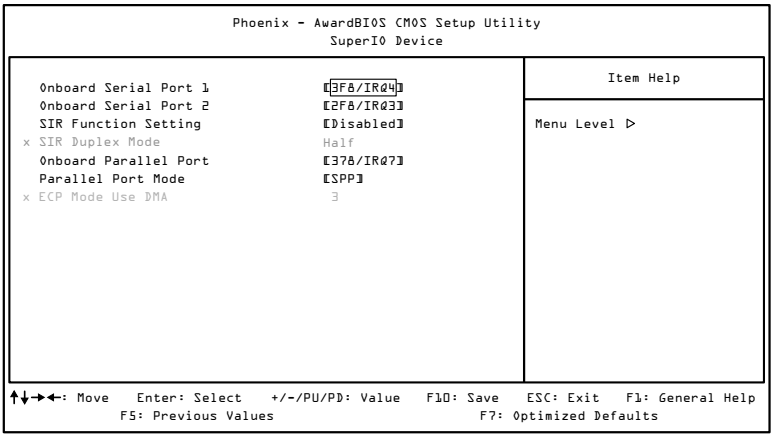
6.16.4. NB HD Audio Codec 1

Settings: [Enabled, Disabled]

6.16.5. Hide D1F1

Settings: [Enabled, Disabled]

6.17. SuperIO Device



6.17.1. Onboard Serial Port 1

Settings: [Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto]

6.17.2. Onboard Serial Port 2

Settings: [Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto]

6.17.3. SIR Function Setting

Settings: [Disabled, IrDA]

6.17.4. Onboard Parallel Port

This specifies the I/O port address and IRQ of the onboard parallel port.

Settings: [Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7]

6.17.5. Parallel Port Mode

Set the parallel port mode. To operate the onboard parallel port as Standard Parallel Port, choose SPP. To operate the onboard parallel port in the EPP mode, choose EPP. By choosing ECP, the onboard parallel port will operate in

ECP mode. Choosing ECP + EPP will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

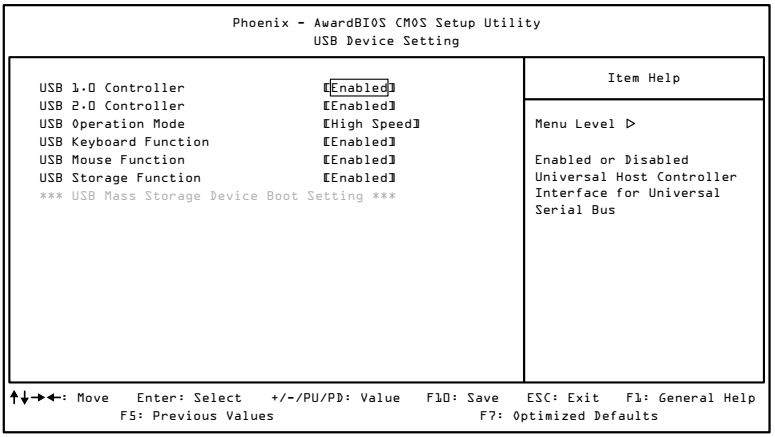
Settings: [SPP, EPP, ECP, ECP + EPP]

6.17.6. ECP Mode Use DMA

ECP (Extended Capabilities Port) has two DMA channels that it can use. The default channel is 3. However, some expansion cards may use channel 3 as well. To solve this conflict, change the ECP channel to 1. Select a DMA channel for the port.

Settings: [1, 3]

6.18. USB Device Setting



6.18.1. USB 1.0 Controller

Enable or disable Universal Host Controller Interface for Universal Serial Bus.

Settings: [Disabled, Enabled]

6.18.2. USB 2.0 Controller

Enable or disable Enhanced Host Controller Interface for Universal Serial Bus.

Settings: [Disabled, Enabled]

6.18.3. USB Operation Mode

Auto decide USB device operation mode.

Settings	Description
Full/Low Speed	All of USB Device operated on full/low speed mode
High Speed	If USB device was high speed device, then it operated on high speed mode.

6.18.4. USB Keyboard Function

Enable or disable legacy support of USB keyboard.

Settings: [Disabled, Enabled]

6.18.5. USB Mouse Function

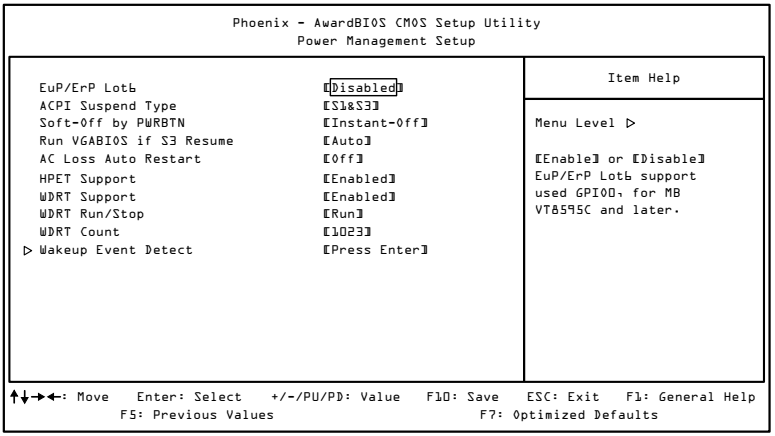
Settings: [Disabled, Enabled]

6.18.6. USB Storage Function

Enable or disable legacy support of USB mass storage.

Settings: [Disabled, Enabled]

6.19. Power Management Setup



The Power Management Setup section includes the following submenus:

☐ Wakeup Event Detect

6.19.1. EuP/ErP Lot6

Settings: [Disabled, Enabled]

6.19.2. ACPI Suspend Type

Settings	Description
S1(POS)	S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system contexts.
S3(STR)	S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.
S1 & S3	Depends on the OS to select S1 or S3.

6.19.3. Soft-Off by PWRBTN

Settings	Description

Delay 4 Sec	System is turned off if power button is pressed for more than four seconds.
Instant-Off	Power button functions as a normal power-on/-off button.

6.19.4. Run VGABIOS if S3 Resume

Select whether to run VGA BIOS if resuming from S3 state. This is only necessary for older VGA drivers.

Settings: [Auto, Yes, No]

6.19.5. AC Loss Auto Restart

The field defines how the system will respond after an AC power loss during system operation.

Settings	Description
Off	Keeps the system in an off state until the power button is pressed
On	Restarts the system when the power is back
Former-Sts	Former-Sts

6.19.6. HPET Support

Settings: [Disabled, Enabled]

6.19.7. WDRT Support

Settings: [Disabled, Enabled

6.19.8. WDRT Run/Stop

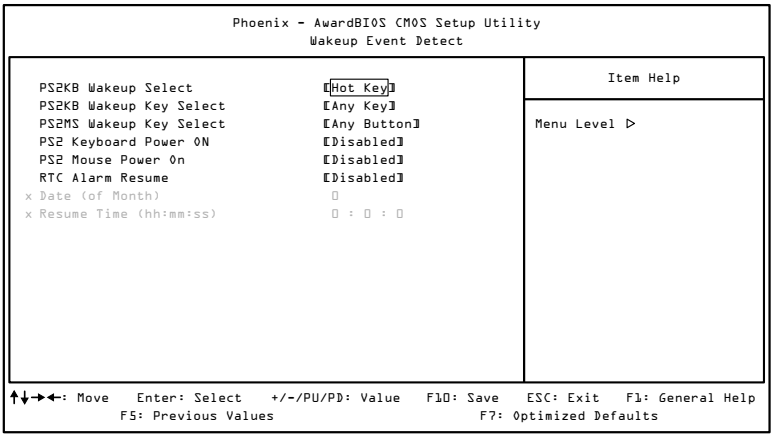
Settings: [Stop, Run]

6.19.9. WDRT Count

Key in a DEC number.

Settings: [Min = 0, Max = 1023]

6.20. Wakeup Event Detect



6.20.1. PS2KB Wakeup Select

This feature has two settings: Hot Key and Password. To select the Password option, press <Page Up> or <Page Down>. To set the password, enter up to eight digits and press <Enter>.

Settings: [Hot Key]

6.20.2. PS2KB Wakeup Key Select

This feature is only available when "Hot Key" is chosen in "PS2KB Wakeup Select".

Settings: [Ctrl+F1, Ctrl+F2, Ctrl+F3, Ctrl+F4, Ctrl+F5, Ctrl+F6, Ctrl+F7, Ctrl+F8, Ctrl+F9, Ctrl+F10, Ctrl+F11, Ctrl+F12, Power, Wake, Any Key]

6.20.3. PS2MS Wakeup Key Select

Settings: [Any Button, Left Button, Right Button]

6.20.4. PS2 Keyboard Power ON

Settings: [Disabled, Enabled]

6.20.5. PS2 Mouse Power ON

Settings: [Disabled, Enabled]

6.20.6. RTC Alarm Resume

Set a scheduled time and/or date to automatically power on the system.
Settings: [Disabled, Enabled]

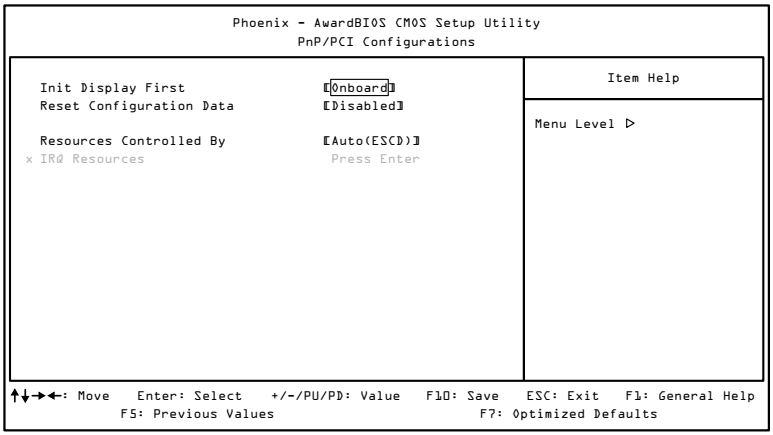
6.20.7. Date (of Month)

This field can only be set if "RTC Alarm Resume" is enabled. The field specifies the date for "RTC Alarm Resume".

6.20.8. Resume Time (hh:mm:ss)

This field can only be set if "RTC Alarm Resume" is enabled. The field specifies the time for "RTC Alarm Resume".

6.21. PnP/PCI Configurations



Note:

This section covers some very technical items and it is strongly recommended to leave the default settings as is unless you are an experienced user.

6.21.1. Init Display First

Settings: [Onboard, PCI slot]

6.21.2. Reset Configuration Data

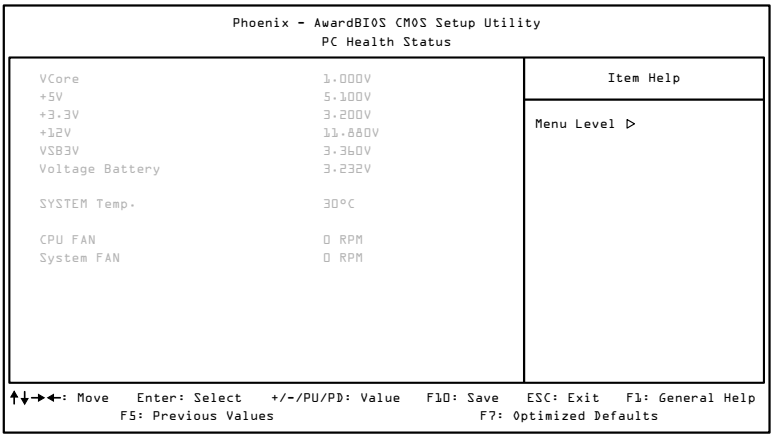
Settings	Description
Disabled	Default setting
Enabled	Resets the ESCD (Extended System Configuration Data) after exiting BIOS Setup if a newly installed PCI card or the system configuration prevents the operating system from loading

6.21.3. Resources Controlled By

Enables the BIOS to automatically configure all the Plug-and-Play compatible devices.

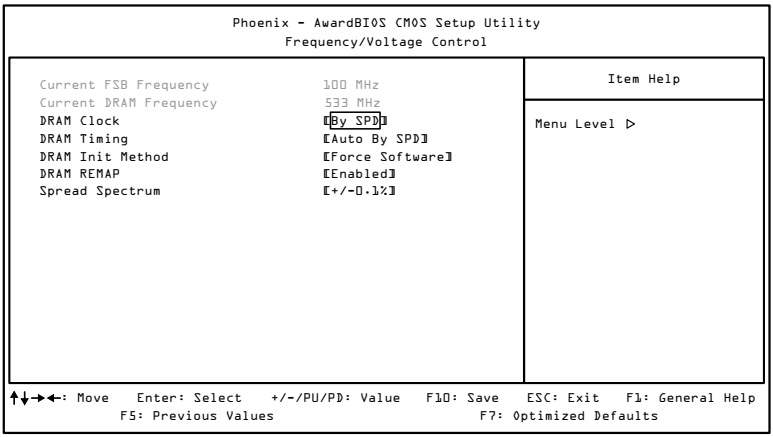
Settings	Description
Auto(ESCD)	BIOS will automatically assign IRQ, DMA and memory base address fields
Manual	Unlocks "IRQ Resources" for manual configuration

6.22 PC Health Status



The PC Health Status displays the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and fan speeds.

6.23 Frequency/Voltage Control



6.23.1 DRAM Clock

This chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency.

Settings: [By SPD, 400 MHz, 533 MHz]

6.23.2 DRAM Timing

Setting: [Auto By SPD]

6.23.3 DRAM Init Method

Settings: [Auto: Hardware Init, Force software]

6.23.4 DRAM REMAP

Settings: [Disabled, Enabled]

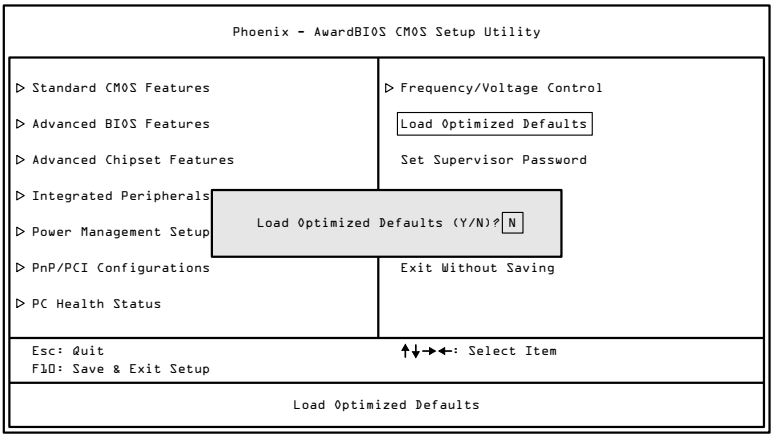
6.23.5 Spread Spectrum

When the mainboard's clock generator pulses, the extreme values (spikes) of the pulses create EMI (Electromagnetic Interference). The Spread Spectrum

function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves.

Settings: [Disabled, +/- 0.1%, +/- 0.2%, +/- 0.3%, +/- 0.4%, +/- 0.5%, +/- 0.6%, +/- 0.7%, +/- 0.8%, +/- 0.9%]

6.24 Load Optimized Defaults

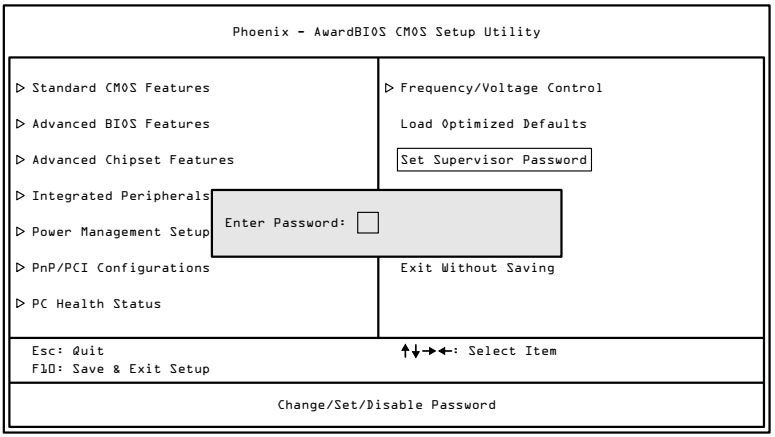


This option is for restoring all the default optimized BIOS settings. The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

Entering "**Y**" and press <Enter> to load the default optimized BIOS values.

Entering "**N**" will cancel the load optimized defaults request.

6.25 Set Supervisor/User Password



This option is for setting a password for entering BIOS Setup. When a password has been set, a password prompt will be displayed whenever BIOS Setup is run. This prevents an unauthorized person from changing any part of your system configuration.

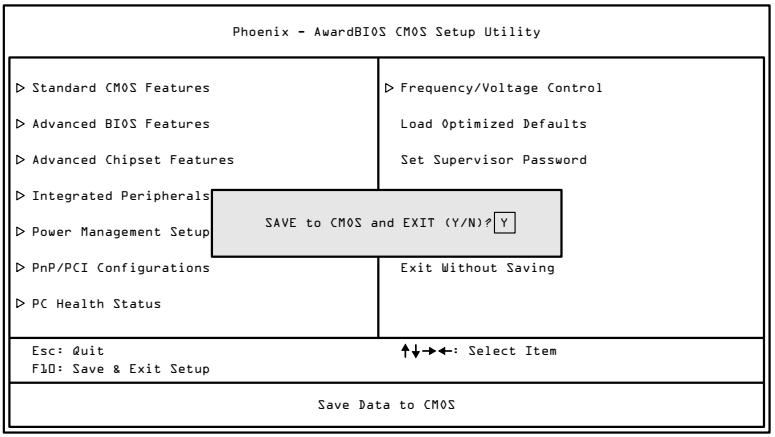
There are two types of passwords you can set. A supervisor password and a user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be changed.

To set the password, type the password (up to eight characters in length) and press **<Enter>**. The password typed now will clear any previously set password from CMOS memory. The new password will need to be reentered to be confirmed. To cancel the process press **<Esc>**.

To disable the password, press **<Enter>** when prompted to enter a new password. A message will show up to confirm disabling the password. To cancel the process press **<Esc>**.

Additionally, when a password is enabled, the BIOS can be set to request the password each time the system is booted. This would prevent unauthorized use of the system. See "Security Option" in the "Advanced BIOS Features" section for more details.

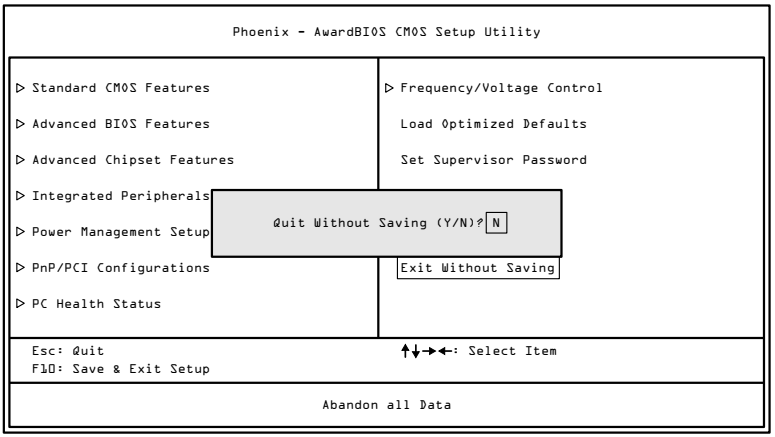
6.26 Save & Exit Setup



Entering "**Y**" saves any changes made, and exits the program.

Entering "**N**" will cancel the exit request.

6.27 Exit Without Saving



Entering "**Y**" discards any changes made and exits the program.

Entering "**N**" will cancel the exit request

7 Driver Installation

7.1 Microsoft Driver Support

The VIA VB7008 mainboard is compatible with Microsoft operating systems. The latest Windows drivers can be downloaded from the VIA Embedded website at www.viaembedded.com.

For embedded operating systems, the related drivers can be found in the VIA Embedded website at www.viaembedded.com.

7.2 Linux Driver Support

The VIA VB7008 mainboard is highly compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Drivers provided by VIA
- Using a driver built into a distribution package
- Visiting www.viaembedded.com for the latest updated drivers
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. Contact VIA Embedded to submit a request.

Appendix A.
Power Consumption Report

Power consumption tests were performed on the VIA VB7008. The following tables represent the breakdown of the voltage, amp and wattage values while running common system applications.

A.1. VB7008-16

The tests were performed based on the following additional components:

- **CPU:** VIA C7®-D 1.6 GHz
- **Chipset:** VX900
- **Memory:** Corsair 4GB DDR3 1600MHz DIMM
- **HDD:** Seagate 500GB ST3500514NS
- **DVD-ROM:** DVR-115BK
- **Power supply:** ATX power supply
- **Operating System:** Windows 7

A.1.1. Playing DVD-Windows Media Player 12 (+HDMI)

Power Plane	Volts	Amperes	Watts
+3.3V	2.771	1.049	2.907
+5V	4.690	3.141	14.731
+5VSB	4.739	0.261	1.237
+12V	11.922	0.056	0.668
		Total Power Consumption	19.543

A.1.2. Playing MP3-Media Player

Power Plane	Volts	Amperes	Watts
+3.3V	2.761	0.908	2.507
+5V	4.737	1.888	8.943
+5VSB	4.790	0.259	1.241
+12V	12.039	0.068	0.819
		Total Power Consumption	13.510

A.1.3. Running Network Application – Files Copy

Power Plane	Volts	Amperes	Watts
+3.3V	2.627	0.886	2.328
+5V	4.605	2.059	9.482
+5VSB	4.635	0.395	1.831
+12V	11.913	0.062	0.739
		Total Power Consumption	14.380

A.1.4. Idle

Power Plane	Volts	Amperes	Watts
+3.3V	2.875	0.896	2.576
+5V	4.784	1.380	6.602
+5VSB	4.828	0.258	1.246
+12V	12.065	0.072	0.869
		Total Power Consumption	11.293

A.1.5. Run Burn-in Test V6.0

Power Plane	Volts	Amperes	Watts
+3.3V	2.897	0.881	2.552
+5V	4.728	2.036	9.626
+5VSB	4.785	0.256	1.225
+12V	12.032	0.068	0.818
		Total Power Consumption	14.221

A.1.6. S3

Power Plane	Volts	Amperes	Watts
+3.3V	0.000	0.000	0.000
+5V	0.000	0.000	0.000
+5VSB	5.035	0.242	1.218
+12V	0.000	0.000	0.000
		Total Power Consumption	1.218

Appendix B. Mating Connector Vendor Lists

The following tables listed the mating connector vendor lists of VB7008 mainboard.

Connectors	Part No.	Mating Vendor & P/N	
F_Audio	99G30-05126I	Neltron	SAMTEC SSW Series
		2214S-XXG-85	
		2214R-XXG-85	
F_PANEL	99G30-05005I	Neltron	SAMTEC SSW Series
		2212S-XXG-85	
		2212R-XXG-85	
FAN	99G30-020035	Neltron	N/A
		2218H-03	N/A
USB	99G30-05072K	Neltron	SAMTEC SSW Series
		2214S-XXG-85	
		2214R-XXG-85	

Table 29: VB7008 mating connector vendor lists