VIA Embedded

user manual

EPIA-M840

Mini-ITX Embedded Board

Revision 1.13
113-11212011-1155

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Regulatory Compliance

FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

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

Do's

- 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.

Don'ts

- 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

Model Number	Description
EPIA-M840-16	Standard kit ☐ 1 x SATA cable ☐ 1 x I/O bracket ☐ 1 x Driver CD
EPIA-M840-12	Standard kit ☐ 1 x SATA cable ☐ 1 x I/O bracket ☐ 1 x Driver CD

TABLE OF CONTENTS

1

Overview

The VIA EPIA-M840 Mini-ITX Mainboard is a compact native x86 mainboard optimized for entry level systems in embedded and productivity applications. It provides support for high fidelity audio with its onboard VIA VT1708S High Definition Audio codec. In addition it supports two SATA 3Gb/s storage devices as well as IDE.

The EPIA-M840 is based on the VIA VX800 Unified Digital Media IGP chipset featuring the VIA Chrome9™ HC3 with 2D/3D graphics and video accelerators for rich digital media performance.

Key Components

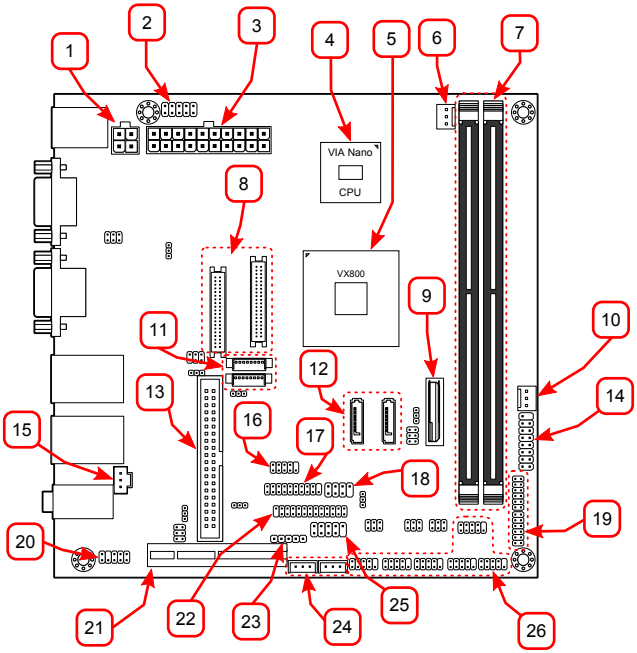
VIA Nano™ NanoBGA2 CPU

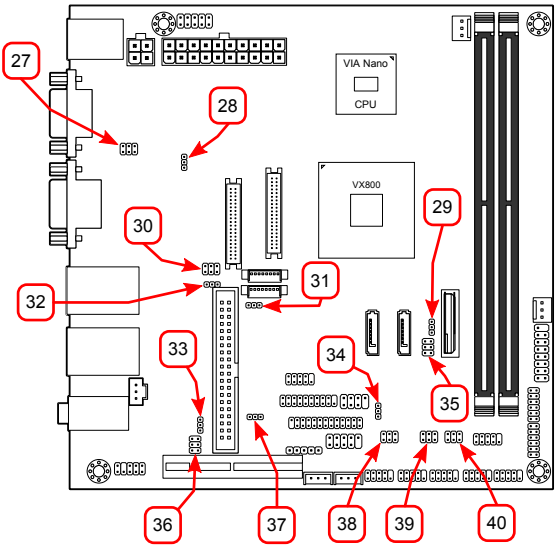
The VIA Nano is a 64-bit superscalar processor in x86 platform using a 65 nanometer process technology. It delivers an energy-efficient, powerful performance, with cool and quiet operation all within an ultra compact NanoBGA2 package measuring 21mm x 21mm. Perfectly fit for embedded system applications such as industrial PCs, test machines, measuring equipment, digital signage, medical PCs, monitoring systems, gaming machines, in-vehicle entertainment, and etc. The VIA Nano also boasts of immersive multimedia performance, connectivity and computing applications.

VIA VX800 System Processor

The VIA VX800 media system processor is an all-in-one, highly integrated digital media IGP chipset featuring the latest video, graphics and connectivity performance in a single chip measuring just 33x33mm.

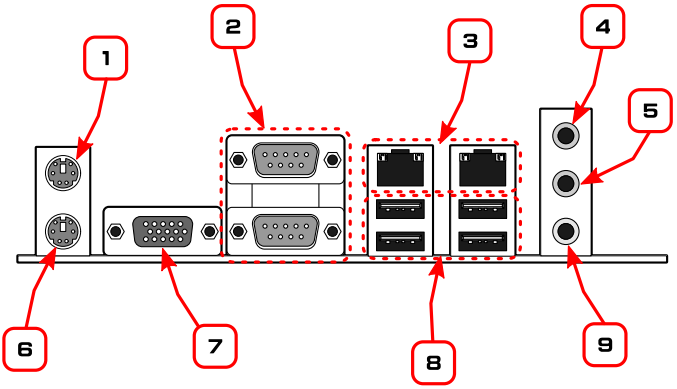
LAYOUT (TOP VIEW)





Note:
For the purposes of simplifying the illustration, the connectors for both DC-in and standard versions have been included in the diagram. However, actual products will only have one or the other.

LAYOUT (I/O PANEL)



Item	Description	Page
1	PS/2 keyboard port	10
2	COM ports	10
3	Gigabit Ethernet ports	10
4	Line-in 3.5 mm TRS jack	10
5	Line-out 3.5 mm TRS jack	10
6	PS/2 mouse port	10
7	VGA port	10
8	USB 2.0 ports	10
9	Microphone 3.5 mm TRS jack	10

SPECIFICATIONS

Processor	Fan VIA 1.3+GHz Nano processor running at 1.6 GHz Fanless VIA 1.2GHz Nano processor running at 1.2 GHz
Chipset	VIA VX800 Advanced all-in-one system processor
Super I/O	Fintek F81865-I
Memory	2 x DDR2 533/667 MHz DIMM slot* (each slot can support a 2 GB module)
VGA	Integrated VIA Chrome9™ HC3 3D/2D graphics
Storage	1 x UDMA 133/100 40-pin connector 2 x SATA connectors with configurable pin 7 (GND/5V) 2 x SATA 3.5" HDD auxiliary power (for DC-in SKU only) 1 x CF type 1
LAN	2 x VIA VT6130 PCIe Gigabit Ethernet controller
Audio	VIA VT1708S High Definition audio codec
I/O	1 x USB pin header (supports two USB ports) 2 x 2-channel 24-bit LVDS connectors 2 x Backlight control connectors 1 x front audio pin header (Line-in/Mic-in or amplifier module) 1 x PS2 keyboard/mouse pin header 6 x RS232 pin header (configurable 5V/12V) 1 x LPT pin header 1 x LPC pin header 1 x SMBUS pin header 1 x S/PDIF Out connector 1 x SIR pin header 2 x Digital I/O pin header (GPI x 8, GPO x 8) 1 x front panel pin header 2 x Smart Fan connectors 1 x Temperature sensor pin header 1 x ATX power connector or +12V DC-in (option)
Expansion	1 x 4-lane PCIe slot
Back Panel I/O	2 x PS/2 connectors (mouse and keyboard) 2 x RS232 COM port (configurable 5V/12V) 1 x VGA port 2 x RJ-45 LAN port 4 x USB ports 3 x Audio jacks (Line-out, Line-in, Mic-in)
BIOS	Award BIOS 4/8Mbit SPI Flash ROM
Operating System	Windows CE, XPe, XP, Linux

System Monitoring	- Wake-on-LAN, keyboard power-on, RTC timer, Watch Dog timer - System power management - AC power failure recover
Operating environment	0°C ~ 60°C 0% ~ 95% (relative humidity; non-condensing)
Form Factor	Mini-ITX (17 cm x 17 cm)
Certifications	CE/FCC
Compliance	RoHS

*System resources require physical memory address locations above 3 GB that may reduce the total available memory.

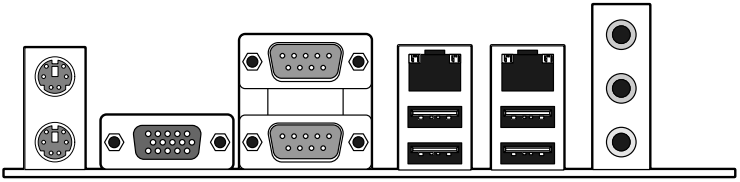
**Specifications are subject to change without notice.

2

Hardware Installation

External I/O

The external I/O panel has the following ports:



PS/2 ports

There are two PS/2 ports: one for a keyboard, one for a mouse.

VGA port

The 15-pin VGA port is for connecting to analog displays.

COM ports

There are two 9-pin COM port is for pointing devices or other serial devices. The 9th pin or each COM port can be configured as an RI pin or to deliver a 5V or 12V power supply. The default setting is 5V. Refer to page 34 for the jumper settings. To configure the pin as an RI pin, remove the jumper cap for the corresponding jumper.

Gigabit LAN ports

The mainboard provides two Gigabit Ethernet port controlled through the VIA VT6130 PCIe Gigabit Ethernet controller.

USB ports

Four standard USB 2.0 ports are provided.

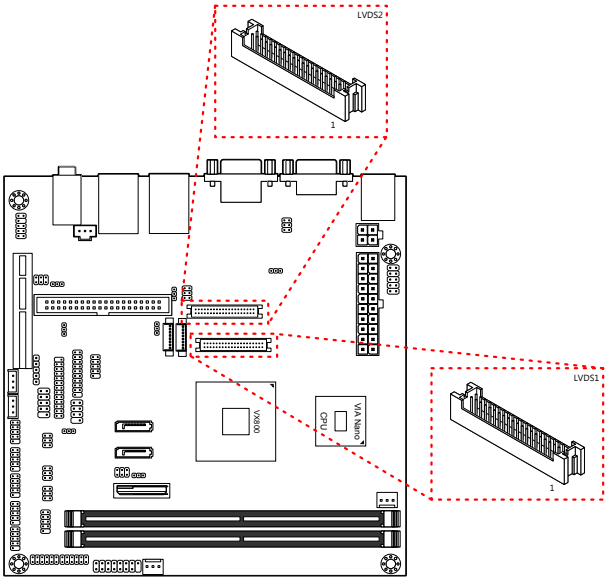
Audio ports

Three 3.5 mm TRS jacks enable connections to Line-out, Line-in, and Mic-in.

ONBOARD CONNECTORS

LVDS panel connectors

The mainboard has two LVDS panel connectors: LVDS1 and LVDS2.



LVDS1

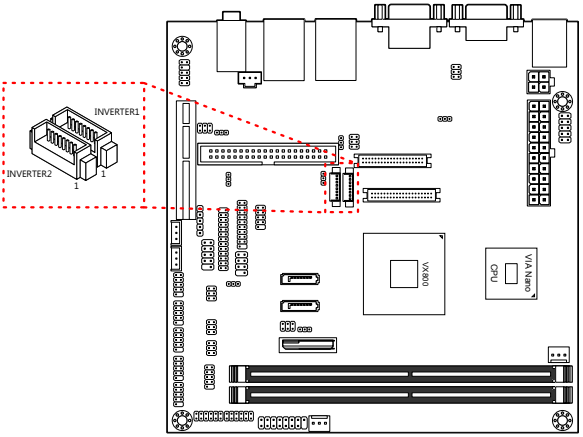
Pin	Signal	Pin	Signal
		M1	GND
1	-LD2C0	2	PVDD1
3	+LD2C0	4	PVDD1
5	GND	6	GND
7	-LD2C1	8	GND
9	+LD2C1	10	-LD1C0
11	GND	12	+LD1C0
13	-LD2C2	14	GND
15	+LD2C2	16	-LD1C1
17	GND	18	+LD1C1
19	-LCLK2	20	GND
21	+LCLK2	22	-LD1C2
23	GND	24	+LD1C2
25	-LD2C3	26	GND
27	+LD2C3	28	-LCLK1
29	NC	30	+LCLK1
31	GND	32	GND
33	NC	34	-LD1C3
35	NC	36	+LD1C3
37	NC	38	DVP1_SPCLK
39	NC	40	DVP1_SPD
		M2	GND

LVDS2

Pin	Signal	Pin	Signal
		M1	GND
1	-A4_L	2	PVDD2
3	A4_L	4	PVDD2
5	GND	6	GND
7	-A5_L	8	GND
9	A5_L	10	-A0_L
11	GND	12	A0_L
13	-A6_L	14	GND
15	A6_L	16	-A1_L
17	GND	18	A1_L
19	-CLK2_L	20	GND
21	CLK2_L	22	-A2_L
23	GND	24	A2_L
25	-A7_L	26	GND
27	A7_L	28	-CLK1_L
29	NC	30	CLK1_L
31	NC	32	GND
33	NC	34	-A3_L
35	NC	36	A3_L
37	NC	38	DISPCLKI0
39	NC	40	DISPCLKO0
		M2	GND

Inverter connectors

The mainboard has two inverters for controlling the LVDS panel backlight and brightness. INVERTER1 corresponds to the LVDS1 panel connector. INVERTER2 corresponds to the LVDS2 panel connector.



INVERTER1

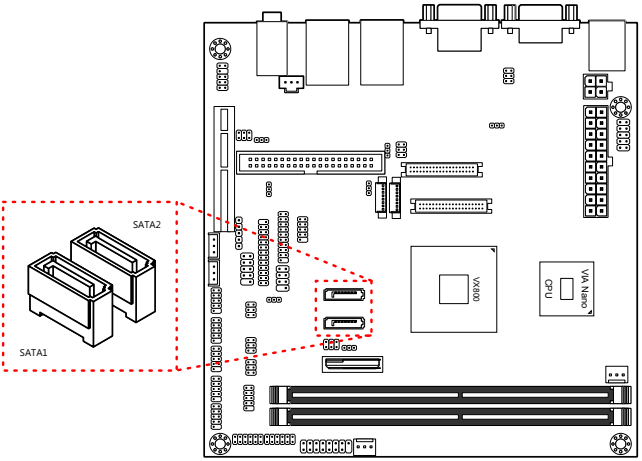
Pin	Signal
1	IVDD1_CEN
2	IVDD1_CEN
3	BLON1
4	VX800PWM_CTL
5	BLON1
6	BRIGHTNESS1_CTL
7	GND
8	GND

INVERTER2

Pin	Signal
1	IVDD2
2	IVDD2
3	BAKLITE
4	VX800PWM_CTL
5	BAKLITE
6	BRIGHTNESS_CTL
7	GND
8	GND

SATA connectors

There are two onboard SATA connectors that support data transfers speeds up to 3 Gbps. Both 2.5-inch and 3.5-inch SATA drives can be supported. The standard mainboard version can only support 2.5-inch SATA hard drives. The DC-in mainboard version can only support 3.5-inch SATA hard drives.



SATA1

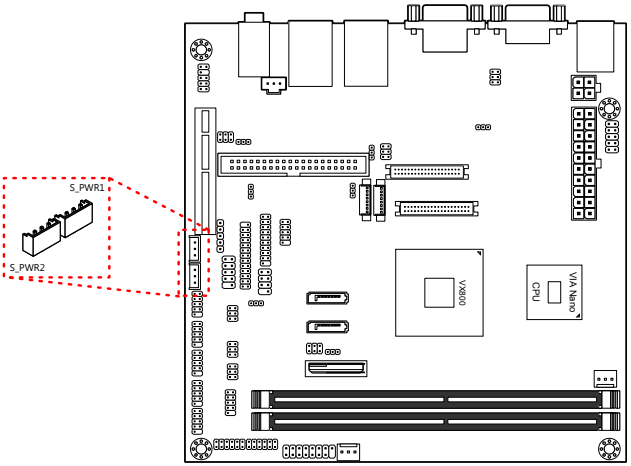
Pin	Signal
G1	G1
1	GND
2	STXP_1
3	STXN_1
4	GND
5	SRXN_1
6	SRXP_1
7	GND
G2	G2

SATA2

Pin	Signal
G1	G1
1	GND
2	STXP_2
3	STXN_2
4	GND
5	SRXN_2
6	SRXP_2
7	GND
G2	G2

SATA power connectors

The DC-in SKU version of the mainboard provides two 3-pin SATA power connectors. Each SATA power connector provides an auxiliary 12V power supply to attached 3.5-inch SATA hard drives. When connecting SATA power cables to the SATA power connectors, make sure that the power plugs are inserted in the proper orientation and the pins are properly aligned.



S_PWR1

Pin	Signal
1	+5V
2	+12V
3	GND

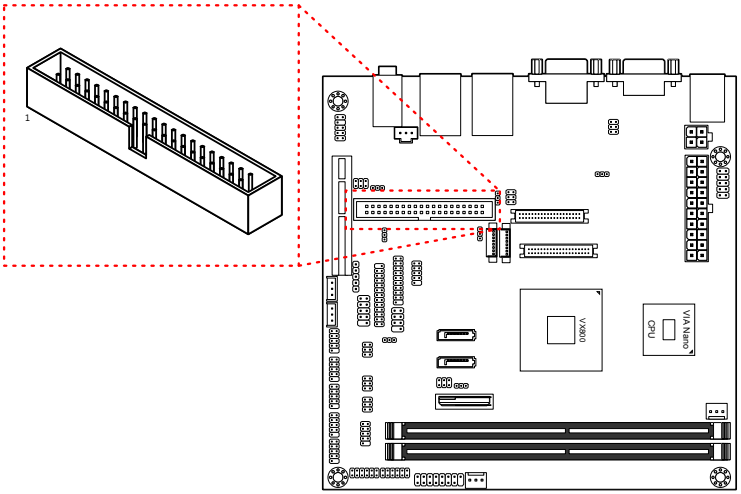
S_PWR2

Pin	Signal
1	+5V
2	+12V
3	GND

Note:
The SATA power connectors are only available with the DC-in SKU.

IDE connector

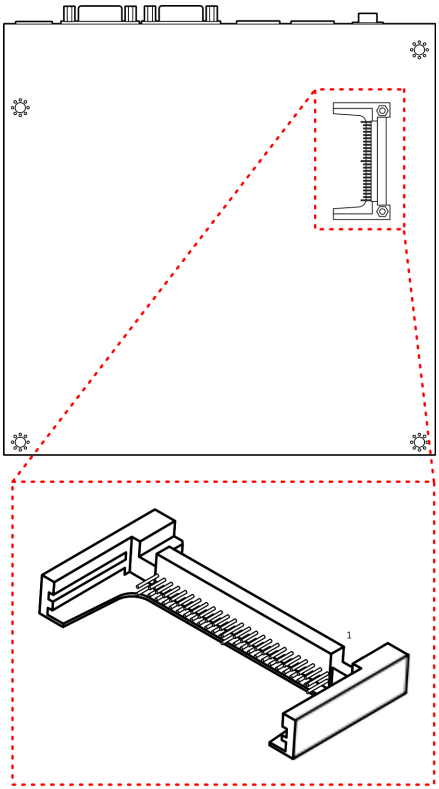
The mainboard has one IDE connector that provides support for up to two IDE devices.



Pin	Signal	Pin	Signal
1	-IDE_RST	2	GND
3	PD_7	4	PD_8
5	PD_6	6	PD_9
7	PD_5	8	PD_10
9	PD_4	10	PD_11
11	PD_3	12	PD_12
13	PD_2	14	PD_13
15	PD_1	16	PD_14
17	PD_0	18	PD_15
19	GND	20	IDEV_SEL
21	PD_REQ	22	GND
23	-PD_IOW	24	GND
25	-PD_IOR	26	GND
27	PD_RDY	28	GND
29	-PD_ACK	30	GND
31	PD_IRQ15	32	NC
33	PD_A1	34	-LID
35	PD_A0	36	PD_A2
37	-PD_CS1	38	-PD_CS3
39	-HD_LED1	40	GND

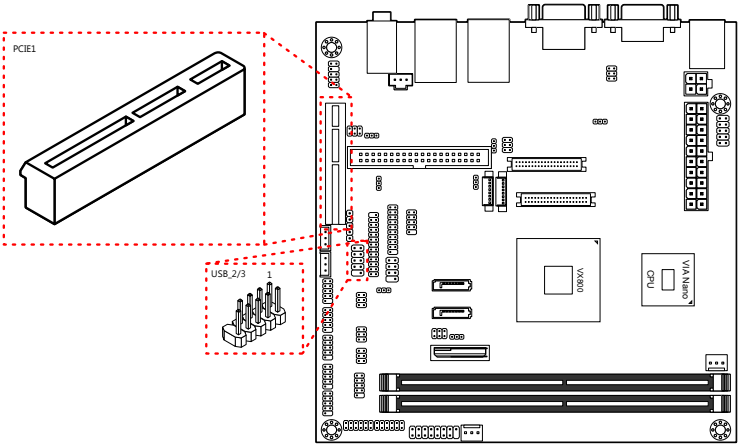
Compact Flash slot

The onboard CompactFlash socket is located on the bottom side of the mainboard. It is compatible with Type 1 and Type 2 CompactFlash cards.



PCIe slot

The onboard PCI Express slot supports one PCIe x4 expansion card.



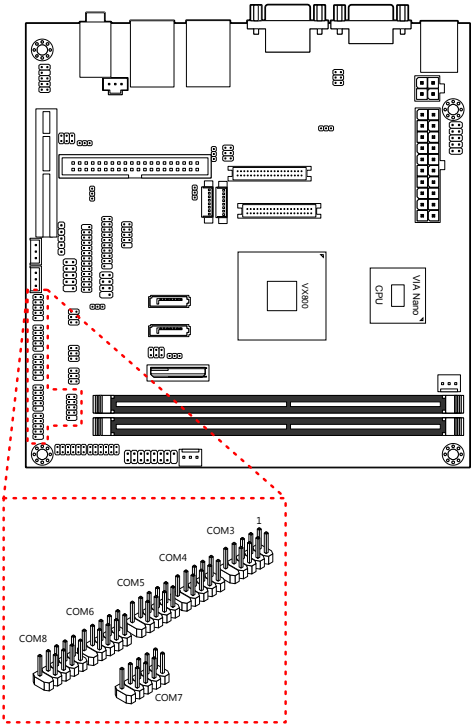
USB pin header

The onboard USB pin header enables the addition of two more USB 2.0 ports.

Pin	Signal	Pin	Signal
1	VUSB4	2	VUSB4
3	USBD_T2-	4	USBD_T3-
5	USBD_T2+	6	USBD_T3+
7	GND	8	GND
9	—	10	GND

RS232 COM pin headers

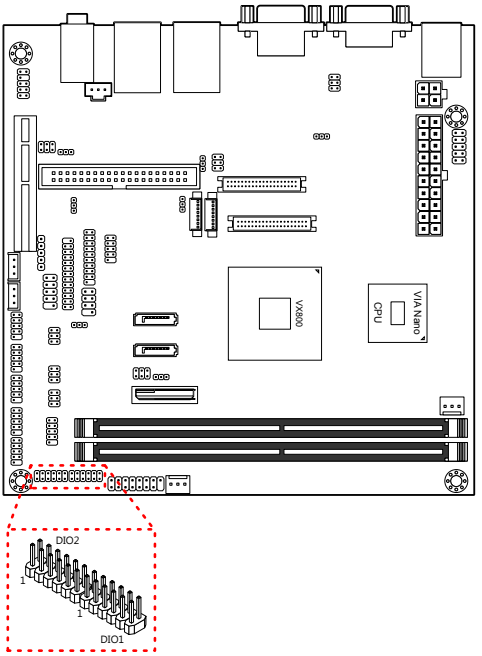
The mainboard includes six COM pin headers onboard. The 9th pin or each COM pin header can be configured as an RI pin or to deliver a 5V or 12V power supply. The default setting is 5V. Refer to page 34 for the jumper settings. To configure the pin as an RI pin, remove the jumper cap for the corresponding jumper.



Pin	Signal	Pin	Signal
1	COM_DCDX	2	COM_RXDX
3	COM_TXDX	4	COM_DTRX
5	GND	6	COM_DSRX
7	COM_RTSX	8	COM_CTSX
9	COM_RIX	10	—

Digital I/O pin headers

The mainboard includes two Digital I/O pin headers that support eight GPO and eight GPI pins.



DIO1

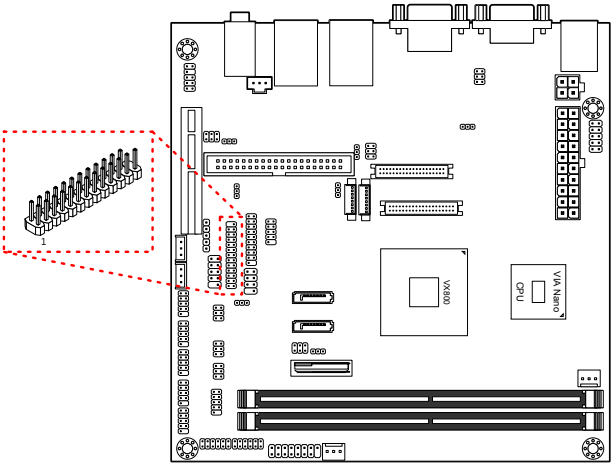
Pin	Signal	Pin	Signal
1	5V_DIO	2	12V_DIO
3	GPO_23	4	GPI_03
5	GPO_22	6	GPI_02
7	GPO_21	8	GPI_01
9	GPO_20	10	GPI_00
11	GND	12	NC

DIO2

Pin	Signal	Pin	Signal
1	5V_DIO	2	12V_DIO
3	GPO_27	4	GPI_15
5	GPO_26	6	GPI_11
7	GPO_25	8	GPI_10
9	GPO_24	10	GPI_04
11	GND	12	NC

LPT pin header

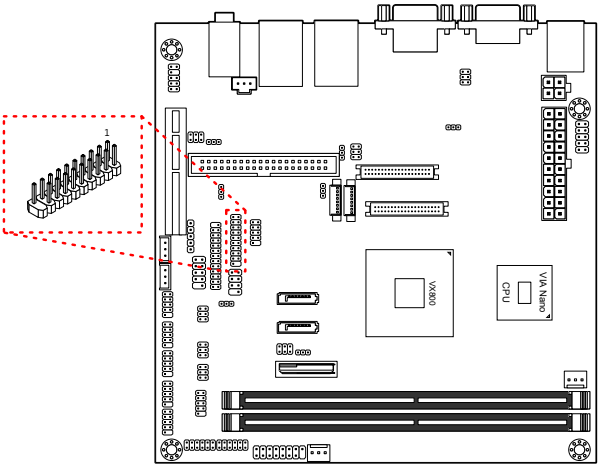
The mainboard includes one onboard LPT pin header.



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	GND
11	LP_D4	12	GND
13	LP_D5	14	GND
15	LP_D6	16	GND
17	LP_D7	18	GND
19	-LP_ACK	20	GND
21	LP_BUSY	22	GND
23	LP_PE	24	GND
25	LP_SLCT		

LPC pin header

The mainboard includes one LPC pin header.

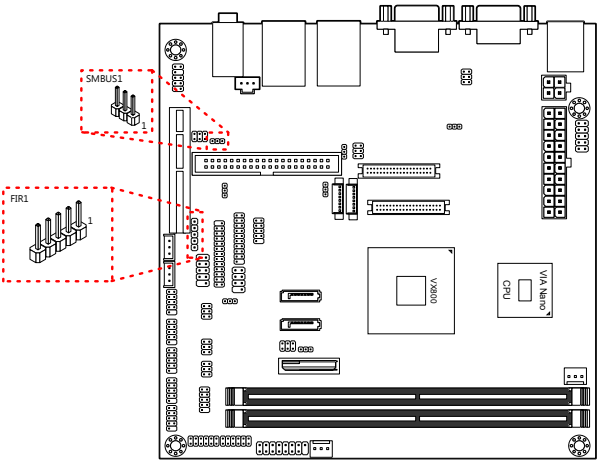


Pin	Signal	Pin	Signal
1	LPC_AD1	2	LPC_33_CLK
3	-PCI_RST-1	4	GND
5	LPC_AD0	6	LPC_48_CLK
7	LPC_AD2	8	-LPC_FRAME
9	SERIRQ	10	LPC_AD3
11	-LPC_DRQ1	12	-EXTSMI
13	+5V	14	+3.3V
15	+5V	16	+3.3V
17	GND	18	GND
19	GND	20	—

FIR pin header

The onboard FIR pin header enables connections to IR optics.

Pin	Signal
1	+5V
2	IRRX2
3	IRRX
4	GND
5	IRTX



SMBus pin header

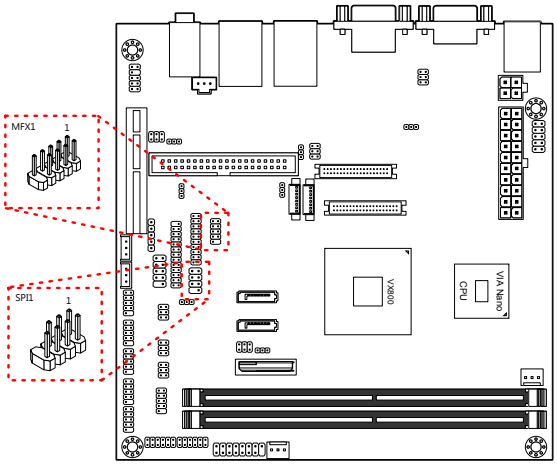
The mainboard includes an SMBus pin header.

Pin	Signal
1	SMB_CLK
2	SMB_DAT
3	GND

MFX pin header

The mainboard includes an MFX pin header.

Pin	Signal	Pin	Signal
1	+5V	2	+5VSUS
3	PW_BN	4	SMB_CLK
5	NC	6	SMB_DAT
7	NC	8	GND
9	GND		—



SPI pin header

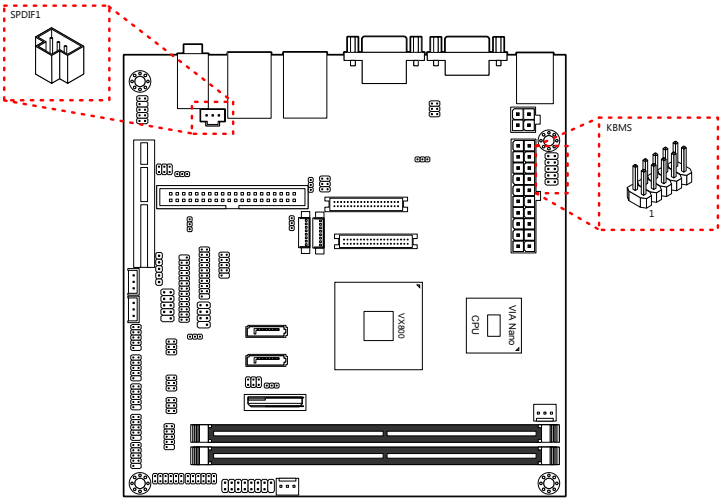
The onboard SPI pin header provides support for one full-duplex serial slave device.

Pin	Signal	Pin	Signal
1	SPI_VCC	2	GND
3	SPI_SS0	4	SPI_CLK
5	SPI_DI	6	SPI_DO
7	—	8	RST_SW

SPDIF connector

The mainboard includes one SPDIF connector.

Pin	Signal
1	+5V
2	SPDIF_O
3	GND



PS/2 keyboard and mouse pin header

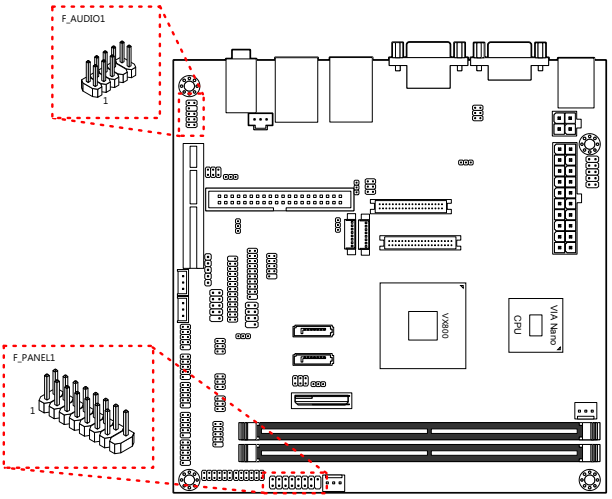
The mainboard includes one pin header for adding support for PS/2 keyboard and mouse.

Pin	Signal	Pin	Signal
1	+5VDUAL	2	GND
3	KB_CLK	4	KB_DAT
5	EKBCLK	6	EKBDATA
7	MS_CLK	8	MS_DAT
9	EMSCLK	10	EMSDATA

Front audio pin header

The mainboard has one pin header for connecting to front panel switches and status LEDs.

Pin	Signal	Pin	Signal
1	HPOUTR	2	HPOUTL
3	NC	4	NC
5	MIC2IN_R	6	MIC2IN_L
7	—	8	NC
9	AGND	10	AGND



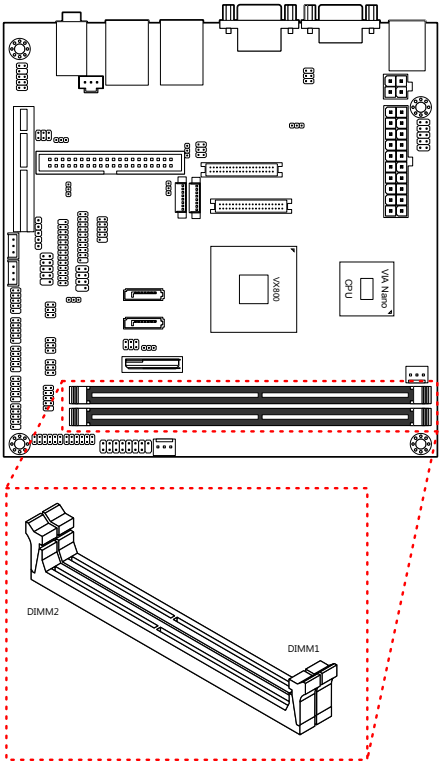
Front panel pin header

The mainboard has one pin header for connecting to front panel switches and status LEDs.

Pin	Signal	Pin	Signal
1	+5VDUAL	2	+5V
3	+5VDUAL	4	HD_LED
5	-PLED_2	6	PW_BN
7	+5V	8	GND
9	NC	10	RST_SW
11	NC	12	GND
13	SPEAK	14	+5V
15	—	16	-SLEEP_LED

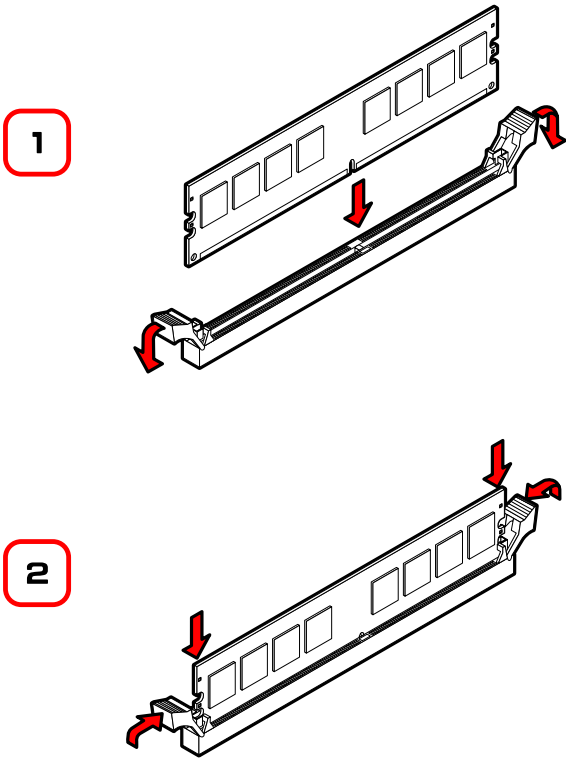
Memory module slots

The mainboard includes two DIMM memory module slots.



To install the memory modules:

1. Disengage the locking mechanism at both ends of the DIMM slot.
2. Align the notch at the bottom of the DIMM with the counterpart on the DIMM slot.
3. Then insert the DIMM into the slot and push down at both ends until the locking clips snap into position.



CPU fan and system fan connectors

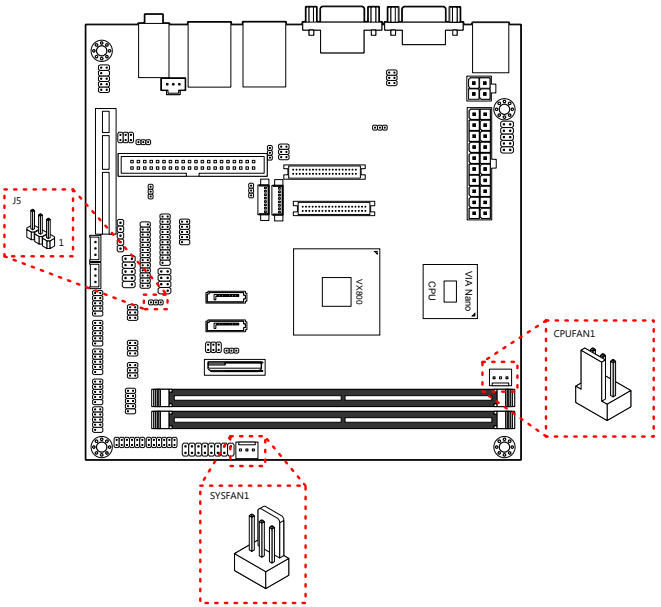
CPUFAN1 and SYSFAN1 run on +12V and maintains system cooling. When connecting the cable to the connector, always be aware that the red wire (positive wire) should be connected to the +12V pin. The black wire is the ground wire and should always be connected to GND.

CPUFAN1

Pin	Signal
1	F_IO2
2	F_PWM2
3	GND

SYSFAN1

Pin	Signal
1	F_IO1
2	F_PWM1
3	GND



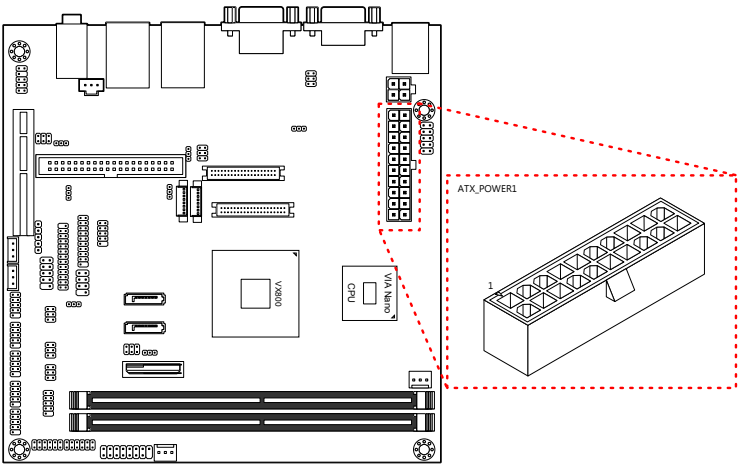
Thermal sensor pin header

The onboard battery provides power to the CMOS RAM. If disconnected all configurations in the CMOS RAM will be reset to factory defaults. When replacing the battery, use CR2032 coin batteries.

ATX power connector

The mainboard supports a conventional ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed correctly to ensure that no damage will be caused. To connect the power supply, make sure the power plug is inserted in the proper orientation and the pins are aligned. Then push down the plug firmly into the connector.

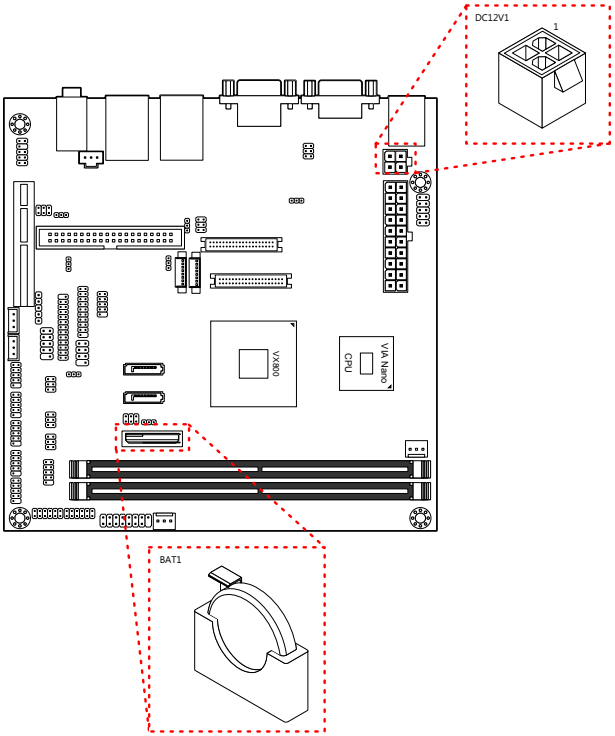
Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	+3.3V	4	-12V
5	GND	6	GND
7	+5V	8	PS_ON
9	GND	10	GND
11	+5V	12	GND
13	GND	14	GND
15	PW_OK	16	-5V
17	+5V_SB	18	+5V
19	+12V	20	+5V



DC-in power connector

The mainboard has a 12V DC connector onboard. The 12V DC is needed if 3.5-inch SATA drives will be used with the mainboard.

Pin	Signal	Pin	Signal
1	GND	3	+12VDC
2	GND	4	+12VDC



CMOS battery

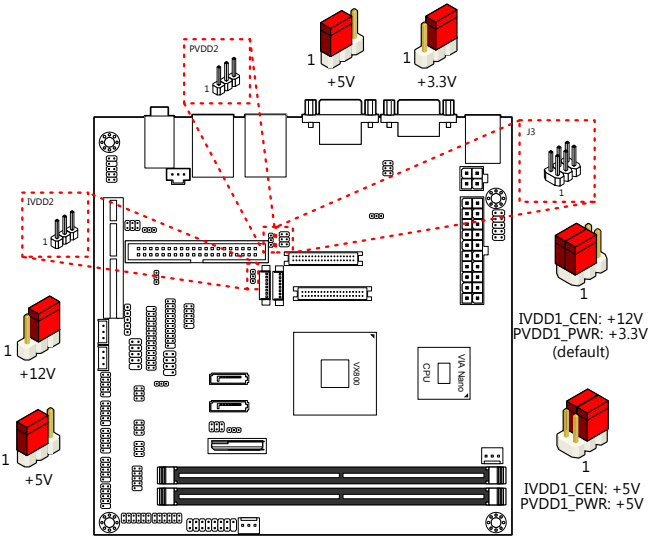
The onboard battery provides power to the CMOS RAM. If disconnected all configurations in the CMOS RAM will be reset to factory defaults. When replacing the battery, use CR2032 coin batteries.

ONBOARD JUMPERS

LVDS jumper settings

The LVDS connectors and LVDS inverters can operate on different input voltages. Pins 1, 3, and 5 correspond to INVERTER1. Pins 2, 4, and 6 correspond to LVDS1.

INVERTER1 power	1	3	5
+12V (default)	ON	ON	OFF
+5V	OFF	ON	ON
LVDS1 power	**2**	**4**	**6**
+3.3V (default)	ON	ON	OFF
+5V	OFF	ON	ON



LVDS2 jumper settings

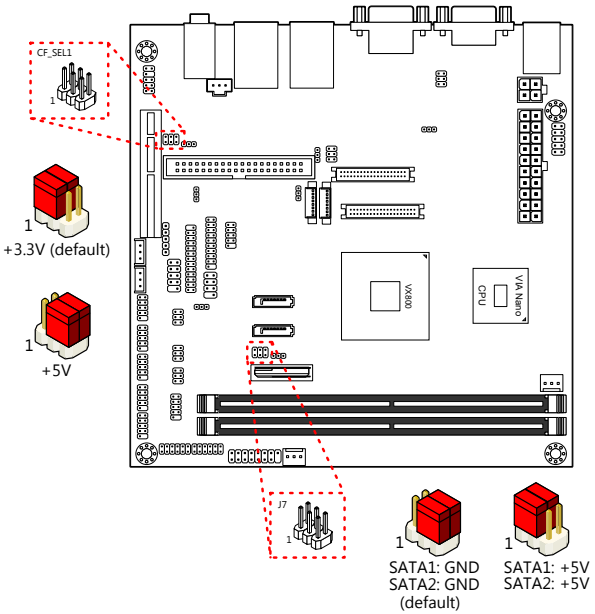
IVDD2 corresponds to INVERTER2. PVDD2 corresponds to LVDS2.

IVDD2 power	1	2	3
+12V (default)	OFF	ON	ON
+5V	ON	ON	OFF
PVDD2 power	**1**	**2**	**3**
+3.3V (default)	OFF	ON	ON
+5V	ON	ON	OFF

SATA DOM power select

The J7 jumper enables SATA1 and SATA2 to support +5V on the seventh SATA pin.

SATA2 setting	1	3	5
+5V	ON	ON	OFF
GND (default)	OFF	ON	ON
SATA1 setting	**2**	**4**	**6**
+5V	ON	ON	OFF
GND (default)	OFF	ON	ON



CF power select

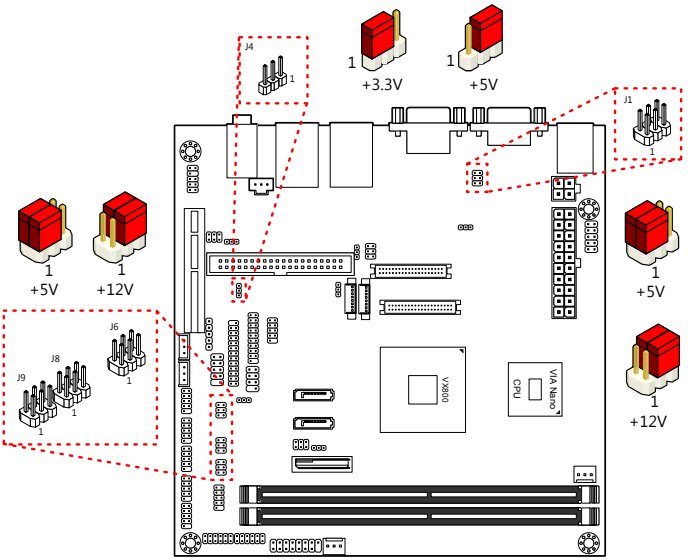
The CF_SEL1 jumper enables the CF slot to support either +3.3V or +5V.

Voltage setting	1	3	5
+3.3V (default)	ON	ON	OFF
+5V	OFF	ON	ON
Master/slave setting	**2**	**4**	**6**
Slave	ON	ON	OFF
Master	OFF	ON	ON

IDE DOM power select

The J4 jumper enables the IDE port to support either +3.3V or +5V.

Setting	1	2	3
+3.3V (default)	ON	ON	OFF
+5V	OFF	ON	ON



COM power select

The COM jumpers enable the COM ports to support either +5V or +12V power modes. All of the COM power select jumpers (J1, J6, J8, and J9) have identical jumper settings as shown below.

J1	J6	J8	J9
COM1 (Pin 1, 3 and 5)	COM4 (Pin 1, 3 and 5)	COM6 (Pin 1, 3 and 5)	COM8 (Pin 1, 3 and 5)
COM2 (Pin 2, 4, and 6)	COM3 (Pin 2, 4, and 6)	COM5 (Pin 2, 4, and 6)	COM7 (Pin 2, 4, and 6)

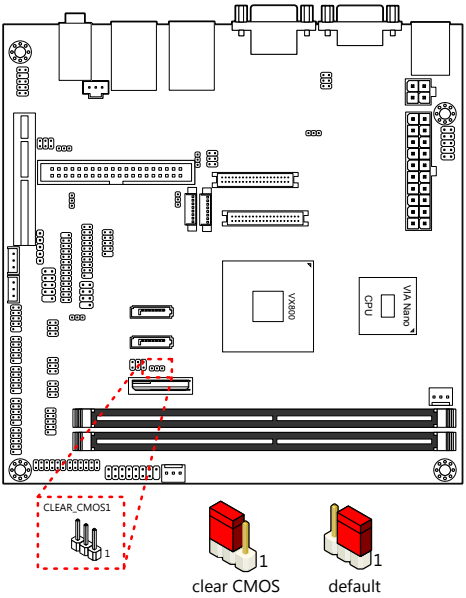
COM setting	1	3	5
+5V (default)	ON	ON	OFF
+12V	OFF	ON	ON
COM setting	**2**	**4**	**6**
+5V (default)	ON	ON	OFF
+12V	OFF	ON	ON

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.

Setting	1	2	3
Normal Operation (default)	ON	ON	OFF
Clear CMOS setting	OFF	ON	ON

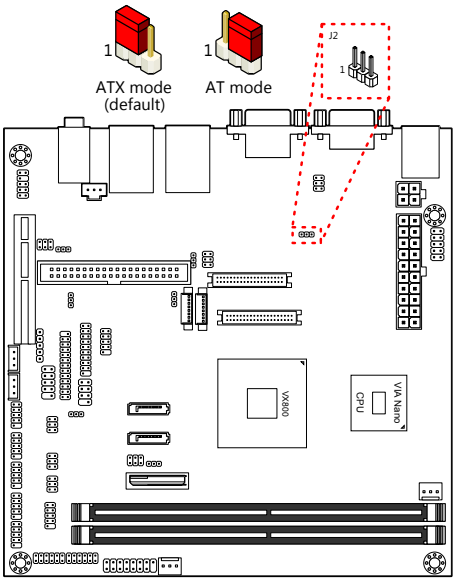
Caution:
Except when clearing the RTC RAM, never remove the cap from the CLEAR_CMOS jumper default position. Removing the cap will cause system boot failure. Avoid clearing the CMOS while the system is on; it will damage the mainboard.



AT/ATX mode jumper

The AT/ATX jumper enables the user to specify AT or ATX power mode support. To enable support for +3.3V, the jumper must be set to ATX mode.

Setting	1	2	3
ATX mode (default)	ON	ON	OFF
AT mode	OFF	ON	ON



3

BIOS Setup

Entering the BIOS Setup Menu

Power on the computer and press <Delete> during the beginning of the boot sequence to enter the BIOS setup menu. If you missed the BIOS setup entry point, restart the system and try again.

Control Keys

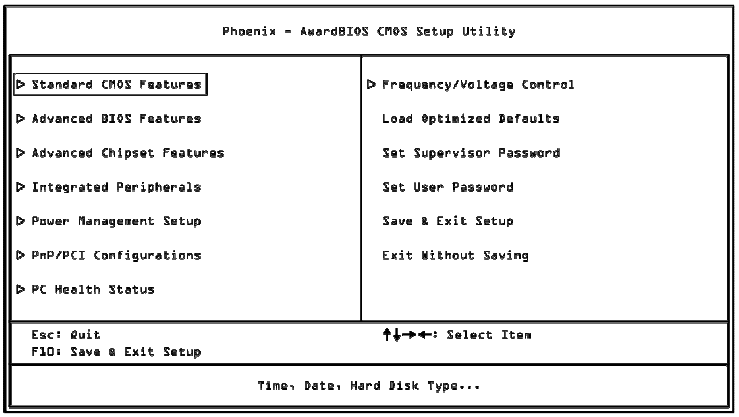
Keys	Description
Up	Move to the previous item
Down	Move to the next item
Left	Move to the left
Right	Move to the right
Enter	Select the item
Esc	Jumps to the Exit menu or returns to the main menu from a submenu
Page Up	Increase the numeric value or make changes
Page Down	Decrease the numeric value or make changes
+ (number pad)	Increase the numeric value
- (number pad)	Decrease the numeric value
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F5	Restore the previous CMOS value (only for option page setup menu)
F6	Load the Fail-safe CMOS values (only for option page setup menu)
F7	Load Optimized defaults
F10	Save all the changes and exit

GETTING HELP

The BIOS setup program provides a "**General Help**" screen. You can display this screen from any menu/sub-menu by pressing <**F1**>. The help screen displays the keys for using and navigating the BIOS setup. Press <**Esc**> to exit the help screen.

Main Menu

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



Standard CMOS Features

Use this menu to set basic system configurations.

Advanced BIOS Features

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

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to set onboard peripherals features.

Power Management Setup

Use this menu to set onboard power management functions.

PnP/PCI Configurations

Use this menu to set the PnP and PCI configurations.

PC Health Status
This menu shows the PC health status.

Frequency/Voltage Control
Use this menu to set the system frequency and voltage control.

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

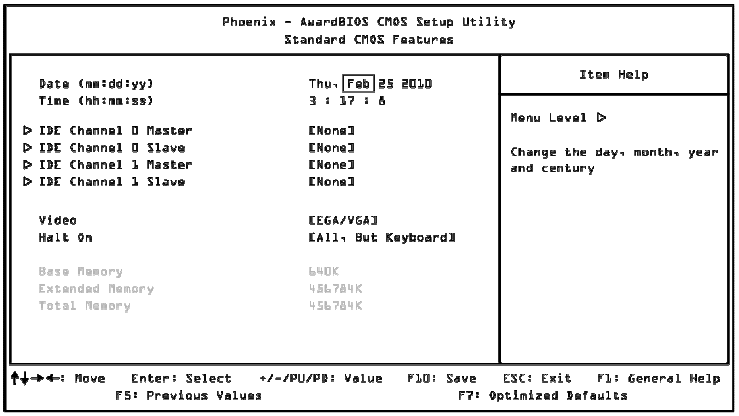
Set Supervisor Password
Use this menu option to set the BIOS supervisor password.

Set User Password
Use this menu option to set the BIOS user password.

Save & Exit Setup
Save BIOS setting changes and exit setup.

Exit Without Saving
Discard all BIOS setting changes and exit setup.

STANDARD CMOS FEATURES



Date

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

Time

The time format is [Hour : Minute : Second]

Video

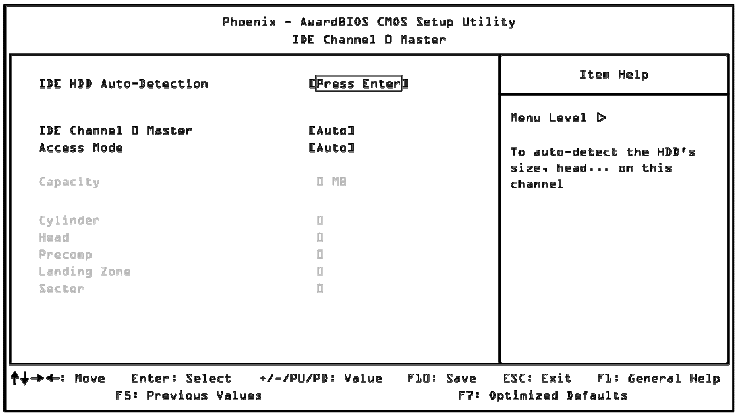
Settings	Description
EGA/VGA	Supports 16 colors at 640x350 and 640x480 resolutions
CGA 40	Supports 16 colors at 320x200 resolution
CGA 80	Supports 16 colors at 640x200 resolution
MONO	Supports 1 color at 80x25 characters (columns x rows)

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

HDD CHANNELS

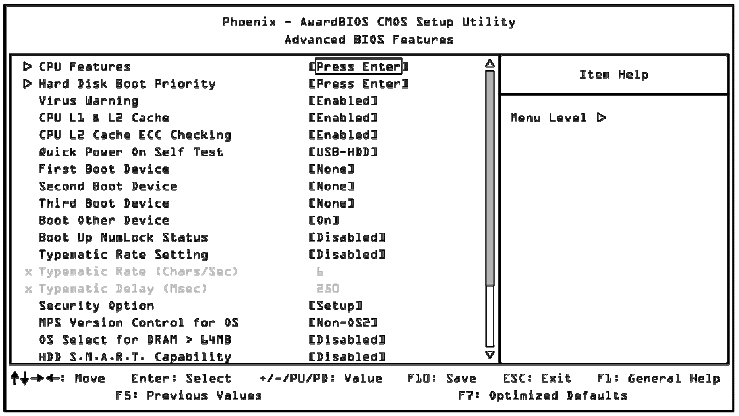


The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select "Auto" whenever possible. If you select "Manual", make sure the information is from your hard disk vendor or system manufacturer.

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

ADVANCED BIOS FEATURES



Virus Warning

Enables boot sector protection for the hard disks.

Settings	Description
Enabled	Turns on hard disk boot sector virus protection
Disabled	Turns off hard disk boot sector virus protection

Note:
If this function is enabled and someone attempt to write data into this area, the BIOS will sound off an audible alarm and show a warning message on the screen.

CPU L1 & L2 Cache

Settings	Description
Disabled	Turns off CPU L1 & L2 cache
Enabled	Turns on CPU L1 & L2 cache

CPU L2 Cache ECC Checking

Settings	Description
Disabled	Turns off ECC checking
Enabled	Enables the system to detect and correct single-bit errors

Quick Power On Self-Test

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

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

First/Second/Third Boot Device

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

Settings	Description
LS120	Boot from LS-120 drive
Hard Disk	Boot from the HDD
CDROM	Boot from CDROM
ZIP100	Boot from ATAPI ZIP drive
USB-FDD	Boot from USB Floppy drive
USB-ZIP	Boot from USB ZIP drive
USB-CDROM	Boot from USB CDROM
Legacy LAN	Boot from network drive
Disabled	Disable the boot device sequence

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

Boot Up NumLock Status

Sets 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

Typematic Rate Setting

Enables "Typematic Rate" and "Typematic Delay" functions.

Settings	Description
Disabled	Forces default typematic rate and delay
Enabled	Unlocks Typematic Rate and Typematic Delay

Typematic Rate (Chars/Sec)

This item sets the rate (characters/second) at which the system retrieves a signal from a depressed key.

Settings: [6, 8, 10, 12, 15, 20, 24, 30]

Typematic Delay (Msec)

This item sets the delay between, when the key was first pressed and when the system begins to repeat the signal from the depressed key.

Settings: [250, 500, 750, 1000]

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

MPS Version Control for OS

Settings: [1.1, 1.4]

OS Select for DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

Settings: [Non-OS2, OS2]

HDD S.M.A.R.T Capability

Settings: [Disabled, Enabled]

Video BIOS Shadow

Copies the Video BIOS to the shadow RAM to improve performance.

Settings: [Disabled, Enabled]

Full Screen Logo Show

Show full screen logo during BIOS boot up process.

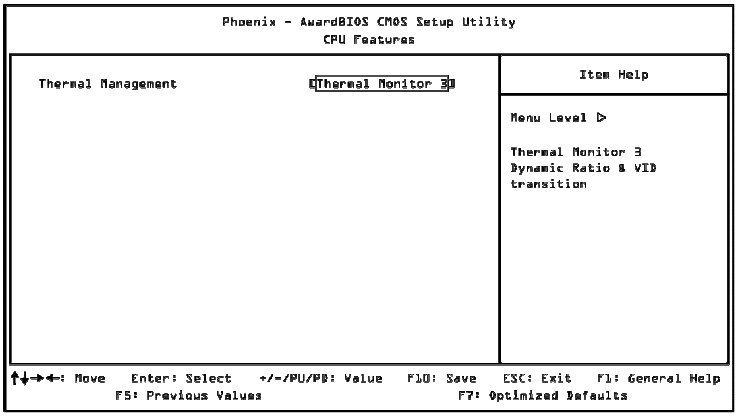
Settings: [Disabled, Enabled]

Summary Screen Show

Show summary screen.

Settings: [Disabled, Enabled]

CPU FEATURES

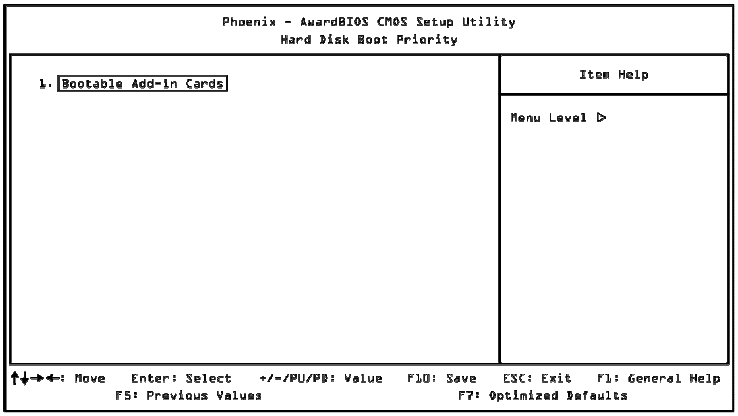


Thermal Management

This item sets CPU's thermal control rule to protect the CPU from overheating.

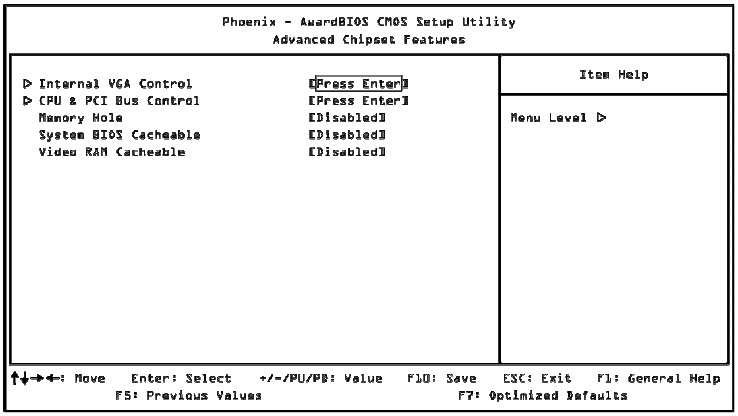
Settings	Description
Thermal Monitor 3	Dynamic Ratio and VID
Disabled	

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.

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.

Memory Hole

Settings: [Disabled, 15M – 16M]

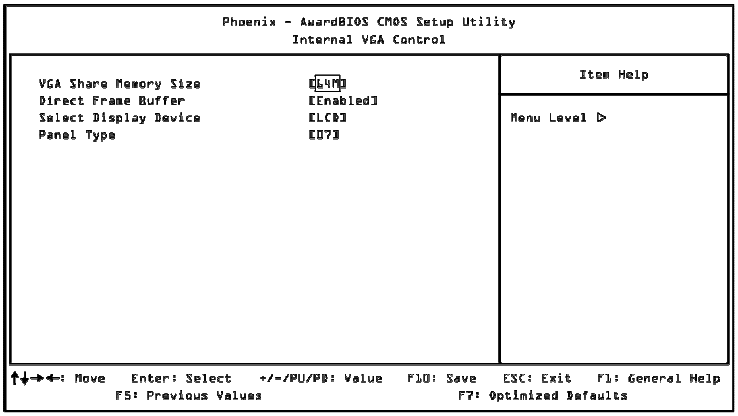
System BIOS Cacheable

Settings: [Disabled, Enabled]

Video RAM Cacheable

Settings: [Disabled, Enabled]

INTERNAL VGA CONTROL



VGA Share Memory Size

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

Settings: [Disabled, 64M, 128M, 256M]

Direct Frame Buffer

Settings: [Disabled, Enabled]

Select Display Device

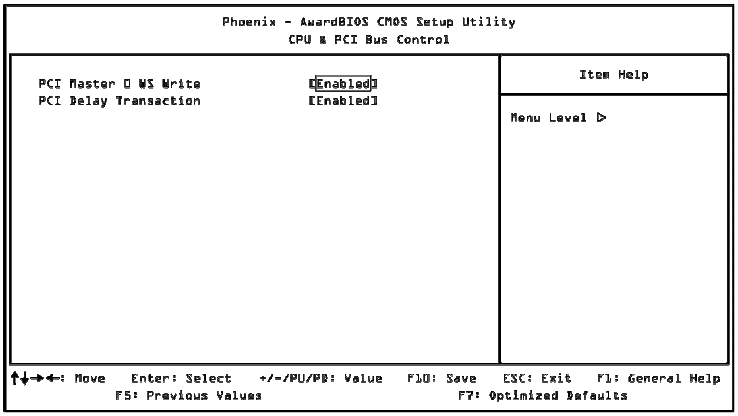
This feature enables choosing between different types of display outputs. The default setting is CRT+LCD. When set in the LCD mode, the CRT display must be connected before turning on the power. Otherwise, the CRT display will be ignored.

Settings	Description
CRT	Enables the VGA port
LCD	Enables LVDS1
LCD2	Enables LVDS2
CRT+LCD	Enables VGA and LVDS1
CRT+LCD2	Enables VGA and LVDS2
LCD+LCD2	Enables LVDS1 and LVDS2

Panel Type

Panel ID	Resolution
0	640x480
1	800x600
2	1024x768
3	1280x768
4	1280x1024
5	1400x1050
6	1440x900
7	1280x800
8	800x480
9	1024x600
A	1366x768
B	1600x1200
C	1680x1050
D	1920x1200
E	640x240
F	480x640

CPU & PCI Bus Control



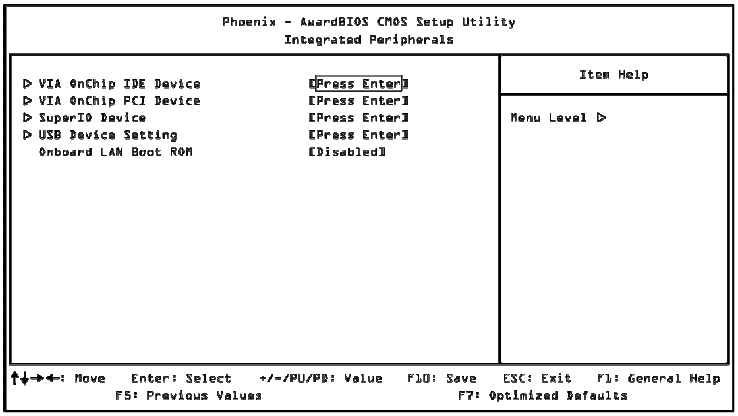
PCI Master 0 WS Write

Settings: [Enabled, Disabled]

PCI Delay Transaction

Settings: [Disabled, Enabled]

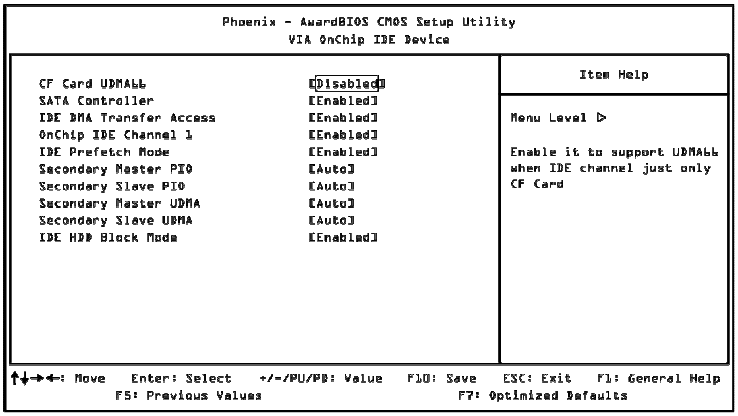
INTEGRATED PERIPHERALS



Onboard LAN Boot ROM

Settings: [Enabled, Disabled]

VIA OnChip IDE Device



CF Card UDMA66

Settings: [Disabled, Enabled]

SATA Controller

Settings: [Disabled, Enabled]

IDE DMA Transfer Access

Settings: [Disabled, Enabled]

OnChip IDE Channel 1

Settings: [Disabled, Enabled]

IDE Prefetch Mode

Settings: [Disabled, Enabled]

Secondary Master PIO

Settings: [Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4]

Secondary Slave PIO

Settings: [Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4]

Secondary Master UDMA

Settings: [Disabled, Auto]

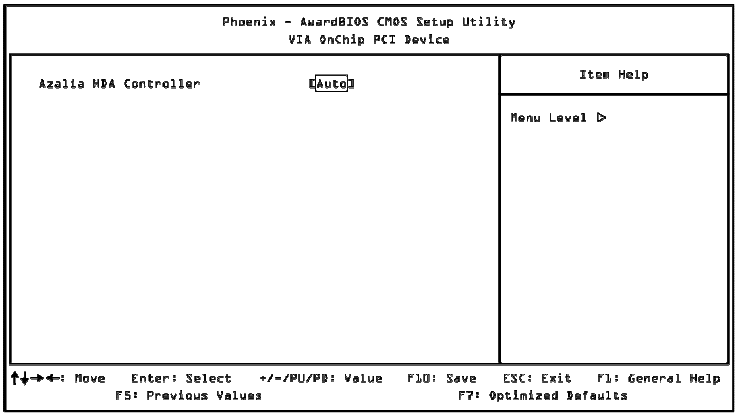
Secondary Slave UDMA

Settings: [Disabled, Auto]

IDE HDD Block Mode

Settings: [Disabled, Enabled]

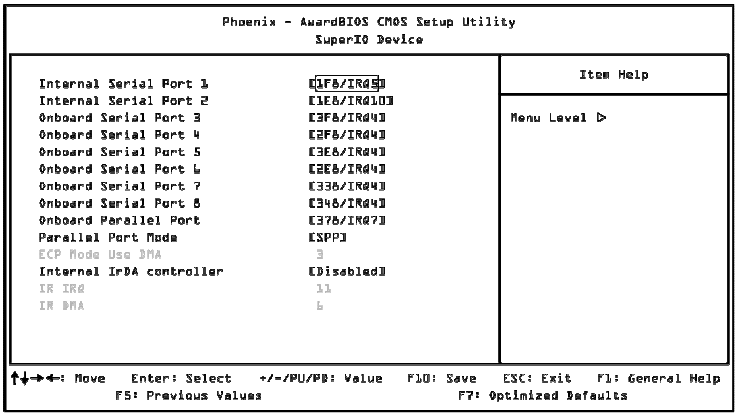
VIA OnChip PCI Device



Azalia HDA Controller

Settings: [Auto, Disabled]

SUPERIO DEVICE



Serial ports

The SuperIO Device configuration menu enables the BIOS to specifically define the resources used for serial ports 1 – 4.

Port	Address	IRQ
1	1F8, 1E8	5, 10
2	1F8, 1E8,	5, 10
3	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	4
4	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	4
5	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	4
6	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	4
7	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	4
8	3F8, 2F8, 3E8, 2E8, 338, 348, Disabled, Auto	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]

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]

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]

Internal IrDA Controller

Enables or disables the infrared port.

Settings: [Disabled, FIR]

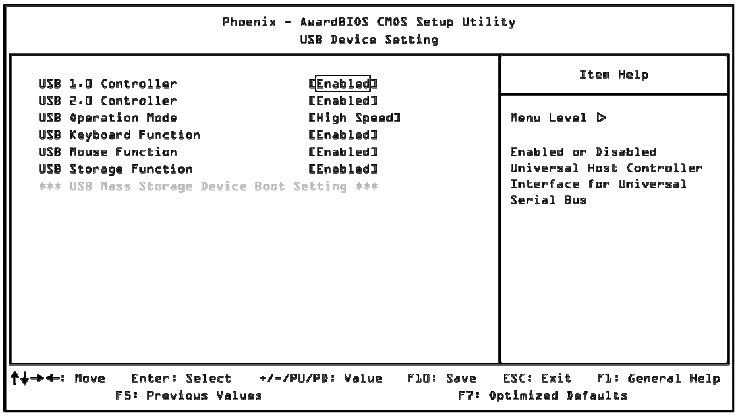
IR IRQ

Set this field to reserve an IRQ for the Fast IR port. This field is only available if Onboard Fast IR is enabled. The Fast IR IRQ is locked to IRQ 11.

IR DMA

Set this field to choose the DMA channel. This field is only available if Onboard Fast IR is enabled. The Fast IR DMA is locked to 6.

USB Device Setting



USB 1.0 Controller

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

Settings: [Disabled, Enabled]

USB 2.0 Controller

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

Settings: [Disabled, Enabled]

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.

USB Keyboard Function

Enable or disable legacy support of USB keyboard.

Settings: [Disabled, Enabled]

USB Mouse Function

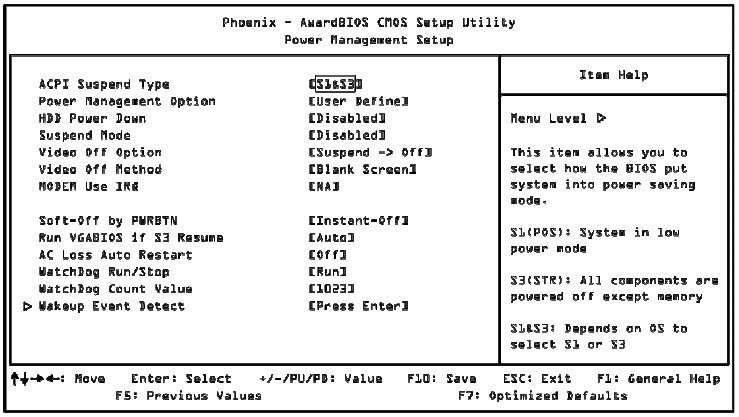
Settings: [Disabled, Enabled]

USB Storage Function

Enable or disable legacy support of USB mass storage.

Settings: [Disabled, Enabled]

POWER MANAGEMENT SETUP



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.

Power Management Option

When set to "Max Saving", the HDD will power down if inactive for 5 minutes and the system will go into suspend mode if inactive for 30 seconds.

When set to "Min Saving", the HDD will power down if inactive for 15 minutes and the system will go into suspend mode if inactive for 1 hour.

Settings: [User Define, Min Saving, Max Saving]

HDD Power Down

Set the length of time for a period of inactivity before powering down the hard disk.

Settings: [Disable, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min]

Suspend Mode

Sets the length of time for a period of inactivity before entering suspend mode.

Settings: [Disable, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 1 Hour]

Video Off Option

Select whether or not to turn off the screen when system enters power saving mode, ACPI OS such as Windows XP will override this option.

Settings	Description
Always On	Screen is always on even when system enters power saving mode
Suspend -> Off	Screen is turned off when system enters power saving mode

Video Off Method

Settings: [Blank Screen, V/H SYNC+Blank, DPMS Support]

MODEM Use IRQ

Settings: [NA, 3, 4, 5, 7, 9, 10, 11]

Soft-Off by PWRBTN

This field configures the power button on the chassis.

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.

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]

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

WatchDog Run/Stop

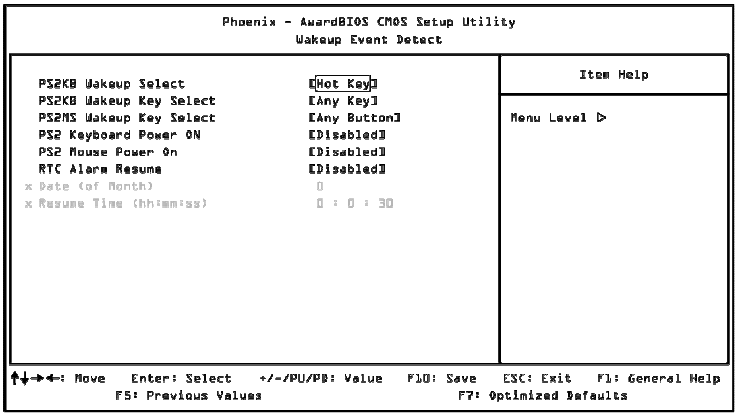
Settings: [Stop, Run]

WatchDog Count Value

Key in a DEC number.

Settings: [Min = 0, Max = 1023]

WAKEUP EVENT DETECT



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]

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]

PS2MS Wakeup Key Select

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

PS2 Keyboard Power ON

Settings: [Disabled, Enabled]

PS2 Mouse Power ON

Settings: [Disabled, Enabled]

RTC Alarm Resume

Set a scheduled time and/or date to automatically power on the system.

Settings: [Disabled, Enabled]

Date (of Month)

The field specifies the date for "RTC Alarm Resume".

Key in a DEC number.

Settings: [Min = 0, Max = 31]

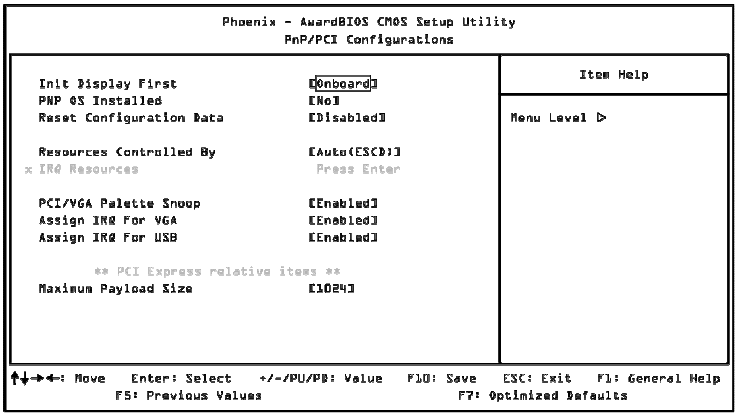
Resume Time (hh : mm : ss)

The field specifies the time for "RTC Alarm Resume".

Key in a DEC number.

Settings: [Min = 0, Max = 23]

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.

Init Display First

Settings: [Onboard, PCIEx]

PNP OS Installed

Settings	Description
No	BIOS will initialize all the PnP cards
Yes	BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system

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

Resources Controlled By

Enable 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

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

Settings: [Disabled, Enabled]

Assign IRQ for VGA

Assign IRQ for VGA devices.

Settings: [Disabled, Enabled]

Assign IRQ for USB

Assign IRQ for USB devices.

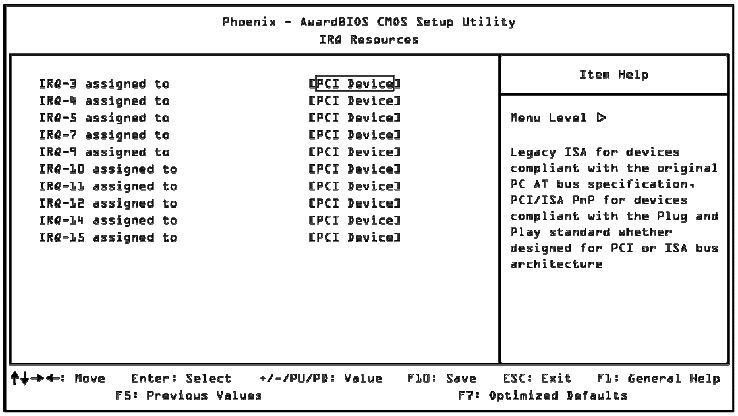
Settings: [Disabled, Enabled]

Maximum Payload Size

Set maximum TLP payload size for the PCI Express devices. The unit is byte.

Settings: [128, 256, 512, 1024, 2048, 4096]

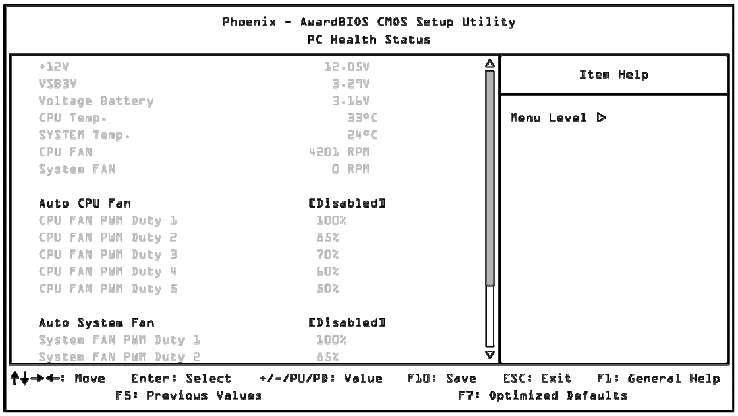
IRQ RESOURCES



IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ.

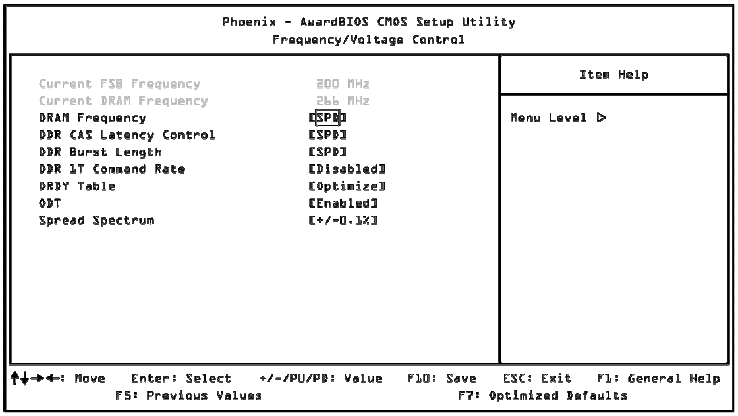
Settings	Description
PCI Device	For Plug-and-Play compatible devices designed for PCI bus architecture
Reserved	The IRQ will be reserved for further requests

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.

FREQUENCY/VOLTAGE CONTROL



DRAM Frequency

Settings: [DDR2-400, DDR2-533, DDR-667, SPD]

DDR CAS Latency Control

Settings: [2T, 3T, 4T, 5T, 6T, SPD]

DDR Burst Length

Settings: [4, 8, SPD]

DDR 1T Command Rate

Settings: [Disabled, Enabled]

DRDY Table

Settings: [Slowest, Optimize]

ODT

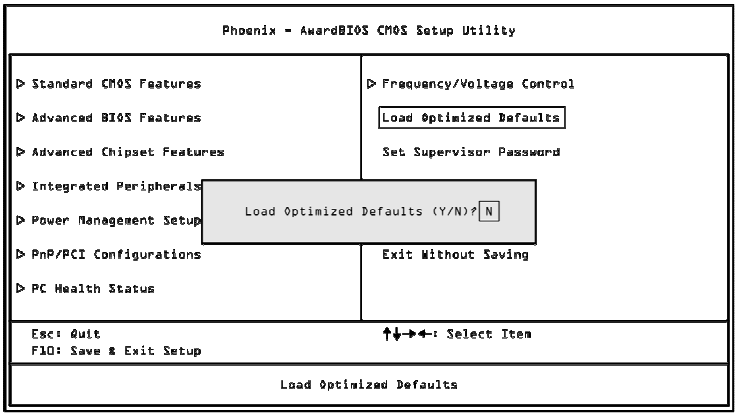
Settings: [Disabled, Enabled]

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. If the system is not placed near EMI sensitive electronics, it is recommended to leave this feature disabled.

Settings	Description
0.1 – 0.9%	Increments of 0.1. Higher percentages have a greater effect on reducing EMI.
Disabled	Support for this feature will be unavailable.

LOAD OPTIMIZED DEFAULTS

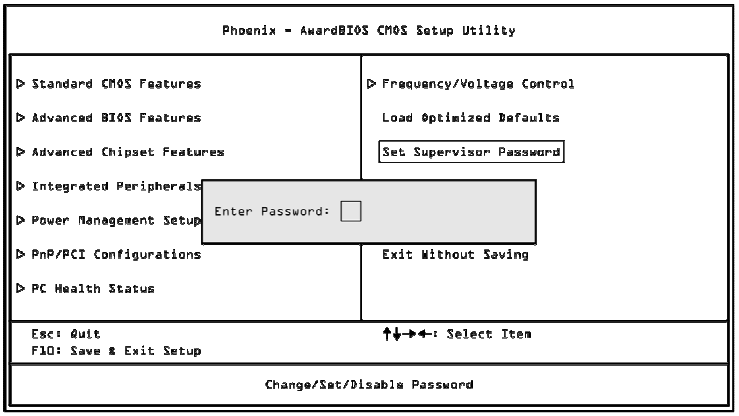


This option is for restoring all the default optimized BIOS settings. The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

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

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

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.

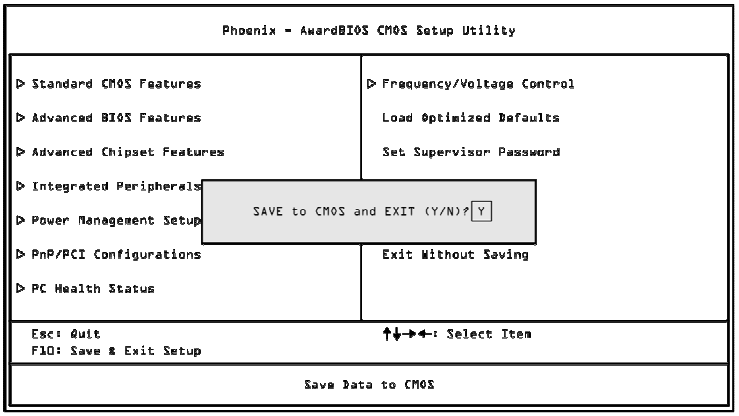
There are two types of passwords you can set. A supervisor password and a user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be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

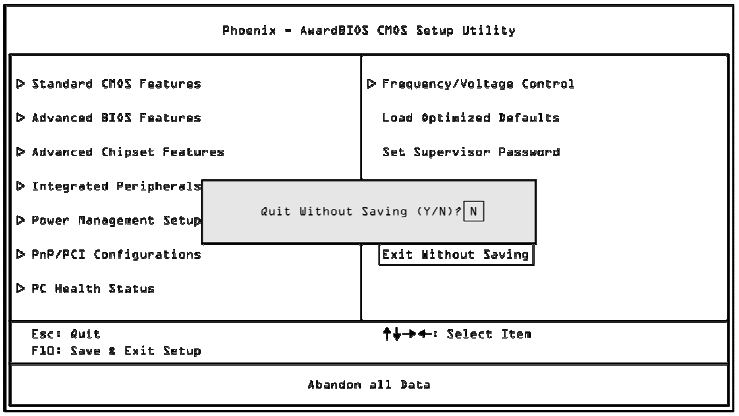
SAVE & EXIT SETUP



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

Entering "N" will cancel the exit request.

EXIT WITHOUT SAVING



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

Entering "N" will cancel the exit request.

4

Driver Installation

This chapter gives you brief descriptions of each mainboard driver and application. You must install the VIA chipset drivers first before installing other drivers such as VGA drivers. The applications will only function correctly if the necessary drivers are already installed.

DRIVER UTILITIES

Getting Started

The VIA EPIA-M840 includes a driver CD that contains the drivers and software for enhancing the performance of the system. The drivers can also be downloaded from http://www.via.com.tw.

Note:
The driver utilities and software are updated from time to time. The latest updated versions are available at http://www.via.com.tw

Running the Driver Utilities CD

To start using the CD, insert the CD into the CD-ROM or DVD-ROM drive. The CD should run automatically after closing the CD-ROM or DVD-ROM drive. The driver utilities and software menu screen should then appear on the screen. If the CD does not run automatically, click on the "Start" button and select "Run..." Then type: "D:\Setup.exe".

For Linux drivers, click the right button on mouse and click open. Linux drivers located in the "Driver" folder.

Note:
D: might not be the drive letter of the CD-ROM/DVD-ROM in your system.

CD CONTENT

- ☐ VIA 4 in 1 Drivers
  - Contains VIA ATAPI Vendor Support Driver (enables the performance enhancing bus mastering functions on ATA-capable Hard Disk Drives and ensures IDE device compatibility), AGP VxD Driver (provides service routines to your VGA driver and interface directly to hardware, providing fast graphical access), IRQ Routing Miniport Driver (sets the system's PCI IRQ routing sequence) and VIA INF Driver (enables the VIA Power Management function).
  - Includes V-RAID and RAID tools.
- ☐ VIA Graphics Driver
  - Enhances the onboard VIA graphic chip.
  - Windows XP and Linux drivers are provided.
- ☐ VIA Audio Driver
  - Enables access to the onboard VIA HD audio codec.
- ☐ VIA USB 2.0 Driver
  - Enhances VIA USB 2.0 ports.
- ☐ VIA LAN Driver
- ☐ VIA GigaLAN Driver
- ☐ VIA RAID Driver
  - Support for SATA RAID devices

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