

POS - 380

Socket 370 POS Motherboard
with SVGA, LAN, USB2.0

User's Manual

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Chapter 1 Introduction

POS-380 is a full function and high performance motherboard, it uses socket370 type CPU and newest DDR dram interface, which can support up to 1GB memory.

It also supports new generation of IO interface, includes 6 USB2.0 ports, 2 ATA133 IDE interface. For various types of applications, POS-380 supports 3 kinds of display methods: standard VGA display, TTL/LVDS LCD interface, and TV-out. For convenient use of POS-380, it equips 5.1ch audio with 6W output in main channel, 6 serial ports, WDT, compact flash card socket, 10/100Mbps LAN or 1000Mbps LAN, and one PCI slot.

1.1 Specifications

- **Socket 370 32-Bit x86 Processor**
- **System Memory:** Two 184-pin DDR SDRAM DIMM sockets support up to 1GB MB DDR SDRAM
- **BIOS:** AMI 512 KB Flash memory
- **Display Controller:** VIA 8623

- Supports 24-bit TFT LCD panel resolution up to 1600x1200
- Supports non-interlaced CRT monitors resolutions up to 1920x1440
- Supports LVDS Encoders
- **IDE Interface:** Supports two ATA133 IDE hard drives
- **Compact Flash Disk:** Runs in true IDE mode that is compatible with an IDE disk drive. It can be used with a passive adapter in a Type II socket.
- **FDD Interface:** Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
- **Serial Ports:** Six UART ports. COM2 can support RS422/485
- **Parallel Port:** supports SPP/EPP/ECP mode
- **USB 2.0:** 6 USB 2.0 ports by South Bridge
- **Audio Connector:** One 2x8-pin header supports Line-in, Line-out, Speaker-out, Surround-out, MIC-in, Center/LFE-out
- **GPIO:** Supports four digital-in, and four digital-out (TTL-level)

- **IrDA:** Supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface
- **PS/2 Mouse/Keyboard Connector:** A 6-pin header supports PS/2 keyboard and mouse.
- **Watchdog Timer:** Can be set by 1-255 seconds period. Reset will be generated when CPU does not periodically trigger the timer
- **Ethernet Controller:** One Realtek RTL8100B or Intel 82540 10/100/1000M BASE-T standard Dual auto-sensing interface. On board RJ-45 connectors are provided for easy connection.
- **Serial ATA Controller (optional):** Silicon Image Sil3112A PCI to Serial ATA host controller
- **1394 Controller (optional):** TI TSB43AB22 1394 PCI host controller
- **PCI Slot:** 32-bit PCI expansion slot (Rev. 2.1 compliant).
- **TV out (optional):** VIA VT1622 Digital TV Encoder
- **LPC I/O:** Winbond W83697HF supports ISA flash ROM and Hardware monitor functions

- **LPC UART:** Fintek F81216 4 UART controller
- **Power Supply:** +5V(4.75V to 5.25V)@8.1A (typical) ,+12V @260 mA ,+5VSB @350mA, -12V @100mA (PIII 1.0G, 256MB RAM, Win2000, 3DMARK2001)
- **Operating Temperature:** -20-60°C (-4-140°F)
- **Dimension:** 235 (D) x 220 (W) (mm x mm)

1.2 Package Contents

Before any installation, please check if the following materials are included in the package:

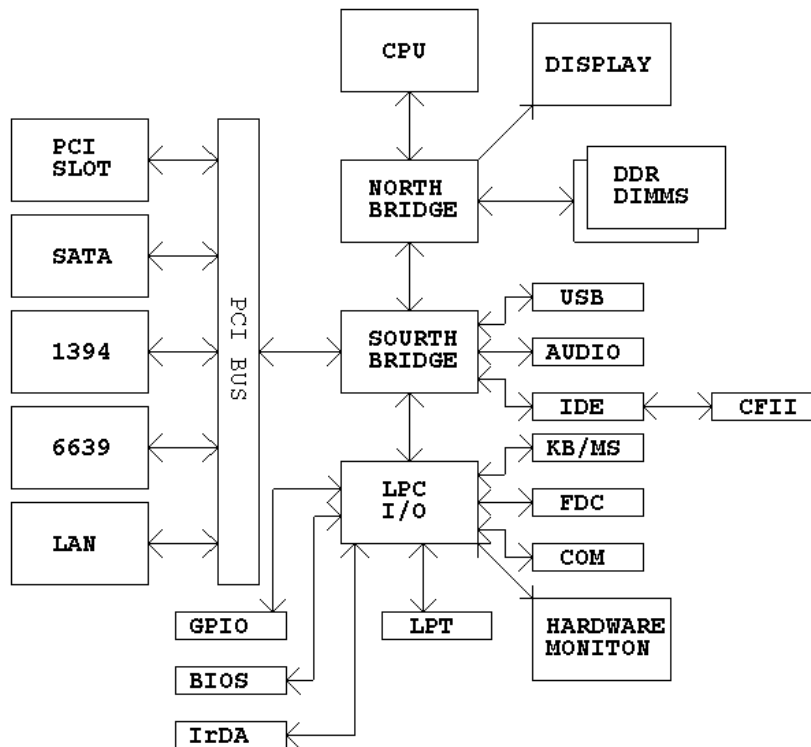
- One POS-380 all-in-one single board computer
- one compact disk for utility and drivers
- One IDE flat cable (40-pin 2.54mm pitch)
- one floppy cable (for 3.5" FDD only)
- Serial port cable
- one audio cable

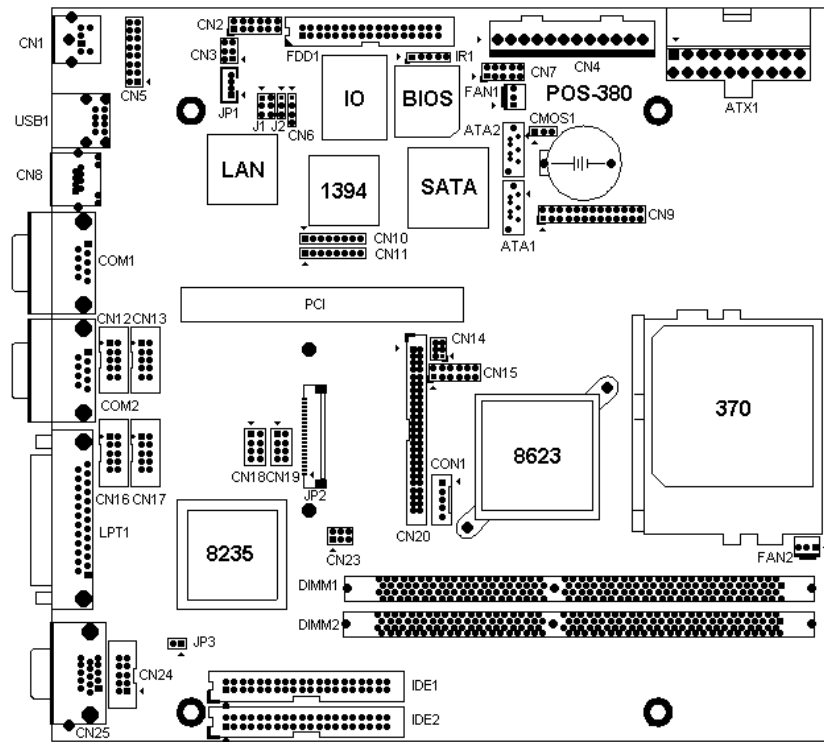
If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Chapter 2 Installation

This chapter gives instructions about how to set up the POS-380 hardware, including directions of setting jumpers and connecting peripherals, switches and indicators. Before installation, please pay attention to the unpacking precautions on the following page for safety.

2.1 POS-380 Block Diagram & Board Layout





BOARD LAYOUT

2.2 Unpacking Precautions

Some components of POS-380 SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to note these precautions:

Ground yourself to remove any static charge before touching the POS-380 SBC. You can do it

by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.

Handle POS-380 SBC by its edges. Don't touch IC chips, leads or circuitry if not necessary.

Do not plug any connector or jumper while the power is on.

2.3 System Memory DRAM

There are two 184-pin DDR SDRAM DIMM slots to accept 2.5V non-buffered DDR SDRAM. The max Memory size is 1GB.

2.4 Watchdog Timer Setting

Writing port 292H value to enables the Watchdog Timer. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again. Writing port 292H 0 to disable the Watchdog Timer. Please refer to Appendix A for detailed information.

2.5 Clear CMOS Setup

If the user needs to clear the CMOS setup (e.g., the user forgot the password, then the setup should be cleared and the password will be reset). The user should close the CMOS1 about 3 seconds, and then open it again. Short pin 2-3 of CMOS1 can set the system back to normal operation mode.

CMOS1: Clear CMOS Setup

CMOS1	DESCRIPTION
2-3	Normal Operation
1-2	Clear CMOS Setup

2.6 LCD VCC Voltage and Shift Clock Selector

The LCD interface connector CN23 can provide 5V or 3.3V power supply by selecting the CN23 to meet the different LCD requirement.

CN23 (2,4,6): LCD VCC Voltage Selector

CN23 (1,3,5): LCD SHIFT Clock

CN23	DESCRIPTION
4-6	5V
2-4	3.3V
1-3	Reverse
3-5	Normal

Chapter 3 Connection

This chapter describes how to connect peripherals, switches and indicators to the POS-380 board.

Label	Function
FDD1	Floppy Disk connector
IDE1 & IDE2	Primary & Secondary IDE connectors
FAN1, 2	FAN connectors
COM1, 2	Serial port connectors
IR1	IRDA infrared interface port
LPT1	Parallel port connector
USB1	USB1, 2 connector
CN1	Keyboard & Mouse connector
CN2	System Panels connector
CN4	AT Power connector
CN5	Audio connector
CN6	COM2 422/485 connector
CN7	4-Bit GPIO connector
CN8	LAN RJ-45 connector
CN9	DVI connector (optional)
CN10, 11	1394 connector (optional)
CN12, 13, 16, 17	COM4, 3, 6, 5
CN14	TV-out connector (optional)
CN18, 19	USB3, 4 connector
CN20	LCD connector (TTL)
CN24	VGA connector (pin header)
CN25	VGA connectors (D-sub)
CN26	Compact Flash connector
ATX1	ATX Power connector
ATA1, ATA2	SATA connector (optional)
CON1	LCD Inverter Power connector
JP1	Audio CD-IN connector
JP2	LVDS LCD connector

3.1 Floppy Disk Drive Connector - FDD1

POS-380 is equipped with a 34-pin daisy-chain driver connecting cable.

- FDD1: FDC CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.2 PCI E-IDE Disk Drive Connector - IDE1 / IDE2

For IDE HDD connection, the POS-380 was designed with two 2.54mm connector (IDE1/ IDE2). Using this cable the user can attach four IDE disk drives to the POS-380.

- IDE1/IDE2: IDE Interface Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.3 Compact Flash Connector - CN26

You can attach one Compact Flash Disk to CN26 that occupies the secondary IDE channel. The CN26 supports both the TYPE II and TYPE I module. JP3 configure CF card as master or slave.

•CN26: Compact Flash Connector (Secondary IDE)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	INTERRUPT
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	N/C
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

JP3: Select CF Card occupied master or slave on IDE2

JP3	DESCRIPTION
OPEN	SLAVE
CLOSE	MASTER

3.4 Parallel Port - LPT1

This port is usually connected to a printer. POS-380 includes an on-board parallel port (LPT1), accessed through a 25-pin D-sub connector.

- LPT1: Parallel Port Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	N/C
25	GROUND	26	

3.5 Serial Ports

POS-380 offers four high speed NS-16C550 compatible UARTS with Read/Receive 16 byte FIFO serial ports, and supports RS-422/485 mode by setting J2 connector. These ports let you connect to serial devices or a communication network. The J1

header also provides a 1A-fuesd +5V or +12V power out from Com2 pin 9. Two 9-pin D-SUB connector and four 14-pin headers are also provided. The detailed pin assignment of the connectors is specified as following tables:

- COM1, COM2: Serial Port1/2 Connector (9-pin D-SUB)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	RX
3	TX	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

- CN16, CN17: Serial Port2 Connector (10-pin 2.54mm header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	N/C

- J1: Com2 Pin 9 selector (2X3-pin 2.54mm header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	RI (To I/O Buffer)
3	Connect to J3 Pin6	4	RI (To Com2)
5	+12V	6	Connect to J1 Pin9

Normal operation for Pin9 (RI): short Pin2-4

+5V supply from Com2 Pin9: short Pin1-3 and Pin4-6

+12V supply from Com2 Pin9: short Pin3-5 and Pin4-6

- **J2:** RS232/RS422/485 Selector (3-pin 2.0mm header)

Pin 1-2: RS232

Pin 2-3: RS422/RS485

- **CN6:** RS422/485 Connector (4-pin 2.54mm header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	2	TX-
3	RX+	4	RX-

3.6 PS/2 Keyboard & Mouse Connector - CN1

The board comes with a Y split PS/2 cable for keyboard and mouse connection.

- CN1: PS/2 Keyboard & Mouse Connector

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GND
4	VCC
5	KEYBOARD CLOCK
6	MOUSE CLOCK

3.7 USB Port Connectors

POS-380 provides two USB 2.0 interfaces, which give the completed plug and play, for up to 480 Mbps bandwidth.

- USB1: USB 1/2 connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC	1	USBVCC
2	DATA1-	2	DATA2-
3	DATA1+	3	DATA2+
4	USBGND	4	USBGND

- CN18, CN19: USB 3/4 connector (pin header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC	8	USBGND
2	DATA3-	7	DATA4+
3	DATA3+	6	DATA4-
4	USBGND	5	USBVCC

3.8 IrDA Infrared Interface Port - IR1

POS-380 has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. To use the IrDA port, the system has to be set to SIR or ASKIR model in the BIOS's Peripheral.

- IR1: 1X5 2.54mm IrDA connector

PIN NO.	DESCRIPTION
1	VCC
2	CIR

3	IR-RX
4	GROUND
5	IR-TX

3.9 VGA Connector - CN25

POS-380 has a built-in 15-pin VGA connector and a 2x5 10-pin header accepting the CRT monitor.

- CN25: 15-pin D-Sub Connector

PIN NO.	DESCRIPTIO N	PIN NO.	DESCRIPTIO N
1	RED	9	NC
2	GREEN	10	GROUND
3	BLUE	11	NC
4	NC	12	DDCDAT
5	GROUND	13	HSYNC
6	GROUND	14	VSYNC
7	GROUND	15	DDCCLK
8	GROUND		

- CN24: VGA connector (pin header) -- the same function as CN25

PIN NO.	Description	PIN NO.	Description
1	RED	2	DDCDATA
3	GREEN	4	DDCCLK
5	BLUR	6	GND
7	Hsync	8	GND
9	Vsync	10	GND

3.10 LAN RJ45 Connector - CN8

POS-380 has one built-in RJ-45 LAN connectors for

10/100/1000Mbps Ethernet connection.

- CN8: LAN RJ-45 Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5	MDI2-
2	TX-	6	RX-
3	RX+	7	MDI3+
4	MDI2+	8	MDI3-

3.11 LCD Interface Connectors

POS-380 provides a 2x25-pin connector for the TTL LCD flat panel, and one 1x20 DF-14A-20p type connector for 24-bit LVDS LCD

- CN20: TTL LCD Interface Connector – supports up to 24 bit TTL signals. For better display quality, the length of LCD cable should be shorter than 35 cm.

PIN NO.	Description	PIN NO.	Description
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	RED5
15	RED7	16	RED6
17	RED0	18	RED4
19	RED1	20	RED2
21	RED3	22	GREEN6
23	GREEN5	24	GREEN4
25	GREEN7	26	GREEN3

27	BLUE7	28	GREEN2
29	LCD POWER	30	LCD POWER
31	GREEN1	32	GREEN0
33	BLUE4	34	BLUE6
35	BLUE3	36	BLUE5
37	BLUE2	38	BLUE1
39	DE	40	BLUE0
41	SFCLK	42	ENPBLT
43	ENPVDD	44	FLM
45	ENPVEE	46	LP
47	GND	48	GND
49	+12V	50	+12V

- JP2: LVDS Interface Connector

PIN NO.	Description	PIN NO.	Description
1	+LCD	2	+LCD
3	GND	4	GND
5	TX0-	6	TX0+
7	GND	8	TX1-
9	TX1+	10	GND
11	TX2-	12	TX2+
13	GND	14	TXC-
15	TXC+	16	GND
17	TX3-	18	TX3+
19	GND	20	GND

- CN23: LCD Power and Clock setting

PIN NO.	Description	PIN NO.	Description
1	FPCLK#	2	+3.3V
3	SFCLK	4	LCD Vcc
5	FPCLK	6	+5V

FPCLK: LCD Panel shift clock from VT8623

Do the setting first before connecting the LCD to POS-380. Don't change the setting while power is on; or the LCD may be damaged.

PIN NO.	LCD Clock
1 - 3 *	FPCLK# (inverted FPCLK)
3 - 5	FPCLK

PIN NO.	LCD Supply Voltage
2 - 4 *	3.3V
4 - 6	5V

- CON1: LCD Inverter Power Connector

PIN NO.	Description	PIN NO.	Description
1	NC	2	GND
3	+12V	4	GND
5	ENPVEE		

- CN9: DVI connector (optional)

PIN NO.	Description	PIN NO.	Description
1	TX2-	2	+5V
3	TX2+	4	GND
5	GND	6	HTPLG
7	NC	8	TX0-
9	NC	10	TX0+
11	SPCLK	12	GND
13	SPDATA	14	NC
15	NC	16	NC
17	TX1-	18	GND
19	TX1+	20	TXC-
21	GND	22	TXC+
23	NC	24	GND
25	NC	26	GND

3.12 External Power Connector - ATX1, CN4

POS-380 has two onboard external power connectors -- ATX1 and CN4. You can connect power directly to the board.

- ATX1: Standard ATX type Connector

PIN NO.	Description	PIN NO.	Description
1	NC	2	NC
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	PWR GOOD
9	+5VSB	10	+12V
11	NC	12	-12V
13	GND	14	PSON
15	GND	16	GND
17	GND	18	NC
19	+5V	20	+5V

- CN4: Standard AT type Connector

PIN NO.	Description	PIN NO.	Description
1	NC	2	+5V
3	+12V	4	-12V
5	GND	6	GND
7	GND	8	GND
9	NC	10	+5V
11	+5V	12	+5V

3.13 4-BIT GPIO Connector - CN7

- CN7: 4-BIT GPIO Connector (TTL level)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GPI0	2	GPI1
3	GPI2	4	GPI3
5	GPO0	6	GPO1
7	GPO2	8	GPO3
9	GND	10	+3.3V

3.14 Fan Connectors - FAN1, FAN2

PIN NO.	DESCRIPTION
1	Fan Speed Detect
2	+12V
3	GND

3.15 Audio Connectors

- CN5: Audio Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Front out R	2	GND
3	Front out L	4	GND
5	Center	6	LFE
7	GND	8	GND
9	Line in L	10	Line in R
11	GND	12	GND
13	Surround L	14	Surround R
15	MIC in	16	GND

- JP1: CD-IN -- Connect to analog CD out from CD player

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CD-IN L	2	CDGND
3	CDGND	4	CD-IN R

3.16 1394 Connectors - CN10, CN11 (optional)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	TPB-	4	TPB+
5	TPA-	6	TPA+
7	NC	8	NC

3.17 SATA Connectors - ATA1, ATA2 (optional)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

3.18 TV-OUT Connector - CN14 (optional)

TV-OUT cable connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TVSYNC	2	TVY
3	GND	4	TVC
5	GND	6	CVBS

3.19 System Panel Connector - CN2

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	SPEAK
3	GND	4	NC
5	GND	6	NC
7	PS_ON	8	VCC
9	VCC	10	RESET
11	HD-LED	12	GND

Pin 1-3: System power LED connector

Pin 5-7: ATX power on button connector

Pin 9-11: IDE active LED connector

Pin 2-8: External speaker connector

Pin 10-12: System reset connector

Chapter 4 AMI BIOS Setup

4.1 Introduction

This chapter discusses AMI's setup program built into the ROM BIOS. The setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the setup information when the power is turned off.

4.2 Starting Setup

The AMI BIOS is immediately activated when you first boot up the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and then configures it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and pass the control over to the operating system.

While the BIOS is in charge, the Setup program can be activated in one of the following ways:

1. By pressing immediately after switching the system on, or
2. by pressing the key when the following message appears briefly at the bottom of the screen during the POST.

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, press the "RESET" button on the chassis or turn the power off then turn it back on to restart the system then you can try again. You may also restart by

simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct moment and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F2 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, use the arrow keys to highlight options, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program.

Up arrow	Move to previous option
Down arrow	Move to next option
Left arrow	Move to the option in the left column
Right arrow	Move to the option in the right column
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F4 key	Reserved

F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the **F1** key again.

If, after making and saving system changes with Setup, you discover that your computer is no longer able to boot, the AMI BIOS supports an override to the CMOS settings which can reset your system to its defaults.

The best advice is to alter only the settings which you thoroughly understand. To this end, we strongly recommend not to make any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and the system manufacturer to provide the optimum performance and reliability. Even a seemingly little change to the chipset setup may shut the system down and need the override program to reset it.

4.5 Main Menu

```
AMIBIOS HIFLEX SETUP UTILITY - VERSION 1.54
(c)2001 American Megatrends, Inc. All Rights Reserved

Standard CMOS Setup
Advanced CMOS Setup
Advanced Chipset Setup
Power Management Setup
PCI / Plug and Play Setup
Peripheral Setup
Hardware Monitor Setup
Auto-Detect Hard Disks
Change User Password
Change Supervisor Password
Auto Configuration with Optimal Settings
Auto Configuration with Fail Safe Settings
Save Settings and Exit
Exit Without Saving

Standard CMOS setup for changing time, date, hard disk type, etc.
ESC:Exit  ↑↓:Sel  F2/F3:Color  F10:Save & Exit
```

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

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

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

Standard CMOS Setup

Use this menu for basic system configuration.

Advanced CMOS Setup

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

Advanced Chipset Setup

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

Power Management Setup

When Disabled, SMI will not be initialized, and complete power management functionality is removed unless this option is set to Enabled.

PCI / Plug and Play Setup

This entry appears if your system supports PnP / PCI.

Peripheral Setup

Use this menu to specify your settings for integrated peripherals.

Hardware Monitor Setup

Use this menu to monitor your hardware.

Auto-detect Hard Disks

Use this menu to specify your settings for hard disks control.

Change Supervisor Password

Use this menu to set User and Supervisor Passwords.

Auto Configuration with Optimal Settings

Use this menu to load the BIOS factory settings for optimal system performance. While AMI has been designed the custom BIOS to optimize performance, the factory has the right to change these defaults to meet its needs.

Auto Configuration with Fail-Safe Settings

Use this menu to load the BIOS default values for the safe and stable system performance.

Save Settings and Exit

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

The options in Standard CMOS Setup Menu are divided into 10 categories. Each category includes none, one or more than one setup options. Use the arrow keys to highlight the option and then use the <PgUp> or <PgDn> keys to select the value you want for each option.

AMIBIOS SETUP - STANDARD CMOS SETUP	
(c)2001 American Megatrends, Inc. All Rights Reserved	
Date (mm/dd/yyyy): Wed Oct 23, 2002	Base Memory: 0 KB
Time (hh/mm/ss) : 15:21:49	Extd Memory: 0 MB
Floppy Drive A: 1.44 MB 3½	
Floppy Drive B: Not Installed	
	LBA Blk PIO 32Bit
Pri Master: Auto	Mode Mode Mode Mode
Pri Slave : Auto	On
Sec Master: Auto	On
Sec Slave : Auto	On
Boot Sector Virus Protection Disabled	
Month: Jan - Dec	ESC:Exit ↑:Sel
Day: 01 - 31	PgUp/PgDn:Modify
Year: 1980 - 2099	F2/F3:Color

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu for more options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu for more options
IDE Secondary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu for more options
IDE Secondary	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu for more options
Drive A	None	Select the type of

Drive B	360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	floppy disk drive installed in the system
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the status in which you want the BIOS to stop the POST processes and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up

Advanced CMOS Setup

AMIBIOS SETUP - ADVANCED CMOS SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
Quick Boot	Enabled	Available Options: Disabled ▶ Enabled
1st Boot Device	Floppy	
2nd Boot Device	IDE-0	
3rd Boot Device	CDROM	
Try Other Boot Devices	Yes	
Boot From Lan	Disabled	
S.M.A.R.T. for Hard Disks	Disabled	
BootUp Num-Lock	On	
Floppy Drive Swap	Disabled	
Floppy Drive Seek	Disabled	
PS/2 Mouse Support	Enabled	
System Keyboard	Absent	
Primary Display	VGA/EGA	
Password Check	Setup	
Boot To OS/2	No	
Wait For 'F1' If Error	Enabled	
Hit 'DEL' Message Display	Enabled	
CPU MicroCode Updation	Enabled	
L1 Cache	Enabled	
L2 Cache	Enabled	
System BIOS Cacheable	Enabled	
C000,32k Shadow	Cached	
C800,16k Shadow	Disabled	
CC00,16k Shadow	Disabled	
D000,16k Shadow	Disabled	
D400,16k Shadow	Disabled	
D800,16k Shadow	Disabled	
DC00,16k Shadow	Disabled	

ESC:Exit ↑↓:Sel
PgUp/PgDn:Modify
F1:Help F2/F3:Color

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Quick Boot

When this option is set to enable, DRAM testing function will be disable.

1st /2nd /3rd Boot Device

This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE-0, IDE-1,

IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, SCSI.

Try Other Boot Devices

The options are Yes or No. Set this setting to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, 4th Boot Device options.

Boot From LAN

When setting Enable, bios will load LAN's Boot Rom and try to boot the system from LAN.

S.M.A.R.T. for Hard Disks

S.M.A.R.T. stands for Self-Monitoring, Analysis and Reporting Technology. This setting can help BIOS to warn the user of the possible device failure and let the user back up the device before actual failure happens. The options are Disabled, Enabled.

Boot Up Num-Lock

If the user wants the Num-Lock function to be turned on during the boot-up period so that the user can use the key pad on the keyboard right after the system starts, please select ON to do so. Otherwise, select OFF.

Floppy Drive Swap

This setting decides whether drives A: and B: can be swapped or not. The options are Enabled or Disabled.

Floppy Drive Seek

This setting is whether to enable floppy drives A: to perform a Seek operation at system boot process. The options are Enabled or Disabled.

PS/2 Mouse Support

When this setting is enabled, BIOS support a PS/2- type mouse.

System Keyboard

This won't be specified if a keyboard is attached to the computer. Otherwise, when there's no keyboard detected and an error message is displayed, this setting can be marked as needed. This setting permits you to configure workstation with no keyboard. The options are Absent, Present.

Primary Display

This setting is to configure the type of monitor attached to the computer. The settings are Monochrome, Color 40x25, Color 80x25, VGA/PGA/EGA ,or Not Install.

Password Check

This option enables the password check option every time the system boots or the end user runs Setup. If always is chosen a user password prompt appears every time the computer is tuned on. If setup is chosen, the password prompt appears if BIOS is executed.

Boot To OS/2

Set this option to YES if running OS/2 operating system and using more than 64MB of system memory on the motherboard. The options are YES or NO.

Wait For 'F1' If Error

If this setting is enabled, AMIBIOS waits for the end user to press <F1> before continuing. If this option is disabled, AMIBIOS continues the boot process without waiting for <F1> to be pressed. The options are Disabled or Enabled.

Hit 'DEL' Message Display

Disabling this setting prevents "Hit if you want to run Setup" from appearing when the system boots. The options are Disabled or Enabled.

CPU MicroCode Update

When setting Enable, Bios will load CPU Microcode.

L1 Cache

The setting enabled or disabled the L1 cache memory in the processor.

L2 Cache

The setting enables L2 cache memory. If Enabled is selected, L2 cache memory is enabled. If disabled is select, L2 cache memory is disabled.

System BIOS Cacheable

When this setting is set to enabled, the System ROM area from F0000-FFFFFF is copied (shadowed) to RAM for faster execution.

C000, 32k Shadow

This setting is about the contents inside the Video ROM area form C000-C7FFF, which influences the speed of execution.

Disabled: The contents of the video ROM are not copied to RAM.

Cached: The contents of the video ROM area from C0000h - C7FFFh are copied from ROM to RAM and can be written to or read from cache memory.

Enabled: The contents of the video ROM area from C0000h - C7FFFh are copied (shadowed) from ROM to RAM for faster execution.

C800, 16k Shadow

These settings enable shadowing of the contents of the ROM area named in the option title. The options are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.000, 32k Shadow.

CC00, 16k Shadow

These settings enable shadowing of the contents of the ROM area named in the setting title. The settings are Enable Disable, Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.800, 16k Shadow.

D000, 16k Shadow

These settings enable shadowing of the contents of the ROM area named in the setting title. The options are Enable, Disable, and Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.C00, 16k Shadow.

D400, 16k Shadow

These settings enable shadowing of the contents of the ROM area named in the setting title. The options are Enable, Disable, and Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.000, 16k

Shadow.

D800,16k Shadow

These settings enable shadowing of the contents of the ROM area named in the setting title. The options are Enable, Disable, and Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.400, 16k Shadow.

DC00, 16k Shadow

These settings enable shadowing of the contents of the ROM area named in the setting title. The options are Enable, Disable, and Cached. ISA adapter cards will be allocated to PCI adapter cards.800, 16k Shadow.

Advanced Chipset Setup

AMIBIOS SETUP - ADVANCED CHIPSET SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
***** DRAM Timing *****		
Configure SDRAM Timing by SPD	Enabled	Available Options: Disabled ▶ Enabled ESC:Exit ↑↓:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color
SDRAM Frequency	Auto	
SDRAM CAS# Latency	2.5	
SDRAM Bank Interleave	Disabled	
SDRAM Command Rate	2T	
Memory Hole	Disabled	
Auto Precharge for TLB/WB	Disabled	
Write Recovery time	2T	
AGP Mode	4x	
AGP Read Synchronization	Disabled	
AGP Fast Write	Disabled	
AGP Aperture Size	64MB	
AGP Master 1 W/S Write	Disabled	
AGP Master 1 W/S Read	Disabled	
PCI Delay Transaction	Enabled	
MPS Revision	1.4	
USB Controller	6 USB Ports	
USB Device Legacy Support	Disabled	

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

Configure SDRAM Timing by SPD

When setting Enable, bios will use the data from DIMM's SPD to setup the DRAM timing. Disable the setting, bios will use default setting.

DRAM Frequency

This setting is setting Memory working frequency, 100/133 MHz.

SDRAM CAS# Latency

This setting is setting Memory CAS latency

AGP Aperture Size

This is about the size of AGP aperture. The aperture is a portion of the PCI Memory addresses space. Host cycles that hit the aperture range are forwarded to the AGP without any translation

USB Controller

Select enable if your system contains a USB controller and you have USB Peripherals. Otherwise, select disable.

USB Device Legacy Support

Enable or Disable the USB device legacy support.

Power Management Setup

AMIBIOS SETUP - POWER MANAGEMENT SETUP		(C)2001 American Megatrends, Inc. All Rights Reserved	
ACPI Aware O/S	No	Available Options: ▶ No Yes	
ACPI Standby State	S1/POS		
Re-Call VGA BIOS at S3 Resuming	Enabled		
Power Management/APM	Enabled		
Video Power Down Mode	Disabled		
Hard Disk Power Down Mode	Disabled		
Standby Time Out (Minute)	Disabled		
Suspend Time Out (Minute)	Disabled		
Throttle Slow Clock Ratio	50%-56.25%		
Display Activity	Ignore		
IRQ3	Monitor		
IRQ4	Monitor		
IRQ5	Ignore		
IRQ7	Monitor		
IRQ9	Ignore		
IRQ10	Ignore		
IRQ11	Ignore		
IRQ13	Ignore		
IRQ14	Monitor		
IRQ15	Ignore		
Power Button Function	On/Off		
Restore on AC/Power Loss	Last State		
Resume On Ring/LAN	Disabled		
Resume On RTC Alarm	Disabled		
RTC Alarm Date	15		
RTC Alarm Hour	12		
RTC Alarm Minute	30		
RTC Alarm Second	30		
Power Type Select	AT		
		ESC:Exit ↑↓:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color	

ACPI Aware O/S

This feature is the switch of ACPI function. Configuration options : [No] [Yes]

ACPI Standby State

This feature is the switch of STR (S3) or POS (S1) function. Configuration options: [S3/STR] [S1/POS]

Re-Call VGA BIOS at S3 Resuming

Enable or Disable system load the VGA bios after S3 state.

Power Management/APM

When Disabled, SMI will not be initialized, and the complete power management functionality is removed unless this option is set to Enabled.

Video Power Down Mode

Hard Disk Power Down Mode

Standby Time Out (Minute)

Suspend Time Out (Minute)

If no activity occurs during this time period, the BIOS will place the system into the suspended low power state.

IRQ3 ,4 ,5 ,7 , 9, 10, 11, 13, 14, 15

The factory defaults assigned IRQ3, 4, 7, and 14 to the Monitor. When other external devices using the same IRQ numbers as of the Monitor start, the Monitor will be waked up from the power saving state by these devices.

The user can assign the other IRQ numbers available here to the Monitor. Just highlight the IRQ number and set the value to Monitor.

Resume on Ring/LAN

Allows the user to decide to resume the system from Soft Off state by either LAN or Modem Ring.

Resume On RTC Alarm

When this setting is enabled, the system will wakeup from soft off mode according to the time

you set.

Power Type Select

This setting allows the user to choose the power type for AT or ATX.

PCI / Plug and Play Setup

AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP		
(C)2001 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options:
Clear NVRAM	No	▶ No
OnChip VGA Frame Buffer Size	16MB	Yes
PCI Latency Timer (PCI Clocks)	32	
Primary Graphics Adapter	PCI	
Boot Device Select	CRT	
LCD Expansion Support	Enabled	
TU Type	NTSC	
TU Output Connector	Composite	
LCD Panel Type	1 800x600	
TU Layout	Default	
Dithering	Disabled	
Allocate IRQ to PCI VGA	Yes	
PCI IDE BusMaster	Disabled	
OffBoard PCI IDE Card	Auto	
OffBoard PCI IDE Primary IRQ	Disabled	
OffBoard PCI IDE Secondary IRQ	Disabled	
		ESC:Exit ↑↓:Sel
		PgUp/PgDn:Modify
		F1:Help F2/F3:Color

Plug and Play Aware O/S

If enabled, BIOS will configure only PnP ISA boot devices(i.e. all PnP ISA cards which has boot flag set). And PnP aware OS will configure all other devices. If disabled, BIOS will configure all devices.

Clear NVRAM

When set to Yes, system can clear NVRAM automatically. The options are No, Yes.

On Chip VGA Frame Buffer Size

This is for selecting frame buffer size (2~32MB) for VGA.

PCI Latency Timer (PCI Clocks)

This setting specifies the latency timings (in PCI clocks) for

PCI devices installed in the PCI expansion slots. The options are 32, 64, 96, 128, 160, 192, 224, or 248.

Boot Device Select

This setting is to specify Boot Screen.

LCD Panel Type

This setting is to choose LCD Panel Type

Allocate IRQ to PCI VGA

Choose Yes to allocate an IRQ to the VGA device on the PCI bus. The other option is No.

Peripheral Setup

The Peripheral Setup allows the user to configure the system to the most effectively power saving mode while operating in a consistent manner with your own style of computer use.

AMIBIOS SETUP - PERIPHERAL SETUP		
(C)2001 American Megatrends, Inc. All Rights Reserved		
OnBoard Serial Port 3	3E8/COM3	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Serial Port 3 IRQ	11	
OnBoard Serial Port 4	2E8/COM4	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Serial Port 4 IRQ	10	
OnBoard Serial Port 5	5E8/COM5	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Serial Port 5 IRQ	11	
OnBoard Serial Port 6	5F8/COM6	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Serial Port 6 IRQ	10	
OnBoard FDC	Enabled	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
OnBoard Serial Port1	3F8/COM1	
OnBoard Serial Port2	2F8/COM2	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Serial Port2 Mode	Normal	
IR Pin Select	IRRX/IRTX	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
OnBoard Parallel Port	378	
Parallel Port Mode	Normal	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
EPP Version	N/A	
Parallel Port IRQ	7	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
Parallel Port DMA Channel	N/A	
OnBoard IDE	Both	Available Options: Disabled 3F8/COM1 2F8/COM2 ▶ 3E8/COM3 2E8/COM4 5E8/COM5 5F8/COM6
OnBoard AC'97 Audio	Enabled	

Onboard FDC

Onboard Serial Port 1~Port 4

This setting specifies the base I/O port address of serial port 1.

Onboard Parallel Port

This setting specifies the base I/O port address of parallel port on the motherboard. The options are Disabled, 378h, 278h, or 3BCh.

Parallel Port Mode

This setting specifies the parallel port mode. The options are Normal, Bi-Dir, EPP, ECP.

Normal: The normal parallel port mode is used.

Bi-Dir : To support bidirectional transfers on the parallel port.

EPP: The parallel port can be used with devices that adhere to the Enhanced Parallel Port(EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.

ECP: The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bidirectional communication.

EPP Version

EPP data or address read cycle 1.9 or 1.7

Parallel Port IRQ

This setting specifies the IRQ used by the parallel port. The options are Auto, (IRQ)5, (IRQ)7.

Parallel Port DMA Channel

This setting is available only if the setting for the Parallel Port Mode option is ECP. This setting makes the DMA channel used by the parallel port. The options are DMA Channel 0, 1, or 3.

On Board AC'97 Audio

Enable or Disable AC'97 Audio Function.

Hardware Monitor Setup

AMIBIOS SETUP - HARDWARE MONITOR SETUP		
(C)2001 American Megatrends, Inc. All Rights Reserved		
--System Hardware Monitor--		Available Options:
Vcore	1.616 V	▶ -
+ 3.3V	3.232 V	
+ 5.0V	4.865 V	
+12.0V	18.138 V	
+ 2.5V	0.420 V	
Vtt	0.544 V	
CPU Fan Speed	0 RPM	
System Fan Speed	23275 RPM	
CPU Temperature	44°C/111°F	
System Temperature	45°C/113°F	
		ESC:Exit ↑↓:Sel
		PgUp/PgDn:Modify
		F1:Help F2/F3:Color

Change Supervisor Password

You can set passwords for either supervisor or user password, or for both of them. The differences between them are:

supervisor password:

It's used to enter and change the settings of the setup menus.

user password:

It's used to only access the setup menus, but can't change anything of it. When you select this option, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any

previously existing password within CMOS memory. You will be prompted to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not to enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message which ask you to confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

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

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

The user can determine whether the password is needed for entering BIOS Setup Program or other Security options (see Section 4.5). Once the Password has been set, The user will be prompted to enter the password at the beginning of booting and at the entry to Setup Menu.

Appendix A. Watchdog Timer

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

I/O port (controls the Watchdog Timer)

292H	Write 0	disable Watchdog
292H	Write value	Set up watchdog timer

Prior to enable the Watchdog Timer, user has to define Timer first. The output data is a value of time interval and the range of the value is from 01(hex) to FF (hex) and time interval 1 sec to 255 sec.

Data	Time Interval
01	1 sec
02	2 sec
03	3 sec
04	4 sec
- -	- -
FF	255 sec

A tolerance of at least 5% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore if the time-out period has been set to 10 seconds, the I/O port 292H must be read within 7 seconds.

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

Appendix B. GPIO

One characteristic of digital circuit is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. That's why we design 4-bit digital inputs and 4-bit digital outputs on the POS-380.

Digital Input and Output, generally, are used as control signals. You can use these signals to control external devices that needs On/Off circuit or TTL devices. You can read or write data to the selected IO port to enable the function of GPIO.

Example (using the DOS debug command):

```
Debug  
-O 280 value  
-I 280 value
```

The GPI input use lower 4-bit and GPO output use higher 4-bit of port 280h

Appendix C. I/O Address Map

C.1 System I/O Address Map

I/O Address Map	Description
0C0-00F	DMA controller #1
020-021	Interrupt controller # 1, master
022-023	Chipset address
040-043	System timer
060-060	Standard 101/102 keyboard controller
061-061	System speaker
064-064	Standard 101/102 keyboard controller
070-07F	Real time clock, NMI controller
080-0BF	DMA page register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear math coprocessor busy
0F1-0F1	Reset math coprocessor
0F8-0FF	Math coprocessor
1F0-1F7	BUS master PCI IDE controller
278-27F	Reserved
3F8-3FF	Serial Port 1
2F8-2FF	Serial Port 2
3E8-3EF	Serial Port 3
3F8-3FF	Serial Port 4
5E8-5EF	Serial Port 5
5F8-5FF	Serial Port 6
378-37F	Parallel Printer Port 1
3B0-3DF	Graphic Adapter
3F0-3F7	Floppy Disk Controller
280	Digital IO port
282	Watch dog timer port

C.2 DMA channel assignments

Channel	Function
0	Available
1	Available
2	Standard floppy disk controller
3	Parallel port*
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

*parallel port DMA default setting: DMA 3

parallel port DMA select: DMA 1 or 3

C.3 Interrupt assignments

Interrupt #	Interrupt source
NMI	Parity error detected
IRQ 0	System timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Available
IRQ 6	Standard floppy disk controller
IRQ 7	Parallel port (print port)
IRQ 8	Real-time clock
IRQ 9	Available
IRQ 10	Serial communication port 4/6
IRQ 11	Serial communication port 3/5
IRQ 12	PS/2 mouse
IRQ 13	Numeric data processor

IRQ 14	Fixed primary IDE controller
IRQ 15	Fixed secondary IDE controller

Ethernet's IRQ is automatically set by the system

C.4 1st MB memory map

Address	Description
F000h-FFFFh	System BIOS
EF00h-EFFFh	Expansion ROM*
C800h-EFFFh	Unused
C000h-C7FFh	VGA BIOS*
B000h-BFFFh	VGA DRAM
A000h-AFFFh	VGA DRAM
0000h-9FFFh	Base memory

* Default setting