PT-6IF

SYSTEM BOARD

(VER. 1.x)

OPERATION MANUAL

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PT-6IF SYSTEM BOARD

TRADEMARKS

All trademarks used in this manual are the property of their respective owners.

NOTE

The "LOAD SETUP DEFAULTS" function loads the default settings directly from BIOS default table, these default settings are the best-case values that should optimize system performance and increase system stability . This function will be necessary when you accept this system board, or the system CMOS data is corrupted.
By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. (Please refer to the Chapter 5 AWARD BIOS SETUP procedures in this maulal.)

NOTICE

Information presented in this manual has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this manual is subject to change without notice.

WARRING !

The "Static Electricity" will cause damage to the components on the system board, for this reason, please eliminate all static electricity on your body before you touch this system board.

1. INTRODUCTION

1.1 SYSTEM OVERVIEW

The **PT-6IF** Pentium Pro PCI Local Bus system board is designed based on the Intel 82440FX PCIset system chipset and SMC (or UMC, LGS) I/O chipset, it built-in two channel PIO and Bus Master Enhanced PCI IDE ports, one Floppy Disk control port, two high speed Serial ports (UARTs) and one multimode Parallel port and also supports PS/2 mouse, IR and USB ports. It is designed to fit a high performance, Pentium Pro Processor 150 MHz up to 266 MHz based solution for high-end and true GREEN-PC computer systems.

The Pentium Pro Processor is a 64-bit processor with RISC technology, which offers several key features such as built-in 256KB/512KB L2 cache, 12-stage superpipeline architecture, out of order execution .... etc, in order to optimize its capabilities and performances, the Pentium Pro Processors require 32-bit Operating Systems (such Windows NT and OS/2) and applications.

This system board supports the Peripheral Component Interconnect (PCI) Local Bus standard (PCI Spec. Rev. 2.1 compliant). It not only breaks through the I/O bottlenecks of the traditional ISA main board, but also provides the performance needs for networking and multi-user environments.

1.2 FEATURES

The PT-6IF system board contains the following features:

> Supports wide range Pentium Pro family CPUs from 150 MHZ through 266 MHz , fully IBM PC/AT compatible system board with ISA Bus and PCI Local Bus.

> Built-in 3 set voltage regulator circuits to support all low-voltage components include CPU, chipset ..., so that no VRM (Voltage Regulator Module) is needed.

> DRAM Memory : Supports fast page mode (FPM), Extended Data Out (EDO) and Burst Extended Data Out (BEDO) memory. Supports ECC/Parity functions.

> Cache Memory : Supports Pentium Pro CPU's built-in 256KB/512KB L2 cache.

> System BIOS : Supports Plug and Play System BIOS.

> IDE ports : Supports two channel PIO and Bus Master Enhanced PCI IDE ports, up to Mode 4 timing, and up to 22 MBytes/s transfer rates.

> I/O ports : Supports two high speed serial ports (UARTs), One multimode parallel port for standard (SPP), enhanced (EPP) and high speed (ECP) modes. One Floppy Disk Control port. Supports PS/2 mouse connector.

> IR Port : Supports IR (Infrared Rays) functions. Both HPSIR and ASKIR are supported.

> USB Ports : Supports two Universal Serial Bus (USB) ports.

2.   SPECIFICATIONS

CPU
Intel Pentium Pro processors, from 150MHz through 266 MHz

CPU VCC
Three set voltage regulator circuits, support CPU operating voltage from +2.1V DC through +3.5V DC

WORD SIZE
Data Path : 8-bit, 16-bit, 32-bit, 64-bit

PC SYSTEM CHIPSET
Intel 82440FX PCIset (82441FX, 82442FX, 82371SB)

SUPER I/O CHIPSET
SMC FDC37C669 (or UMC UM8669F or LGS Prime 3C)

BUS FREQUENCY
60/66.6 MHz adjustable.

MEMORY
DRAM   : Four banks, each bank could be single or double sided, 8MB up to 1024 MB.
Supports fast page mode (FPM), Extended Data Out (EDO) and Burst Extended Data Out (BEDO) memory. (Using 72-pin SIMM x 6 and 168-pin DIMM x 1).
CACHE : Supports Intel Pentium Pro CPU's built-in 256KB/512KB L2 cache.

BIOS
AWARD Plug & Play System BIOS. (128KBx8, Flash ROM)

EXPANSION SLOTS
PCI Slots : 32-bit x 4 (All Master/Slave, PCI Spec. Rev. 2.1 Compliant)
ISA Slots : 16-bit x 4 (One slot PCI/ISA shared)

IDE PORTS
Two channel PIO and Bus Master Enhanced PCI IDE ports, maximum could be connected up to 4 IDE Hard Disk and ATAPI CD-ROM device. BIOS supports IDE CD-ROM boot-up.

SUPER I/O PORTS
1. Two high speed NS16C550 compatible serial prots (UARTs).
2. One parallel port, supports SPP/EPP/ECP mode.
3. One Floppy Disk Control port.

IR PORT
One HPSIR and ASKIR compatible IR transmission connector (5-pin).

MOUSE AND KEYBOARD
One PS/2 mouse connector, One PS/2 keyboard connector (optional) and One AT keyboard connector.

USB PORTS
Two Universal Serial Bus (USB) ports.

DIMENSION
Width & Length   : 220 mm x 290 mm.
Height   : 3/4 inches with components mounted, but without expansion
                          boards and cables.
PCB Thickness   : 4 layers, 0.05 inches normal.
Weight   : 20 ounces.

ENVIRONMENT
Operating Temperature : 10   to 40   . (50   to 104   )
Required Airflow   : 50 linear feet per minute across CPU.
Storage Temperature   : - 40   to 70   . (- 40   to 158   )
Humidity   : 0 to 90% noncondensing.
Altitude   : 0 to 10,000 feet.

3. SYSTEM BOARD LAYOUT

3.1 PT-6IF VER. 1.x

Explanation : All connectors, jumpers and components which marks by a black point on the corner means the pin-1 side of the connector, jumper and component.
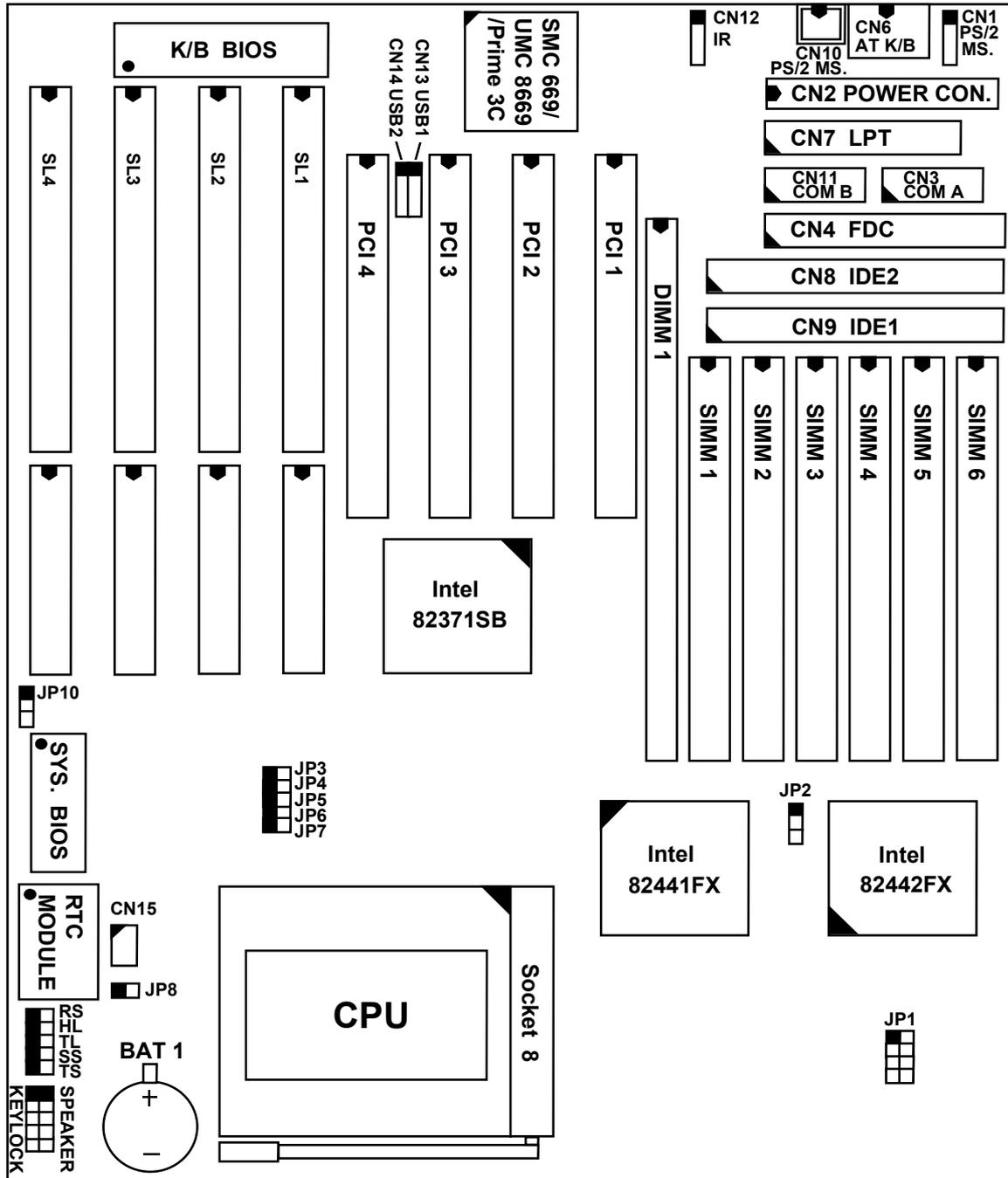
4.   HARDWARE SETUP

4.1   UNPACKING

The system board package should contain the following parts :

    The PT-6IF system board.
    OPERATION MANUAL.
    Cable set for IDE and I/O device.

4.2   HARDWARE CONFIGURATION

Before the system board is ready to operate, the hardware must be configured to allow for various functions within the system. To configure the PT-6IF system board is a simple task, only a few jumpers, connectors, cables and sockets needs to be selected and installed. (For the detailed locations of each component please refer to page 3-1 "system board layout" figure)

4.2.1 DRAM INSTALLATION

The PT-6IF system board will support four banks main memory on board (bank0 : SIMM1, SIMM2. bank1 : SIMM3, SIMM4. bank2 : SIMM5, SIMM6. bank3 : DIMM1), each bank could be single-sided or double-sided, 8MB up to 1024 MB of local memory can be attained. It supports three types of DRAM memory either standard fast page mode (FPM), Extended Data Out (EDO) or Burst Extended Data Out (BEDO) memory. (Both Symmetrical and Asymmetrical DRAM addressing are supported.)

Bank can be populated in any order (bank 0 does not have to be populated before bank 1). Within any given bank, two SIMMs must be same size. Among the two banks, SIMMs' (DIMM's) densities could be mixed in any order. EDO, FPM and BEDO DRAMs could be mixed between Banks, a given SIMM (DIMM) must contain only one type of DRAM. When DRAM types are mixed, each SIMM (DIMM) runs optimized for that particular type of DRAM.

The speed of FPM DRAMs must be used 70ns or faster than 70ns, the speed of EDO DRAMs and BEDO DRAMs must be used 60ns or faster than 60ns.

There is no jumper needed for DRAM configuration, DRAMs' type and size will be detected by system BIOS automatically.

In DRAM memory subsystem, ECC and Parity can be checked on the DRAM interface (Functions selected by BIOS via CMOS setup, please refer to Chapter 5, the defult status is parity selected.) All SIMMs and DIMM must be populated with *parity bit* to implement ECC or Parity functions.

ECC is an optional data integrity feature provided by the system. This feature provides single-bit error correction, multiple-bit error detection, and detection of all errors confined to single nibble for DRAM memory subsystem.

The SIMMs' and DIMM's operating voltage are :

(1) SIMM1 - SIMM6 : + 5V DC

(2) DIMM1   : + 5V DC (***Don't install 3.3V DIMM module***)

The usable DRAM modules are :   *(Note : S = Single-sided , D = Double-sided)*

(1) SIMMs   :   1MB**x**32(36)-S   **(4MB)   ,**
                       2MB**x**32(36)-D   **(8MB)   ,**
                       4MB**x**32(36)-S   **(16MB)   ,**
                       8MB**x**32(36)-D   **(32MB)   ,**
                     16MB**x**32(36)-S   **(64MB)   ,**
                     32MB**x**32(36)-D   **(128MB)   .**

(2) DIMMs   :   1MB**x**64(72)-S   **(8MB)   ,**
                       2MB**x**64(72)-D   **(16MB)   ,**
                       4MB**x**64(72)-S   **(32MB)   ,**
                       8MB**x**64(72)-D   **(64MB)   ,**
                     16MB**x**64(72)-S   **(128MB)   ,**
                     32MB**x**64(72)-D   **(256MB)   .**

The following table is an example for DRAM memory installation, it contains several modules combination, but not all combination.

Bank 0 SIMM1, SIMM2	Bank 1 SIMM3, SIMM4	Bank 2 SIMM5, SIMM6	Bank 3 DIMM 1	Total Size
4MB, 4MB	4MB, 4MB	4MB, 4MB	8MB	32 MB
8MB, 8MB	8MB, 8MB	8MB, 8MB	16MB	64 MB
16MB, 16MB	16MB, 16MB	16MB, 16MB	32MB	128 MB
32MB, 32MB	32MB, 32MB	32MB, 32MB	64MB	256 MB
64MB, 64MB	64MB, 64MB	64MB, 64MB	128MB	512 MB
128MB, 128MB	128MB, 128MB	128MB, 128MB	256MB	1024 MB

4.2.2 CONNECTORS

A connector is two or more pins that are used make connections to the system standard accessories (such as power, mouse, printer,...etc.) The following is a list of connectors on board, as well as descriptions of each individual connector.

(A) BAT1 Battery Socket (Using 3 Vlots Lithium battery : CR2032)

Pin #	Assignment
	Battery Positive
	Ground

(B) CN1 PS/2 Mouse converted connector

Pin #	Assignment
1	Mouse Data
2	No Connection
3	Ground
4	5V DC
5	Mouse Clock

(C) CN2 Power connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Power Good	5	Ground	9	5V DC
2	5V DC	6	Ground	10	5V DC
3	12V DC	7	Ground	11	5V DC
4	12V DC	8	Ground	12	5V DC

(D) CN3 COM A (Serial Port 1) connector
COM1/2/3/4, selected by BIOS setup, using IRQ4 or 3

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	2	RD (Received Data)
3	TD (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC (No Connection)

(E) CN4 Floppy Disk Control Port connector (Using IRQ6, DMA channel 2)

(F) CN5 PS/2 Keyboard connector (optional)

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Keyboard Data	3	Ground	5	Keyboard Clock
2	No Connection	4	5V DC	6	No Connection

(G) CN6   AT Keyboard connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Keyboard Clock	3	No Connection	5	5V DC
2	Keyboard Data	4	Ground		

(H) CN7   Parallel Port connector
(Supports Normal/EPP/ECP mode, selected by BIOS setup,using IRQ7 or IRQ5,
ECP using DMA channel 3 or 1)

```
 1  14
┌──┬──┐
│  │  │
├──┼──┤
│  │  │
├──┼──┤
│  │  │
├──┼──┤
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├──┼──┤
│  │  │
└──┴──┘
13  26
```

Pin #	Assignment	Pin #	Assignment
1	STROBE	14	AUTO FEED
2	Data Bit 0	15	ERROR
3	Data Bit 1	16	INIT
4	Data Bit 2	17	SLCT IN
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Ground
9	Data Bit 7	22	Ground
10	ACK	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	N.C. (No Connection)

(I) CN8   IDE 2 connector (Secondary IDE Port, I/O address is 170H, using MIRQ0)

(J) CN9   IDE 1 connector (Primary IDE Port, I/O address is 1F0H, using IRQ14)

(K) CN10 PS/2 Mouse connector (optional)

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Mouse Data	3	Ground	5	Mouse Clock
2	No Connection	4	5V DC	6	No Connection

(L) CN11 COM B (Serial Port 2) connector
COM1/2/3/4, selected by BIOS setup, using IRQ3 or 4

```
 1   2
┌──┬──┐
│  │  │
├──┼──┤
│  │  │
├──┼──┤
│  │  │
├──┼──┤
│  │  │
├──┼──┤
│  │  │
└──┴──┘
 9  10
```

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	2	RD (Received Data) or IR-RX
3	TD (Transmit Data) or IR-TX	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC (No Connection)

(M) CN12 IR (Infrared Rays) connector

Pin #	Assignment
1	5V DC
2	No Connection
3	IR Receive (IR-RX2)
4	Ground
5	IR Transmit (IR-TX2)

(N) CN13 USB 1 (Universal Serial Bus port1) connector

Pin #	Assignment
1	5V DC
2	DATA
3	DATA
4	Ground

(O) CN14 USB 2 (Universal Serial Bus port2) connector

Pin #	Assignment
1	5V DC
2	DATA
3	DATA
4	Ground

(P) CN15 Cooling Fan Power connector

Pin #	Assignment	Pin #	Assignment
1	12V DC	2	K/B controller Pin-29
3	Ground	4	Ground
5	K/B controller Pin-29	6	12V DC

(Q) RS Reset Button connector

Pin #	Assignment	Pin1&2	Function
1	Ground	Open	No action
2	Reset Control	Short	System Reset

(R) HL IDE HDD LED connector

Pin #	Assignment
1	Pullup (5V DC)
2	Signal Pin

(S) TL   Turbo LED connector

Pin #	Assignment
1	Pullup (5V DC)
2	Signal Pin

(T) SS   External SMI button connector

Pin #	Assignment	Pin1&2	Function
1	SMI Control	Open	For normal operation
2	Ground	Short	To get into Suspend mode

(U) TS   Turbo Switch connector (This function is reserved)

Pin #	Assignment	Pin1&2	Function
1	Turbo Control	Open	Turbo
2	Ground	Short	Normal

(V) SPEAKER   Speaker connector
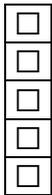
Pin #	Assignment
1	5V DC
2	No Connection
3	No Connection
4	Speaker Data Signal
5	No Connection

(W) KEY LOCK   Front Panal Power LED & Key-Lock connector
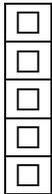
Pin #	Assignment
1	Pullup (5V DC for Power LED)
2	No Connection
3	Ground
4	Keyboard Lock
5	Ground

Explanation : (For next section : JUMPERS)

open ⇨ [○ ○] [○ ○ ○] , short ⇨ [●●]
        1   1   1

1-2 ⇨ [●●○]   , 2-3 ⇨ [○●●]
       1   1
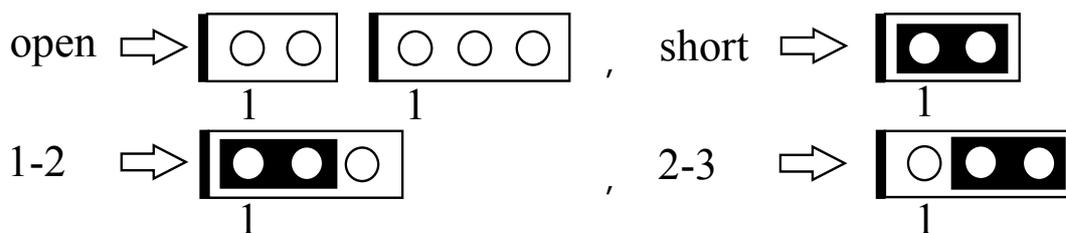
4.2.3 JUMPERS

A jumper is two, three or more pins which may or may not be covered by a plastic connector plug (mini-jumper). A jumper is used to select different system options. ***Please make sure all jumpers at correct position before this system board used.***

(A) JP1   CPU operating voltage selection
     Different Pentium Pro processors may require different operating voltages (VccP).
     Current processors (marked "Pentium Pro") support VID and will automatically adjust the
     output of voltage regulator so that no jumper setting are needed (leave these jumpers open in
     this case). Some older processors without VID support require manual voltage ID setting.
     The following table is used for those older processors only.

Voltage	JP1				Voltage	JP1			
	1-2 VID0	3-4 VID1	5-6 VID2	7-8 VID3		1-2 VID0	3-4 VID1	5-6 VID2	7-8 VID3
+2.1V	**short**	**open**	**open**	**open**	**+2.9V**	**short**	**open**	**open**	**short**
+2.2V	**open**	**short**	**open**	**open**	**+3.0V**	**open**	**short**	**open**	**short**
+2.3V	**short**	**short**	**open**	**open**	**+3.1V**	**short**	**short**	**open**	**short**
+2.4V	**open**	**open**	**short**	**open**	**+3.2V**	**open**	**open**	**short**	**short**
+2.5V	**short**	**open**	**short**	**open**	**+3.3V**	**short**	**open**	**short**	**short**
+2.6V	**open**	**short**	**short**	**open**	**+3.4V**	**open**	**short**	**short**	**short**
+2.7V	**short**	**short**	**short**	**open**	**+3.5V**	**short**	**short**	**short**	**short**
+2.8V	**open**	**open**	**open**	**short**					

Note : The detailed CPU-VccP requirement, please inquire of your CPU supplier.

(B) JP2-JP7   CPU External (BUS) Frequency and CPU to BUS Frequency Ratio selection

     (1). CPU External (BUS) Frequency selection

Frequency (unit : MHz)						Remark
System	PCI Bus	AT Bus	JP2	JP6	JP7	(CPU Type)
60	30	7.5	1-2	open	short	For 150, 180, 210, 240
66.6	33.3	8.33	2-3	short	open	For 166, 200, 233, 266

     (2). CPU to BUS Frequency Ratio selection

Ratio	JP3	JP4	JP5	Remark (CPU Type)
2 x	**short**	**short**	**short**	
2.5 x	**open**	**short**	**short**	**For 150, 166**
3 x	**short**	**open**	**short**	**For 180, 200**
3.5 x	**open**	**open**	**short**	**For 210, 233**
4 x	**short**	**short**	**open**	**For 240, 266**
5 x	**short**	**open**	**open**	

(3). Currently common CPUs Frequency and Ratio quick setting

CPU (MHz)	JP2	JP3	JP4	JP5	JP6	JP7	Remark
150 MHz	**1-2**	**open**	**short**	**short**	**open**	**short**	
166 MHz	**2-3**	**open**	**short**	**short**	**short**	**open**	
180 MHz	**1-2**	**short**	**open**	**short**	**open**	**short**	
200 MHz	**2-3**	**short**	**open**	**short**	**short**	**open**	
210 MHz	**1-2**	**open**	**open**	**short**	**open**	**short**	
233 MHz	**2-3**	**open**	**open**	**short**	**short**	**open**	
240 MHz	**1-2**	**short**	**short**	**open**	**open**	**short**	
266 MHz	**2-3**	**short**	**short**	**open**	**short**	**open**	

(C) JP8   Clear CMOS button
            <u>Pin #</u>   <u>Function</u>
            open   Normal operation
            short   Clear CMOS (*Note : Don't forget to open this jumper after 2-3 seconds*)

   Note : Depends on different brand-name of RTC IC (U33 or U32), there are two times
           to clear CMOS, the following is a list for reference :
           (1) *while power-on   : BENCHMARQ / bq3287AMT, SGS / M48T86,*
           (2) *while power-off : VIA / VT82885N, ODIN / OEC12C885 / OEC12C887A,*
                                  DALLAS / DS12887A.

(D) JP9   ECC Function Mode Selection
            <u>Pin #</u>   <u>Function</u>
            open   ECC use NMI (factory default setting)
            short   ECC use SMI

(E) JP10   ROM BIOS Selection
            <u>Pin #</u>   <u>Function</u>
            1-2   For +5V FLASH ROM, EPROM
            2-3   For +12V FLASH ROM

5. AWARD BIOS SETUP

5.1 GETTING STARTED

When the system is first powered on or reset, the BIOS will enter the Power-On Self Test routines (POST : Display a copyright message on the screen followed by a diagnostics and initialization procedure.) (If an EGA or VGA card is installed, the copyright message of the video card maybe displayed on the screen first.) The BIOS will indicate any error or malfunction by a series of beeps or display the error message on screen.

Normally, the simulate figure 5-1 will display on the screen when the system is powered on.
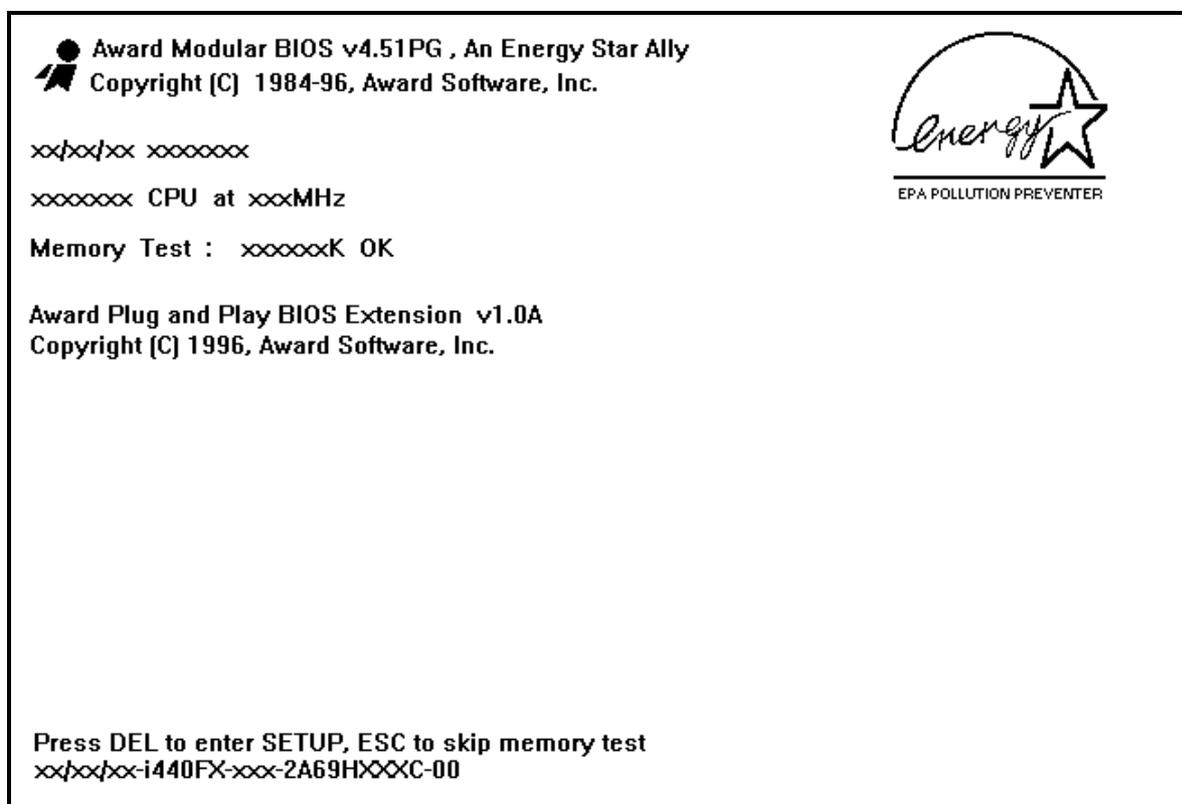

Fig. 5-1 Initial Power-On screen.

During the POST routines are progress, the following message appears :

" Press **DEL** to enter SETUP "

To execute the Award BIOS Setup program, press **DEL** key. The simulate screen in figure 5-2 MAIN MENU will be displayed at this time.

5.2 MAIN MENU

```
                        ROM PCI / ISA  BIOS (2A69HXXX)
                            CMOS  SETUP  UTILITY
                          AWARD  SOFTWARE, INC.
┌────────────────────────────────────────────────────────────────────────┐
│   ┌────────────────────────────────┬───────────────────────────────┐    │
│   │ STANDARD CMOS SETUP            │    SUPERVISOR  PASSWORD        │    │
│   │                                │                               │    │
│   │  BIOS  FEATURES  SETUP         │    USER  PASSWORD             │    │
│   │                                │                               │    │
│   │  CHIPSET  FEATURES  SETUP      │    IDE  HDD  AUTO  DETECTION  │    │
│   │                                │                               │    │
│   │  POWER  MANAGEMENT  SETUP      │    HDD  LOW  LEVEL  FORMAT    │    │
│   │                                │                               │    │
│   │  PNP/PCI CONFIGURATION         │    SAVE  &  EXIT  SETUP       │    │
│   │                                │                               │    │
│   │  INTEGRATED  PERIPHERALS       │    EXIT  WITHOUT  SAVING      │    │
│   │                                │                               │    │
│   │  LOAD  SETUP  DEFAULTS         │                               │    │
│   ├────────────────────────────────┴───────────────────────────────┤    │
│   │ ESC  :  Quit                                    :  Select  Item │    │
│   │ F10  :  Save  &  Exit  Setup          (Shift)F2 :  Change Color │    │
│   ├──────────────────────────────────────────────────────────────┤│    │
│   │                Time,  Date,  Hard Disk  Type ...               ││    │
│   └──────────────────────────────────────────────────────────────┘│    │
└────────────────────────────────────────────────────────────────────────┘
```

Fig. 5-2 CMOS SETUP MAIN MENU screen.

5.3 CONTROL KEYS

Listed below is an explanation of the keys displayed at the bottom of the screens accessed through the BIOS SETUP program :

Arrow Keys	**:** Use the arrow keys to move the cursor to the desired item.
Enter	**:** To Select the desired item.
F1	**:** Display the help screen for the selected feature.
(Shift)F2	**:** To change the screen color, total 16 colors.
ESC	**:** Exit to the previous screen.
PgUp(-)/PgDn(+)	**:** To modify the default value of the options for the highlighted feature.
F5	**:** Retrieves the previous CMOS values from CMOS, only for the current option page setup menu.
F6	**:** Loads the BIOS default values from BIOS default table, only for the current option page setup menu.
F7	**:** Loads the SETUP default values from BIOS default table, only for the current option page setup menu.
F10	**:** Save all changes made to CMOS RAM, only for the MAIN MENU.

The following pages will show the simulate screens of CMOS SETUP, each figure contains the setup items and the default settings of them. Below each figure may or may not contain a lists of function description for commonly used settings. For the other settings' function description if you still needed, please feel free to contact with your supplier.

5.4 STANDARD CMOS SETUP

ROM PCI / ISA BIOS (2A69HXXX)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

```
 Date (mm : dd : yy) : Thu, [Oct] 10 1996
 Time (hh : mm : ss) :   16 : 43 : 55
```

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	Auto	0	0	0	0	0	0	Auto
Secondary Master	Auto	0	0	0	0	0	0	Auto
Secondary Slave	Auto	0	0	0	0	0	0	Auto

```
 Drive A :  1.44M,  3.5 in.
 Drive B :  None                        Base Memory :      640 K
                                    Extended Memory :  xxxxxx K
 Video    : EGA/VGA                    Other Memory :  xxxxxx K
 Halt On : All  Errors                 Total Memory :  xxxxxx K
```

```
 ESC   : Quit                  : Select Item        PU/PD/+/- : Modify
 F1    : Help           (Shift)F2 :  Change Color
```

Fig. 5-3 STANDARD CMOS SETUP screen.

MODE :
For IDE hard disks, this BIOS provides three modes to support both normal size IDE hard disks and also disks size larger the 528MB:

   NORMAL : For IDE hard disks size smaller then 528MB.

   LBA   : For IDE hard disks size larger then 528MB and up to 8.4GB (Giga Bytes) that use
                      Logic Block Addressing (LBA) mode.

   Large   : For IDE hard disks size larger then 528MB that do not use LBA mode. Large mode
                      is a new specifition which may not be fully supported by all operation systems.
                      Now it can only be used with the MS-DOS and is very uncommon.

   Auto   : Auto is a new technology, you can select "Auto" under TYPE and Mode fields. This
                      will enable automatic detection of your IDE driver during bootup.

      (*Note   : Some OSes (like SCO-UNIX) must use "NORMAL" for installation.*)

5.5 BIOS FEATURES SETUP

```
                    ROM PCI / ISA BIOS (2A69HXXX)
                         BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────────────┐
│ Virus Warning              : Disabled │ Video   BIOS Shadow      : Enabled │
│ CPU Internal Cache         : Enabled  │ C8000-CBFFF  Shadow      : Disabled│
│ External Cache             : Enabled  │ CC000-CFFFF  Shadow      : Disabled│
│ Quick Power On Self Test   : Enabled  │ D0000-D3FFF  Shadow      : Disabled│
│ Boot Sequence              : A,C,SCSI │ D4000-D7FFF  Shadow      : Disabled│
│ Swap Floppy Drive          : Disabled │ D8000-DBFFF  Shadow      : Disabled│
│ Boot Up Floppy Seek        : Enabled  │ DC000-DFFFF  Shadow      : Disabled│
│ Boot Up NumLock Status     : On       │
│ Boot Up System Speed       : High     │
│ Gate A20 Option            : Fast     │
│ Typematic Rate Setting     : Disabled │
│ Typematic Rate (Chars/Sec) : 6        │
│ Typematic Delay (Msec)     : 250      │
│ Security Option            : Setup    │
│ PCI/VGA Palette Snoop      : Disabled │ ESC : Quit            : Select Item│
│ OS Select For DRAM > 64MB  : Non-OS2  │ F1  : Help    PU/PD/+/- : Modify   │
│                                       │ F5  : Old Values  (Shift)F2 : Color│
│ PS/2 mouse function control : Enable  │ F6  : Load BIOS Default            │
│                                       │ F7  : Load Setup Default           │
└─────────────────────────────────────────────────────────────────────────┘
```

Fig. 5-4 BIOS FEATURES SETUP screen.

Virus Warning :
This feature flashes some messages on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear, in the mean time, you can run anti-virus program to locate the problem. Default values is "Disabled"
Enabled : Activate automatically when the system boots up causing a warning message to appear
                when anything attempts to access the boot sector or hard disk partition table.
Disabled : No warning message to appear when anything attempts to access the boot sector or hard
                disk partition table.

CPU Internal Cache / External Cache :
These fields allow you to choose from the default of Enable or choose Disable to turn on or off the CPU's Level 1 and Level 2 built-in cache.

Boot Sequence :
This field determines where the system looks first for operating system. Options are "A,C,SCSI", "C,A,SCSI", "C,CDROM,A", "CDROM,C,A", "D,A,SCSI", "E,A,SCSI", "F,A,SCSI", "SCSI,A,C", "SCSI,C,A", and "C only". These wide range settings allow you boot-up from either a floppy disk, an IDE hard disk ,a SCSI hard disk or a CD-ROM device.

PCI/VGA Palette Snoop :
Some display cards that are non-standard VGA such as graphics accelerators or MPEG Video Cards may not show color properly. The setting Enabled should correct this problem. Otherwise leave this on the setup default setting of Disabled.

OS Select For DRAM > 64MB :
When using OS/2 operating systems with installed DRAM of greater then 64MB, you must to set this setting to OS2 otherwise leave this on the setup default of Non-OS2.

PS/2 mouse function control :
On this system board built-in a PS/2 mouse port, but if you still won't use PS/2 mouse, this field allows you to Disable PS/2 mouse function and release IRQ12 for the other devices, otherwise leave this field on the setup default of Enabled to enable PS/2 mouse function.

5.6 CHIPSET FEATURES SETUP

ROM PCI / ISA BIOS (2A69HXXX)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	8 Bit I/O Recovery Time	: 1
		16 Bit I/O Recovery Time	: 1
DRAM Speed Selection	: 60 ns	Memory Hole at 15M-16M	: Disabled
DRAM RAS# Precharge Time	: 3	DRAM Fast Leadoff	: Disabled
MA Additional Wait State	: Disabled	Passive Release	: Enabled
RAS# To CAS# Delay	: Enabled	Delayed Transaction	: Disabled
DRAM Read Burst (B/E/F)	: x3/4/4		
DRAM Write Burst (B/E/F)	: x3/3/4		
ISA Bus Clock	: PCICLK/3		
DRAM Refresh Queue	: Enabled		
DRAM RAS Only Refresh	: Enabled		
DRAM ECC/PARITY Select	: Disabled		
Fast Dram Refresh	: Disabled		
Read-Around-Write	: Enabled		
PCI Burst Write Combine	: Enabled		
PCI-To-DRAM Pipeline	: Enabled	ESC : Quit : Select Item	
CPU-To-PCI Write Post	: Enabled	F1 : Help PU/PD/+/- : Modify	
CPU-To-PCI IDE Posting	: Enabled	F5 : Old Values (Shift)F2 : Color	
System BIOS Cacheable	: Disabled	F6 : Load BIOS Default	
Video RAM Cacheable	: Disabled	F7 : Load Setup Default	

Fig. 5-5 CHIPSET FEATURES SETUP screen.

WARNING :   *The CHIPSET FEATURES SETUP in this screen are provided so that technical*
               professionals can modify the Chipset to suit their requirement. If you are not a
               technical engineer, do not use this program !

Auto Configuration :
When "Enabled", this parameter automatically enters and locks some of the optimum values for the chipset and CPU. Otherwise, this parameter allows the values of these fields could be changed.

DRAM Speed Selection :
When "Auto Configuration" is "Enabled", this field provides two suit of the optimal values for the chipset and CPU, depends on the DRAMs' speed, you can select "70 ns" or "60 ns". "70ns" maybe caused your system more stable, but also decrease the system's performance.

DRAM ECC/PARITY Select :
This system board provides a DRAM ECC (Error Checking and Correcting) or Parity function for DRAM subsystem. If all your DRAM modules (includes SIMMs and DIMM) have parity bit, you can set this field to ECC or PARITY to monitoring the DRAMs access status, but if your DRAM modules don't all have parity bit, leave this field on default setting of Disabled to avoid any error movement occurs.

Read-Around-Write :
The default setting of Enabled will increase the execution efficiency of the processor. It allows the processor to execute read commands out of order if there is no dependence between these read and other write commands.

PCI Burst Write Combine :
The default setting of Enabled will increase the efficiency of the PCI bus by combining several CPU to PCI write cycles into one. VGA performance is increased by this action.

PCI-To-DRAM Pipeline :
The default setting of Enabled will increase the bandwidth of the path between the PCI and the DRAM to enhance the PCI bus efficiency and DRAM accessing.

CPU-To-PCI Write Post :
The default setting of Enabled will increase the efficiency of the PCI bus and speed up the execution in the processor.

CPU-To-PCI IDE Posting :
Leave on default setting of Enabled so that the CPU to PCI IDE posting cycles are treated as normal I/O write transactions.

Video RAM Cacheable :
Video RAM caching is a new cache technology for vedio memory of Pentium Pro Processor. It can greatly improve the display speed by caching the display data. You must leave this field on default setting of Disabled if your display card cannot support this feature or else your system may not boot.

Memory Hole at 15M-16M :
Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. The default setting is Disabled.

5.7 POWER MANAGEMENT SETUP

```
                    ROM  PCI / ISA  BIOS (2A69HXXX)
                      POWER  MANAGEMENT  SETUP
                       AWARD  SOFTWARE,  INC.
┌─────────────────────────────────────────────────────────────────────┐
│ Power  Management   : User  Define │   ** Power Down & Resume Events ** │
│ PM Control by APM   : Yes          │ IRQ  3  (COM 2)          : ON      │
│ Video Off Method    : Blank Screen │ IRQ  4  (COM 1)          : ON      │
│ MODEM Use IRQ       : 3            │ IRQ  5  (LPT 2)          : ON      │
│                                    │ IRQ  6  (Floppy Disk)    : OFF     │
│ Doze Mode           : Disable      │ IRQ  7  (LPT 1)          : ON      │
│ Standby Mode        : Disable      │ IRQ  8  (RTC Alarm)      : OFF     │
│ Suspend Mode        : Disable      │ IRQ  9  (IRQ2 Redir)     : ON      │
│ HDD Power Down      : Disable      │ IRQ 10  (Reserved)       : ON      │
│                                    │ IRQ 11  (Reserved)       : ON      │
│ ** Wake Up Events In Doze & Standby ** │ IRQ 12 (PS/2 Mouse)  : ON      │
│ IRQ3  (Wake-Up Event) : ON         │ IRQ 13  (Coprocessor)    : ON      │
│ IRQ4  (Wake-Up Event) : ON         │ IRQ 14  (Hard Disk)      : ON      │
│ IRQ8  (Wake-Up Event) : OFF        │ IRQ 15  (Reserved)       : OFF     │
│ IRQ12 (Wake-Up Event) : ON         │                                    │
│                                    ├────────────────────────────────────┤
│                                    │ ESC : Quit           : Select Item │
│                                    │ F1  : Help    PU/PD/+/- : Modify   │
│                                    │ F5  : Old Values (Shift)F2 : Color │
│                                    │ F6  : Load BIOS Default            │
│                                    │ F7  : Load Setup Default           │
└─────────────────────────────────────────────────────────────────────┘
```

Fig. 5-6 POWER MANAGEMENT SETUP screen.

WARNING :   *The POWER MANAGEMENT SETUP in this screen are provided so that*
               technical professionals can modify the Chipset to suit their requirement. If you
               are not a technical engineer, do not use this program !

Power Management :
This setting controls the Power Management functions. "User Define" allows the values of all parameters could be modified. "Min Saving" and "Max Saving" fixed the values of four parameters, including "Doze Mode", "Standby Mode", "Suspend Mode" and "HDD Power Down".
"Disable" disabled all Power Management functions. Default is "User Define".

5.8　PNP/PCI　CONFIGURATION

ROM PCI / ISA BIOS (2A69HXXX)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By	: Manual	PCI IRQ Actived By	: Level
Reset Configuration Data	: Disabled	PCI IDE IRQ Map To	: PCI-AUTO
		Primary　　IDE INT#	: A
IRQ-3　assigned to	: Legacy ISA	Secondary　IDE INT#	: B
IRQ-4　assigned to	: Legacy ISA		
IRQ-5　assigned to	: PCI/ISA PnP	Used MEM base addr	: N/A
IRQ-7　assigned to	: Legacy ISA	*Used MEM Length*	: *8K*
IRQ-9　assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: Legacy ISA		
IRQ-14 assigned to	: Legacy ISA		
IRQ-15 assigned to	: Legacy ISA		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP		
DMA-3 assigned to	: PCI/ISA PnP	ESC : Quit　　　　　　　　　 : Select Item	
DMA-5 assigned to	: PCI/ISA PnP	F1　 : Help　　　　PU/PD/+/- : Modify	
DMA-6 assigned to	: PCI/ISA PnP	F5　 : Old Values　 (Shift)F2 : Color	
DMA-7 assigned to	: PCI/ISA PnP	F6　 : Load BIOS Default	
		F7　 : Load Setup Default	

Fig. 5-7 PNP/PCI CONFIGURATION setup screen.

WARNING : *The PNP/PCI CONFIGURATION in this screen are provided so that technical*
professionals can modify the Resources Configuration to suit their requirement.
If you are not a technical engineer, do not use this program !

Resources Controlled by :
Manual　: The system BIOS will not reference the ESCD for IRQ & DMA informations. Instead, it
will reference the items in this setup menu for assigning IRQ & DMA, but for I/O and
Memory space the system BIOS still refer to the ESCD.

Atuo　　: The system BIOS will reference the ESCD all legacy informations.

Reset Configuration Data :
Disabled : The system BIOS will do nothing.

Enabled　: The system BIOS will clear/reset the ESCD during "POST". After clearing the ESCD,
the system BIOS will then change this item's value back to "Disable", otherwise, the
ESCD will become useless.

IRQ# / DMA# assigned to :
Legacy   : The system BIOS will skip never assign this specified IRQ/DMA resource to PCI or
ISA   ISA PnP devices.

PCI/ISA : All items set to this value will make the specified IRQ/DMA have a chance to be
PnP   assigned to PCI or ISA PnP devices.

PCI IRQ Actived By :
This option tells the system board chipset the IRQ signals input is Level or Edge trigger.

PCI IDE IRQ Map To : (for off-board PCI ICE cards)
PCI-AUTO : The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE
                  device, then assign IRQ 14 for primary IDE INT#, and assign IRQ 15 for secondary
                  IDE INT#.

PCI-SLOT1 : For the specified slot, the BIOS will assign IRQ 14 for primary IDE INT#, and assign
      to   IRQ 15 for secondary IDE INT#.
PCI-SLOT4

ISA   : The BIOS will not assign any IRQs even if PCI IDE card is found. Because some
                  IDE cards connect the IRQ 14 and 15 directly from ISA slot thru a card. (This card
                  is called Legacy Header)

Used MEM base addr and *Used MEM Length* :
These fields are used for some specific ISA legacy cards with requested memory space below 1M address. You
can define where the used memory address is located and its length of the legacy area corresponding. Base on
these, BIOS will skip the UMB area that is used by the legacy device to avoid the memory conflict.

Note : No matter the item "Resources Controlled By" is set to "Manual" or "Auto", the system
            BIOS assign IRQs to PCI devices from high to low. For ISA PnP devices, the sequence is
            from low to high.

Explanation for proper nouns :

PnP device :
    Device that has Plug & Play compatibility. That means it can request for DMA, IRQ, I/O and
    Memory from the PnP BIOS and all these requests can be relocatable. In other words, these
    devices does not utilized any fixed resources.
    All PCI devices and all ISA PnP devices are PnP devices.

Legacy device :
    A legacy device is a device that all its resources are fixed by hardware (or selected by jumpers).
    All ISA Non-PnP devices are legacy device.

Extended System Configuration Data (ESCD) :
    A media between the user and the system BIOS for passing the legacy devices informations.
    These informations are stored in the onboard NVRAM (flash ROM).

5.9 INTEGRATED PERIPHERALS

There are maybe a few different setup items on this screen while using different I/O chipset, the following figure is an example. For the different setup items, if you still want to know, please feel free to contact with your supplier.

```
                       ROM PCI / ISA BIOS (2A69HXXX)
                         INTEGRATED PERIPHERALS
                          AWARD SOFTWARE, INC.
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ IDE HDD Block Mode       : Enabled       │ USB Controller         : Disabled │
│ IDE Primary Master PIO   : Auto          │                                  │
│ IDE Primary Slave  PIO   : Auto          │                                  │
│ IDE Secondary Master PIO : Auto          │                                  │
│ IDE Secondary Slave  PIO : Auto          │                                  │
│ On-Chip Primary   PCI IDE : Enabled      │                                  │
│ On-Chip Secondary PCI IDE : Enabled      │                                  │
│ PCI Slot IDE 2nd Channel : Enabled       │                                  │
│                                          │                                  │
│ Onboard FDD Controller   : Enabled       │                                  │
│ Onboard UART 1           : Auto          │                                  │
│ Onboard UART 2           : Auto          │                                  │
│ Onboard UART 2 Mode      : Standard      │                                  │
│                                          │                                  │
│                                          ├──────────────────────────────────┤
│ Onboard Parallel Port    : 378/IRQ7      │ ESC : Quit            : Select Item│
│ Parallel Port Mode       : Normal        │ F1  : Help    PU/PD/+/- : Modify  │
│                                          │ F5  : Old Values  (Shift)F2 : Color│
│                                          │ F6  : Load BIOS Default           │
│                                          │ F7  : Load Setup Default          │
└─────────────────────────────────────────┴──────────────────────────────────┘
```

Fig. 5-8 INTEGRATED PERIPHERALS setup screen.

WARNING : *The INTEGRATED PERIPHERALS in this screen are provided so that technical professionals can modify the Chipset to suit their requirement. If you are   not a technical engineer, do not use this program !*

IDE HDD Block Mode :
This feature enhances hard disk performance, making multi-sector transfers instead of one sector per transfer. Most IDE drives, except the very early designs can use this feature. Default is "Enabled".

Onboard UART 2 Mode :
This field determines the UART 2 function mode. By default, this field is set to Standard, which leaves the second serial port UART to support the COM B serial port connector (CN11). When HPSIR or ASKIR is selected, this field enables the onboard infrared feature and sets the second serial UART to support the infrared module connector (CN12). In the meantime, if your system already has a serial device connected to the COM B connector (CN11), it will no longer work.

IR Duplex Mode :
This field determines the IR port transmission mode is Half-Duplex or Full-Duplex.

Use IR Pins :
This field determines the IR module is connected to CN12 (IR-RX2TX2) or CN11 (IR-RX TX).

Parallel Port Mode :
This field determines the onboard parallel port (CN 7) function mode. Supports either Normal, EPP, ECP or ECP+EPP.

5.10 LOAD SETUP DEFAULTS

This option loads the SETUP default values from BIOS default table. By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. The SETUP default settings are the best-case values that should optimize system performance and increase system stability. If CMOS RAM is corrupted, the SETUP DEFAULTS settings are loaded automatically.

5.11 SUPERVISOR PASSWORD / USER PASSWORD

Type the Password and press "Enter",then repeat. Enters up to eight alphanumeric characters.
By pressing "Enter" key twice, without any alphanumeric character enters, the PASSWORD will be disabled.

5.12 IDE HDD AUTO DETECTION

By pressing "Enter" key, while "IDE HDD AUTO DETECTION" is highlighted causes the system to attempt to detect the type of hard disk. If successful, then presses "Y" (or 1, 2, ...) and "Enter" key, it fills in the remaining fields on this menu and the correlated fields in the STANDARD CMOS SETUP menu.

5.13 HDD LOW LEVEL FORMAT

This option provides an utility program for IDE HDD Low Level Format. Performing the Hard Disk Format will destory any data on the Hard Disk. Back up the Hard Disk(s) before actually performing of these routines.
*Note : These routines are not valid for a **SCSI** Disk Drive.*

5.14 SAVE & EXIT SETUP

This option saves all setup values to CMOS RAM & EXIT SETUP routine, by moving the cursor to "SAVE & EXIT SETUP" and pressing "Enter" key, then types "Y" and "Enter" key, the values will be saved, the setup program will be terminated and the system will be reboot.

5.15 EXIT WITHOUT SAVING

This option exites setup routine without saving any changed values to CMOS RAM, by moving the cursor to "EXIT WITHOUT SAVING" and pressing "Enter" key, then types "Y" and "Enter" key, the setup program will be terminated and the system will be reboot.