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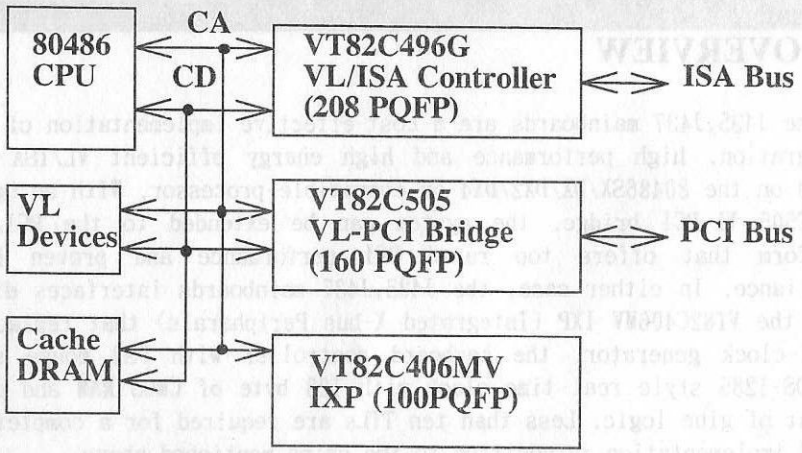
CHAPTER 1

1-1 OVERVIEW

The J435,J437 mainboards are a cost-effective implementation of a high integration, high performance and high energy efficient VL/ISA system based on the 80486SX/DX/DX2/DX4 or compatible processor. With an optional VT82C505 VL-PCI bridge, the system can be extended to the PCI/VL/ISA platform that offers top rated PCI performance and proven PCI-2.0 compliance. In either case, the J435,J437 mainboards interfaces directly with the VT82C406MV IXP (Integrated X-bus Peripherals) that replaces the multi-clock generator, the keyboard controller with PS2 mouse support, the DS-1285 style real time clock with 128 byte of CMOS RAM and certain amount of glue logic. Less than ten TTLs are required for a complete main board implementation in addition to the chips mentioned above.

The J435,J437 mainboards support the state-of-art 80486 families from major CPU vendors including Intel, AMD and Cyrix. The write-back internal cache, burst write transfer, CPU clock stop and switching protocol and system management mode are supported to the full capability of individual CPUs. The J435 mainboards support two VL devices in addition to the embedded local bus IDE controller without any glue logic. Both VL devices can be of the master type and the arbitration logic is integrated inside the chip. More VL devices can be supported with external glue logic.

The integrated power management unit monitors I/O events, interrupt, DMA and VL master request signals to detect the status of system activity. Each event can be turned off or assigned to one of two event classes tracked by two independent idle timers. Two additional general purpose timers are also provided for house-keeping or mode switching purposes. One of the timers can also be used to keep track the activity of specific peripheral devices. The system management interrupt (SMI) may be triggered by multiple sources including time-out of individual timers, occurrence of system activities, external input and software programming for flexible applications. The SMI routine checks the status and takes appropriate actions including clock speed switching (or stop) and I/O and power control. On top of the SMI-oriented power management capability, the J435,J437 mainboards also support automatic conserve mode operation to conserve power under short and frequent system idleness (e.g. keyboard typing).



Main Board Based 80486 PCI/VL/ISA System

The embedded local bus IDE controller recognized IDE I/O port accesses as local bus cycles and provides prefect and post-write buffers to allow concurrent CPU/VL and IDE bus operation. The controller supports either the primary (1F0-1F7h) enhanced IDE channels with two devices. The command and recovery time of each device can be individually programmed in units of CPU clock to achieve the optimal speed of the device up to >10MB/s transfer rate. The IDE devices share the same bus with the ISA bus with separate control signals so that no external logic is required.

The J435,J437 mainboards support shadowing of system, video and other BIOS to speed up the access. The video and system BIOS can also be made cacheable and write-protect. Unused portion of the DRAM can be relocated to increase the size of the overall system memory.

Access to either E or C segment can be programmed to be an on-board EPROM cycle to allow the combination of system and video BIOS for an all-in-one system board implementation. The J435,J437 mainboards can also be programmed to recognize write cycles as EPROM cycles to support field upgradability of flash EPROM BIOS.

The ISA bus controller runs synchronously with the CPU clock to eliminate the synchronization overhead associated with an asynchronous system. The wait state, command delay and I/O recovery time are programmable to allow maximum flexibility in using ISA add-on cards. The bus conversion and data alignment are performed automatically if the sizes of the master and the slave of a command do not match. Push-button suspend and resume function is provided in addition to the traditional hardware and software de-turbo mechanism. Fast gate A20 and fast reset logic is also included to allow faster response in a protected mode environment.

A rich set of configuration registers are provided for fine-tuning the cost and performance of individual system. Standard parameters such as cache and DRAM configurations and ISA bus clock are automatically detected and programmed by the BIOS so that neither jumper nor BIOS settings is necessary.

The J435,J437 mainboards are ideal for high performance, high quality, high energy efficient and high integration desktop and notebook PCI/VL/ISA computer systems.

1-2 FEATURES

1. Fully IBM PC/AT Compatible

2. Flexible CPU and Local Bus Interface

- Supports 80486SX/DX/DX2/DX4 and compatible CPUs
- CPU speed up to 100 Mhz including 80486DX-50, 80486DX2-66 and 80486DX2-80 , 80486DX4-100
- Supports CPUs with write-back internal cache, e.g. and Cx486DX/DX2
- Snoop filtering for write-back CPUs
- Supports SMI protocols of Intel, AMD and Cyrix CPUs
- CPU clock stretching and throttling
- Zero frequency CPU suspend mode
- Soft and hard CPU reset
- Direct VESA and other local bus interface with DMA/master access
- Built-in arbitration for two local bus masters

3. Advanced Cache Controller

- Write back/write through scheme
- Direct map scheme
- Flexible cache size: 0K/128K/256K/512K/1MB
- One bank or two banks of data independent of cache size
- Integrated 8-bit tag comparastor
- Interleaved SRAM access to achieve 2-1-1-1 burst fill
- Supports burst read and burst write transfers
- System and video BIOS cacheable and write-protect
- Programmable cache timing
- Programmable non-cacheable region
- Optional combined tag and alter bit SRAM for the write-back scheme
- Eight bit tag under the combined tag-alter scheme without sacrifice of cacheable space

4. Fast Page Mode DRAM Controller

- Mixed 256K/512K/1M/2M/4M/8M/16MxN DRAMs
- 8 banks up to 128MB
- Flexible column and row addresses
- 72pin(x36) or 30pin SIM module support
- Programmable DRAM timing
- BIOS shadow at 16KB increment
- 256/384K memory relocation
- System management memory remapping

- Decoupled DRAM refresh with staggered RAS timing
- CAS-before-RAS and slow refresh

5. Synchronous ISA Bus Controller

- Synchronous ISA bus clock
- Programmable wait state, command delay and I/O recovery time
- Bus conversion and data alignment
- Hardware and software de-turbo control
- Fast reset and Gate A20 operation
- Integrated 82C206 peripheral controller
- Edge trigger or level sensitive interrupt controller
- Flash EPROM and combined BIOS support

6. Integrated Power Management Unit

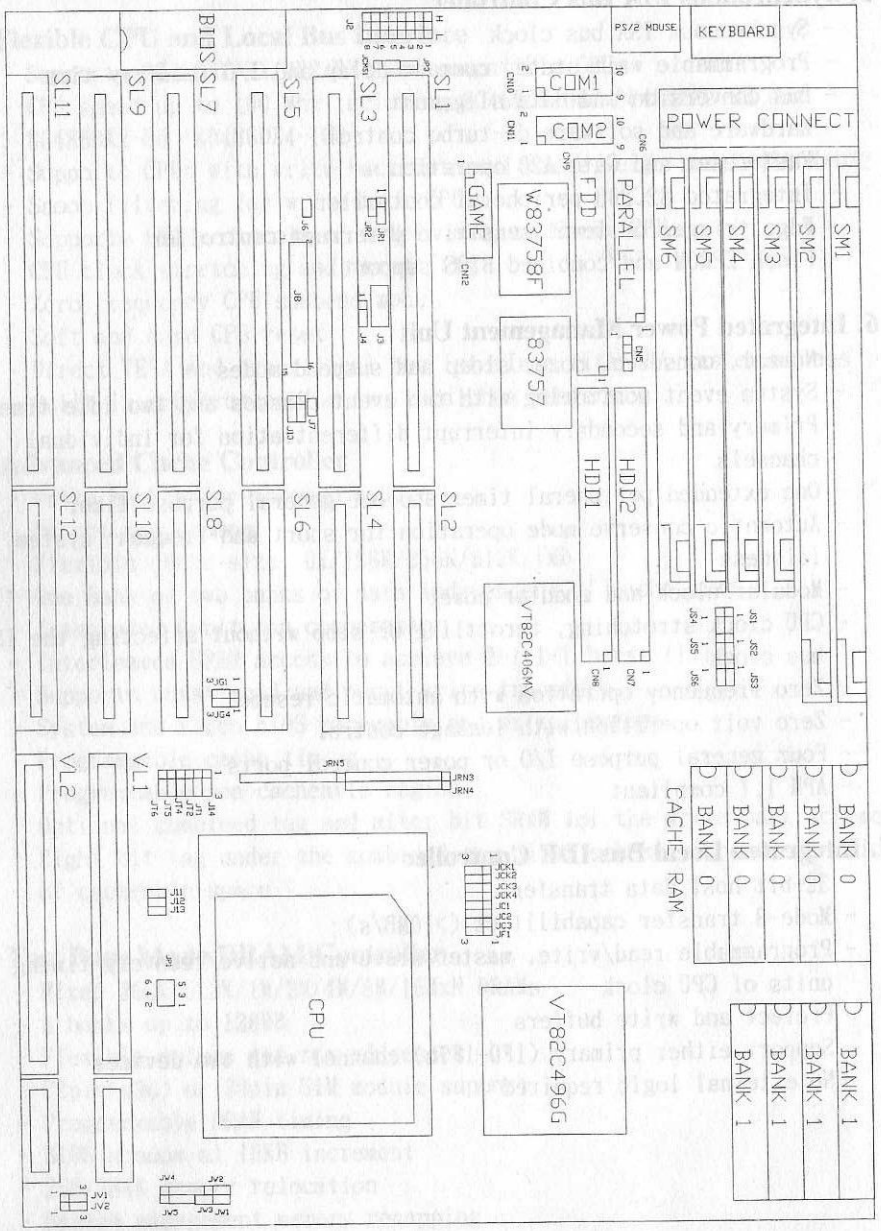
- Normal, conserve, doze, sleep and suspend modes
- System event monitoring with two event classes and two idle timers
- Primary and secondary interrupt differentiation for individual channels
- One extended peripheral timer and one general purpose timer
- Automatic conserve mode operation for short and frequent system idleness
- Modular clock and modular power
- CPU clock stretching, throttling or stop without affecting the ISA bus clock
- Zero frequency operation with automatic resume
- Zero volt operation with leakage control
- Four general purpose I/O or power control ports
- APM 1.1 compliant

7. Integrated Local Bus IDE Controller

- 32-bit host data transfer
- Mode-3 transfer capabilities (>10MB/s)
- Programmable read/write, master/slave and active/recovery timing in units of CPU clock
- Prefect and write buffers
- Support either primary (1F0-1F7h) channel with two devices
- No external logic required

CHAPTER 2

2-1 J435 BOARD LAYOUT



2-2 J435 JUMPER SETTING

CPU TYPE SELECT

Referance page 22

JT2	* 1-2	Other CPU	
	2-3	P24T CPU	
JT5	* 1-2	Cyrix CPU	
	2-3	P24D CPU	
*JRN3	Intel		
JRN4	Cyrix		
* JRN5	AMD		

	486SX/M6	486DX/DX2/DX4/M7	487SX/ODP/P24T
JC1	OFF	* 1-2	2-3
JC2	2-3	* 1-2	1-2
JC3	2-3	* 1-2	1-2

CPU CLOCK SELECT

Referance page 22

JT4	1-2	Cyrix CPU clock*1
	2-3	Cyrix CPU clock*2
J14	* 1-2	Other CPU for DX4-100 (AMD, Intel, P24D)
	2-3	AMD CPU clock for AMD DX2/80, AMD DX2/66
JG1	* 1-2	VL/CPU Sync
	2-3	VL/CPU Async
JG4	* 1-2	CPU clock no delay
	2-3	CPU clock delay

	JCK1	JCK2	JCK3	JCK4
25M	2-3	1-2	2-3	1-2
*33M	2-3	2-3	1-2	1-2
40M	1-2	1-2	2-3	1-2
50M	1-2	2-3	1-2	1-2

CPU POWER REGULATION

Referance page 22

	5V	Changeable
JP1	3-5	1-3
	4-6	2-4

J11	3.3V
*J12	3.45V
J13	4.0V

I/O PORT ADDRESS SETTING

I/O port address select normal don't change it except there is the conflict.
Recommand : Default

Jumper setting also can set by BIOS (chipset features setup), I/O chipset have to be W83787

J2	1	2	RS232I
	Low	Low	COM4(2E8H)
	Low	High	COM1(3F8H,Default)
	High	Low	COM3(3E8H)
	High	High	Disable
	3	4	RS232II
	Low	Low	COM3(3E8H)
	Low	High	COM2(2F8H,Default)
	High	Low	COM4(2E8H)
	High	High	Disable
	5	6	Printer
	Low	Low	LPT1(3BCH)
	Low	High	LPT3(378H)(Default)
	High	Low	LPT2(278H)
	High	High	Disable
	7	8	ISA IDE / Floppy
	Low	High	Enable(Default)
	High	Hight	Disable

RS232 & LPT IRQ SELECT

I/O IRQ selector, Default by factory don't change by user except device there is IRQ conflict, please referance manual for any change.
Recommand : Default

J8	1-2	3-4	5-6	RS232I
	Short	Open	Open	IRQ4(Default)
	Open	Short	Open	IRQ3
	Open	Open	Short	IRQ5
	7-8	9-10	11-12	RS232II
	Short	Open	Open	IRQ3(Default)
	Open	Short	Open	IRQ4
	Open	Open	Short	IRQ5
	13-14	15-16		Printer
	Short	Open		IRQ7(Default)
	Open	Short		IRQ5

VL BUS TIMING

VESA Local Bus clock select depend on cpu clock
Recommand : Default set is CPU 33 MHz.

		CPU_CLK>33MHZ	CPU_CLK<=33MHZ
JV1	VL_TIMING	* 2-3	1-2
		0-WAIT-STATE	1-WAIT-STATE
JV2	VL_WRITE	2-3	* 1-2

CMOS DATA

System CMOS configuration setup
Recommand : Don't remove the 1-2 jump except "ERASE DATA"

JCMS1	* 1-2	Keep CMOS data
	2-3	Erase CMOS data

FLUSH SIGNAL

CPU flush signal from chip or external TTL circuit, The system chip set support flush signal but not ready
Recommand : Flush from TTL

JF1 * 1-2 Flush from TTL
2-3 From 496 Chip

HIGH ADDRESS DECOCTING

Some VGA card driver use Linner address, normally use system high address to mappig the address.
Recommand : Normal 1-2 short

JT6 * 1-2 CA26=A26
2-3 CA26=A31

Solves some VESA VGA card (such as Diamond viper VESA VGA) use address A27 to A31

HARD DISK CONNECTOR

Hard disk cable connect

CN7 HDD2
CN8 HDD1

GAME PORT CONNECTOR

Game cable connect

CN12

PRINTER OUTPUT SELECT

Printer DATA path direction. If the system use parallel port for specifical DATA communication can set this jump for bidirection.

J3 1-2 DMA Chennal 1 request, 5-6 DMA chennal acknowledge
3-4 DMA Chennal 3 request, 7-8 DMA chennal acknowledge
If system use ECP/EPP device. Need to select DMA chennal which will be used.
Ex: use DMA chennal 1 for ECP/EPP DATA transfer have to 1-2, 5-6 short

* 9-10 On printer output only(Default)
Off printer bidirection

IOCHRDY SETTING

I/O timing control, some device I/O speed cannot meet system speed sometime has DATA lose, or HDD can not find by BIOS auto detect HDD, try to Enable the signal.
Recommand : Normal open

J6 Short Enable
Open Disable(Default)

BALE SETTING

Bus address latch enable, sometime if system run on high speed, the I/O have to latch the address ex. CPU CLK > 40MHz
Recommand : Normal open

J7 Short Enable
Open Disable(Default)

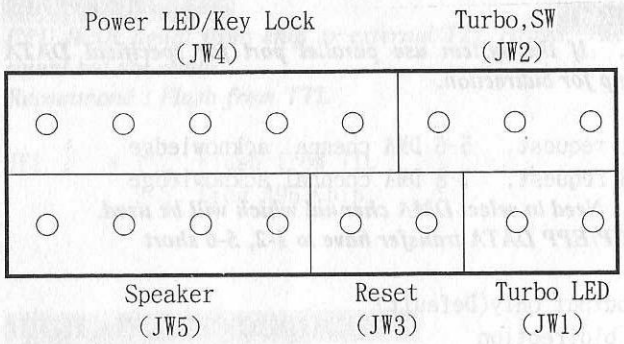
ISA/VL IDE ACTIVITY LED CONNECTOR

Direct HDD DATA transfer status

CN5 1-2 VL IDE LED
3-4 ISA IDE LED

GAME PORT

JR2 Open Disable
* Short Enable(Default)



TURBO ON LED

When LED on, direct the system run on turbo speed

JW1 1-2 TB_LED

TURBO SWITCH

Select system CPU clock turbo or deturbo

JW2 1-2 On Deturbo Mode
1-2 Open Turbo Mode

SYSTEM RESET SWITCH

System Re-start

JW3 1-2 On Rest
1-2 Open normal

KEYBOARD LOCK & POWER ON LED

Direct system power status and keyboard lock

JW4 4-5 KEY_LOCK
1-3 Power on LED

SPEAKER CONNECTOR

JW5 1-4 Speak

BATTERY

On board battery for keep CMOS setup

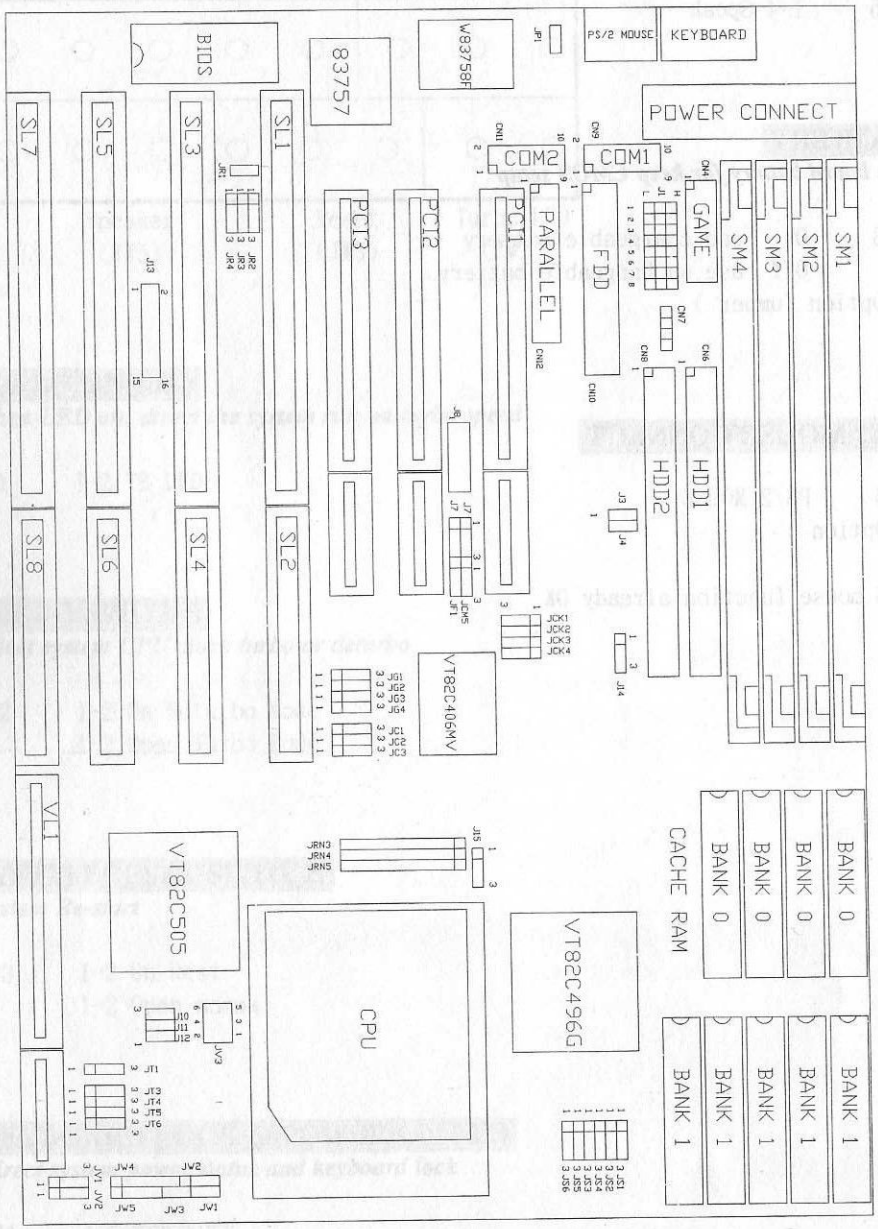
JP3 On use chargeable battery
* Off use unchangeable battery
(Option Jumper)

PS/2 MOUSE CONNECT

CN3 PS/2 MOUSE
(Option)

P/S mouse function already OK

2-3 J437 BOARD LAYOUT



2-4 J437 JUMPER SETTING

CPU TYPE SELECT

Referance page 22

JT4	* 1-2	Cyrix CPU
	2-3	P24D CPU
JT6	* 1-2	others CPU
JRN3		AMD CPU
JRN4		Cyrix CPU
*JRN5		Intel CPU

	486SX/M6	486DX/DX2/DX4/M7	487SX
JC1	OFF	* 1-2	2-3
JC2	2-3	* 1-2	1-2
JC3	2-3	* 1-2	1-2

CPU CLOCK SELECT

Referance page 22

JT5	* 1-2	Cyrix CPU clock*1
	2-3	Cyrix CPU clock*2
J15	* 1-2	Other CPU for DX4-100 (AMD, Intel, P24D)
	2-3	AMD CPU clock for AMD DX2/80, AMD DX2/66
JG1	* 1-2	VL/CPU sync
	2-3	VL/CPU async
JG4	* 1-2	CPU clock no delay
	2-3	CPU clock delay
JG2	* 1-2	PCI clock = CPU clock
	2-3	PCI clock = CPU clock/2

	JCK1	JCK2	JCK3	JCK4
25M	1-2	2-3	1-2	2-3
*33M	2-3	1-2	1-2	2-3
40M	1-2	2-3	1-2	1-2
50M	2-3	1-2	1-2	1-2

JG3	1-2	PCI slot3 clock no delay
	* 2-3	PCI slot3 clock delay

CPU POWER REGULATION

Referance page 22

	5V	Changeable
JV3	3-5 4-6	1-3 2-4

J10 3.3V
J11 * 3.45V
J12 4.0V

I/O PORT ADDRESS SETTING

I/O port address select normal don't change it except there is the conflict.
Recommand : Default

Jumper setting also can set by BIOS (chipset features setup) I/O chipset have to be W83787

J1	1	2	RS232I
	Low	Low	COM4(2E8H)
	Low	High	COM1(3F8H,Default)
	High	Low	COM3(3E8H)
	High	High	Disable
	3	4	RS232II
	Low	Low	COM3(3E8H)
	Low	High	COM2(2F8H,Default)
	High	Low	COM4(2E8H)
	High	High	Disable
	5	6	Printer
	Low	Low	LPT1(3BCH)
	Low	High	LPT3(378H)(Default)
	High	Low	LPT2(278H)
	High	High	Disable
	7	8	ISA IDE / Floppy
	Low	Low	Enable(Default)
	High	High	Disable

RS232 & LPT IRQ SELECT

I/O IRQ selector, Default by factory don't change by user except device there is IRQ conflict, please referance manual for any change.
Recommand : Default

J13	1-2	3-4	5-6	RS232I
	Short	Open	Open	IRQ4(Default)
	Open	Short	Open	IRQ3
	Open	Open	Short	IRQ5
	7-8	9-10	11-12	RS232II
	Short	Open	Open	IRQ3(Default)
	Open	Short	Open	IRQ4
	Open	Open	Short	IRQ5
	13-14	15-16		Printer
	Short	Open		IRQ7(Default)
	Open	Short		IRQ5

PCI INTERRUPT

PCI interrup select, direct set by BIOS don't change the jump.
Recommand : 1-2 short

PCI IRQ10 connect to ISA IRQ10 or ISA IRQ14
JT1 * 1-2 PCI IRQ10 connect to ISA IRQ10
2-3 PCI IRQ10 connect to ISA IRQ14

VL/BUS TIMING

VESA Local Bus clock select depend on cpu clock
Recommand : Default set is CPU 33 MHz.

		CPU_CLK>33MHZ	CPU_CLK<=33MHZ
JV1	VL_TIMING	* 2-3	1-2
		0-WAIT-STATE	1-WAIT-STATE
JV2	VL_WRITE	2-3	* 1-2

CMOS DATA

System CMOS configuration setup
Recommand : Don't remove the 1-2 jump except "ERASE DATA"

JCMS1 * 1-2 Keep CMOS data
2-3 Erase CMOS data

FLUSH SIGNAL

CPU flush signal from chip or external TTL circuit, The system chip set support flush signal but not ready
Recommand : Flush from TTL

JF1 * 1-2 Flush from TTL
2-3 Flush from 496 Chip

HIGH ADDRESS DECOCTING

Some VGA card driver use Linner address, normally use system high address to mappig the address.
Recommand : Normal 1-2 short

JT3 * 1-2 CA26=A26
2-3 CA26=A31

Solves some VESA VGA card (such as Diamond viper VESA VGA) use address A27 to A31.

HARD DISK CONNECTOR

Hard disk cable connect

CN6 HDD1
CN8 HDD2

GAME PORT CONNECTOR

Game cable connect

CN4

PRINTER OUTPUT SELECT

Printer DATA path direction. If the system use parallel port for specifical DATA communication can set this jump for bidirection.

J8 1-2 DMA Chennal 1 request, 5-6 DMA chennal acknowledge
3-4 DMA Chennal 3 request, 7-8 DMA chennal acknowledge
If system use ECP/EPP device. Need to select DMA chennal which will be used.
Ex: use DMA chennal 1 for ECP/EPP DATA transfer have to 1-2, 5-6 short

* 9-10 On printer output only(Default)
Off printer bidirection

IOCHRDY SETTING

I/O timing control, some device I/O speed cannot meet system speed sometime has DATA lose, or HDD can not find by BIOS auto detect HDD, try to Enable signal.
Recommand : Normal open

J3 Short Enable
* Open Disable(Default)

BALE SETTING

Bus address latch enable, sometime if system run on high speed, the I/O have to latch the address ex. CPU CLK > 40MHz
Recommand : Normal open

J4 Short Enable
* Open Disable(Default)

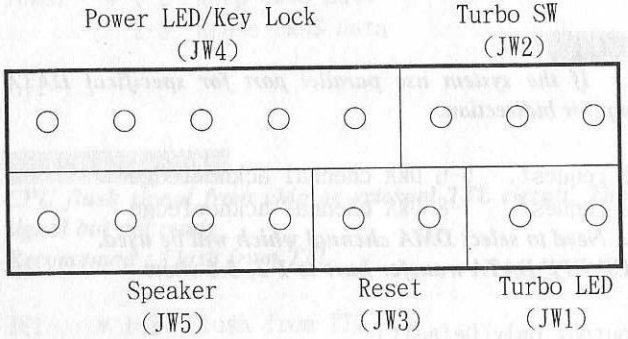
ISA/VL IDE ACTIVITY LED CONNECTOR

Direct HDD DATA transfer status

CN7 1-2 VL IDE LED
3-4 ISA IDE LED

GAME PORT

JR1 Open Disable
* Short Enable(Default)



TURBO ON LED

When LED on, direct the system run on turbo speed

JW1 1-2 TB_LED

TURBO SWITCH

Select system CPU clock turbo or deturbo

JW2 1-2 On Deturbo Mode
1-2 Open Turbo Mode

SYSTEM RESET SWITCH

System Re-start

JW3 1-2 On Rest
1-2 Open normal

KEYBOARD LOCK & POWER ON LED

Direct system power status and keyboard lock

JW4 4-5 KEY_LOCK
1-3 Power on LED

SPEAKER CONNECTOR

JW5 1-4 Speak

BATTERY

On board battery for keep CMOS setup

JP1 * On use chargeable battery
Off use un-chargeable battery

PS/2 MOUSE CONNECT

CN3 PS/2 MOUSE
(OPTION)

P/S mouse function already OK

2-5 Quick FOR CPU Installation J435 & J437

(J435)

CPU type select			CPU Voltage		CPU CLK D/T		CPU CLK			
	JRN3, JRN4, JRN5	JC1, JC2, JC3	JP1	J11, J12, J13	JT4	J14	JCK1, JCK2, JCK3, JCK4			MHz
Intel DX/33, DX2/66 487SX, ODP/P24T SX DX4/100	JRN3 Install JRN4,5 no Install	1-2 1-2 1-2 2-3 1-2 1-2 OFF 2-3 2-3 1-2 1-2 1-2	5V 5V 5V 3.3V	3-5, 4-6 OP OP OP 3-5, 4-6 OP OP OP 3-5, 4-6 OP OP OP 1-3, 2-4 ON OP OP	1-2 1-2 1-2 1-2	2-3 2-3 2-3 1-2	2-3 2-3 1-2 1-2 2-3 1-2 2-3 1-2 2-3 1-2 2-3 1-2 2-3 2-3 1-2 1-2			33 25 25 33
AMD DX2/66, DX2/80 DX4/100	JRN5 Install JRN3,4 no Install	1-2 1-2 1-2 1-2 1-2 1-2	3.45V 3.45V	1-3, 2-4 OP ON OP 1-3, 2-4 OP ON OP	1-2 1-2	2-3 1-2	2-3 2-3 1-2 1-2 1-2 1-2 2-3 1-2 2-3 2-3 1-2 1-2			33 40 33
Cyrix DX2/V66 DX2/V80	JRN4 Install JRN3,5 no Install	1-2 1-2 1-2 1-2 1-2 1-2	3.45V 4.0V	1-3, 2-4 OP ON OP 1-3, 2-4 OP OP ON	2-3 2-3	1-2 1-2	2-3 2-3 1-2 1-2 1-2 1-2 2-3 1-2			33 40

(J437)

CPU type select			CPU Voltage		CPU CLK D/T		CPU CLK			
	JRN3, JRN4, JRN5	JC1, JC2, JC3	JV3	J10, J11, J12	JT5	J15	JCK1, JCK2, JCK3, JCK4			MHz
Intel DX/33, DX2/66 487SX, ODP/P24T SX DX4/100	JRN5 Install JRN3,4 no Install	1-2 1-2 1-2 2-3 1-2 1-2 OFF 2-3 2-3 1-2 1-2 1-2	5V 5V 5V 3.3V	3-5, 4-6 OP OP OP 3-5, 4-6 OP OP OP 3-5, 4-6 OP OP OP 1-3, 2-4 ON OP OP	1-2 1-2 1-2 1-2	2-3 2-3 2-3 1-2	2-3 1-2 1-2 2-3 1-2 2-3 1-2 2-3 1-2 2-3 1-2 2-3 2-3 1-2 1-2 2-3			33 25 25 33
AMD DX2/66, DX2/80 DX4/100	JRN3 Install JRN4,5 no Install	1-2 1-2 1-2 1-2 1-2 1-2	3.45V 3.45V	1-3, 2-4 OP ON OP 1-3, 2-4 OP ON OP	1-2 1-2	2-3 1-2	2-3 1-2 1-2 2-3 1-2 2-3 1-2 1-2 2-3 1-2 1-2 2-3			33 40 33
Cyrix DX2/V66 DX2/V80	JRN4 Install JRN3,5 no Install	1-2 1-2 1-2 1-2 1-2 1-2	3.45V 4.0V	1-3, 2-4 OP ON OP 1-3, 2-4 OP OP ON	2-3 2-3	1-2 1-2	2-3 1-2 1-2 2-3 1-2 2-3 1-2 1-2			33 40

CHAPTER 3

SYSTEM I/O ADDRESS MAP

Other than the two 82C37A compatible DMA controllers, two 82C59A compatible interrupt controllers, one 82C54 compatible counter/timer, the main board also includes the BIOS EPROM and VT82C406MV interface and the port B logic. Table 5 summarizes the I/O address map for the ISA system. I/O accesses are always run as ISA bus cycles, but the data steering depends on whether the I/O location is on-chip, in the VT82C406MV or in the expansion ISA bus.

Address	Device	Location
00-0Fh	82C37A#1	on-chip
10h-1Fh	not used	
20h-3Fh	823C59A#1	on-chip
40h-43h	82C54	on-chip
44h-5Fh	not used	
60h	keyboard controller	VT82C406MV
61h	Port B	on-chip
62h-63h	unused	
64h	keyboard controller	VT82C406MV
65h-6Fh	not used	
70h(bit 7)	NMI enable	on-chip
70h-71h	CMOS, real time clock	VT82C406MV
80h-8Fh	DMA page register	on-chip
90h-91h	not used	
92h	Port A	on-chip
93h-9Fh	not used	
A0h-A3h	82C59A#2	on-chip
A4h-A7h	not used	
A8h-A9h	configuration register	on-chip
AAh-BFh	not used	
C0h-DFh	82C37A#2	on-chip
E0h-EFh	not used	
F0h	co-proc. busy clear	on-chip
F1h	co-proc. reset	on-chip
F2h-FFh	not used	
100h-1EFh	General I/O location	ISA bus
1F8h-3F5h	General I/O location	ISA bus
3F6h-3F7h	IDE control block register	on-chip
3F8h-FFFFh	General I/O location	ISA bus

Table 5. I/O Address Map

CHAPTER 4

SOFTWARE INSTALLATION (ON BOARD IDE)

4-1 SOFTWARE SUPPORT LIST

-DOS
-NETWARE
-NT
-OS/2
-UNIX
-WINDOWS

4-2 IDE DRIVER INSTALLATION

Please reference read me for detail driver setup.

4-3 REMARK

1. Before install IDE driver, please make sure IRQ15 no occupied.
2. If use normal type CPU without SMM function, please Disable power manager function when install IDE driver.
3. If use S series CPU (with SMM function), you can Enable power manager function when install IDE driver.

CHAPTER 5

5-1 AWARD BIOS SETUP GUIDE

J435,J437 mainboards are equipped with the BIOS for VT82C496 & VT82C505 & VT82C406 from Award Software Inc. This page briefly explains the function of a BIOS in managing the special features of you system. The following pages describe how to use the BIOS for J435,J437 mainboards Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drive and memory.

The operating system relies on a BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS Enable you to make basic changes to your system's hardware without having to write a new operating system.

The SETUP program lets you specify your system's configuration of diskette drivers, hard disk drivers, video display, memory, date and time, and to make setting in the J437 VIP Green PC main board. The SETUP program can only be accessed when the main board has been installed in your system and all necessary power, drive and display connections have been made. When you turn on your computer, the system will run a memory check, and you can see it counting through the memory on your screen. The following display will also appear on your screen:

Press <Del> to enter SETUP

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at bottom of the number keypad) to access the setup program. In a moment, the main menu of the Award SETUP program will appear on the screen:

ROM PCI/ISA BIOS (2A4L6J11)
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	SAVE & EXIT SETUP
PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC : QUIT	↑ ↓ →← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color

Time, Date, Hard Disk Type.....

You may use the cursor up/down keys to highlight the individual menu items. As you highlight each item, a brief description of that item's function appears in the lower window. If you have a color monitor you can use the Shift F2 keys to scroll through the various color combinations available.

5-2 STANDARD CMOS SETUP

The first item in the main menu is the STANDARD CMOS SETUP You must run this part of the setup program in order to correctly setup your hardware configuration. Highlight STANDARD CMOS SETUP and press <ENTER> A message will appear on your screen as shown below:

ROM PCI/ISA BIOS (2A4L6J11)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Thu, Feb, 9, 1995
Time (hh:mm:ss) : 22 : 5 : 40

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: None	0	0	0	0	0	0	-----
Primary Slave	: None	0	0	0	0	0	0	-----
Secondary Master	: None	0	0	0	0	0	0	-----
Secondary Slave	: None	0	0	0	0	0	0	-----

Drive A : 1.2M , 5.25 in.
Drive B : None

Video : EGA/VGA
Halt On : All Errors

Base Memory :	640K
Extended Memory :	7168K
Other Memory :	384K
Total Memory :	8192K

Esc : Quit	↑ ↓ →← : Select Item	Pu/Pd/+/- : Modify
F1 : Help	(Shift)F2: Change Color	

In the above table the base memory size and the extended memory size are displayed. This is automatically read from your systems, and you do not need to set these parameters. The screen shows a calendar. The week display will depend on the date set in your system clock and one day will flashing indicating the current date. Since you have not yet set the time and date, the date displayed is probably incorrect. Information on each item is given in the left, with details of the available options for each item and examples of setting.

This option is used to configure the following options:

***Date:** Month, Date, and Year, Ranges for each value are listed below in prompt box in the lower left comer of the CMOS Setup Screen.

***Time:** Hour, Minute and Second, Uses 24 hour clock format. i.e., for PM number, add 12 to the hour. You would enter 4:30 PM as 16:30:00.

***Drive C: and Drive D:** The user can choose any of the standard hard disk types from 1 to 46 or he can choose type 47 which is the user definable type. The user must enter the hard disk parameters is he wants to choose the user - definable hard disk per driver, i.e,type 47 may be different for drive C: and for driver D: and you can choose Not Installed for SCSI hard disk. See table 3-4 for printed list of these drive types.

Type: This is the number designation for a drive with certain identification parameters.

Cyl: This is the number of cylinders found in the specified drive type.

Heads: This is the number of cylinders found in the specified drive type.

WPcom: WPcom is the read delay circuitry which takes into account the timing differences between the inner and outer edges of the surface of the disk platter. The number designates the starting cylinder of the signal.

Lzone: Lzone is the landing zone of the heads this number determines the cylinder location where the heads will normally park when the system is shut down.

Size (Capacity): This is the formatted capacity of the drive based on the following formula: (# of heads) X (# of cylinders) X (# of sects) X (512bytes/sects)

***Drive A and Drive B:** The option are 360KB 5.25 in. 1.2KB 5.25 in. 720KB 3.5 in, 1.44MB 3.5 in, 2.88MB 3.5 in and None. Not Installed could be used as an option for diskless workstations.

***Video:** Options are Monochrome, Color 40, VGA/EGA, Color 80.

Having made all the above setting according to your system configuration, press <ESC> to return to the main menu. If you do not wish to use the advanced setup options you may now save the setting you made in the STANDARD CMOS SETUP by pressing the F10 key or highlight the SAVE SETTINGS AND EXIT item in the main menu. When you save the settings, your system will reboot and these settings will be automatically implemented every time you turn your computer on.

HARD DISK ATTRIBUTES:

Type	Cylinders	Heads	V-P comp	LZone	Sect	Capacity
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	30
4	940	8	512	940	17	62
5	940	6	512	940	17	46
6	615	4	65535	615	17	20
7	642	8	256	511	17	30
8	733	5	65535	733	17	30
9	900	15	65535	901	17	112
10	820	3	65535	820	17	20
11	855	5	65535	855	17	35
12	855	7	65535	855	17	49
13	306	8	128	319	17	20
14	733	7	65535	733	17	42
15	000	0	0000	000	00	00
16	612	4	0000	663	17	20
17	977	5	300	977	17	40
18	977	7	65535	977	17	56
19	1024	7	512	1023	17	59
20	733	5	300	732	17	30
21	733	7	300	732	17	42
22	733	5	300	733	17	30
23	306	4	0000	336	17	10
24	977	5	65535	976	17	40
25	1024	9	65535	1023	17	76
26	1224	7	65535	1223	17	71
27	1224	11	65535	1223	17	111
28	1224	15	65535	1223	17	152
29	1024	8	65535	1023	17	68
30	1024	11	65535	1023	17	93
31	918	11	65535	1023	17	83
32	925	9	65535	926	17	69
33	1024	10	65535	1023	17	85
34	1024	12	65535	1023	17	102
35	1024	13	65535	1023	17	110
36	1024	14	65535	1023	17	119
37	1024	2	65535	1023	17	17
38	1024	16	65535	1023	17	136
39	918	15	65535	1023	17	114
40	820	6	65535	820	17	40
41	1024	5	65535	1023	17	42
42	1024	5	65535	1023	26	65
43	809	6	65535	852	17	40
44	809	6	65535	852	26	61
45	776	8	65535	775	33	100
46	684	16	65535	685	38	203

Award Hard Disk Type Table

5-3 BIOS FEATURES SETUP

To access the BIOS setup program, highlight BIOS FEATURES SETUP in the main menu and press <enter> A warring message will appear on your screen and you may press any key to remove this and access the BIOS Features program.

ROM PCI/ISA BIOS (2A4L6J11)
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	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C	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		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
IDE Second Channel Control	: Enabled		

Esc: Quit ↑ ↓ →←: Select Item
F1 : Help Pu/Pd/+/-:Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load BIOS Defaults

The BIOS FEATURES SETUP allows you find true certain features supported by the chipset and Award BIOS. It also includes support for shadow RAM under which the contents of he ROM BIOS can be copied into memory at boot up enhancing performance. When you change any of the setting you may recall the default settings at any time from the main menu. This is detailed later. To get help on each item, high the relevant item and press the F1 key. A windows will appear on your screen detailing he various options available for each item. A brief introduction of each of the setting in the BIOS FEATURES SETUP program is given below.

***CPU Internal Cache:** This item should always be Enable. If you system is main board Even if you have installed the external cache. If you have no external cache installed this item should be Enabled to allow use of the internal 8K cache in the 486 CPU.

***External Cache:** Enable or Disable this function according to whether you want external cache Enabled or Disabled.

***Boot Sequence:** You may define whether the system will look first at drive A: and then at drive C: when booting up or vice versa.

***Boot Up Floppy Seek:** You may Enable/Disable this item to define whether the system will look for a floppy disk drive to boot at power-on or directly to the hard disk drive.

***Boot Up NumLock Status:** Use to item to Enable/Disable the NumLock on your keyboard automatically at power-on.

***Boot Up System Speed:** Select High to configure your system in the turbo speed mode at boot up, select Low to configure your system in normal speed mode. Whichever setting your choose you will still be able to use the turbo switch to toggle between the two modes during use.

***Memory Parity Check:** Enable or Disable this item according to whether you wish the system to check the memory parity during boot up or not. If you Disable this item even if the BIOS encounters a parity error it will be ignored. We recommend that you always Enable the item in order to ensure that the memory is good each time you turn your PC on.

***Typematic Rate Setting:** Enable this item if you wish to be able to configure the characteristics of your keyboard. Typematic refers to the way in which characters are entered repeatedly if a key is held down. For example, if you press and hold down the "A" key the letter "a" will repeatedly appear on your screen on your screen on your screen until you release the key. This item is disable by default.

***Typematic Rate (Chars-Sec):** You can use this item to define the typematic rate delay of your keyboard. i.e. the rate at which characters will be repeated when a key held down.

5-4 CHIPSET FEATURES SETUP

ROM PCI/ISA BIOS (2A4L6J11)
CMOS SETUP UTILITY
CHIPSET FEATURES SETUP

Decoupled Refresh	: Enabled	Onboard local bus IDE	: Enabled
Video BIOS Cacheable	: Enabled	IDE HDD Block Mode	: Enabled
System BIOS Cacheable	: Enabled	IDE 32-bit Transfer Mode	: Enabled
		IDE Primary Master PIO	: Auto
External Cache Scheme	: Write Back	IDE Primary Slave PIO	: Auto
Combine Alter & Tag Bits	: Disabled	2nd IDE Controller	: Enabled
CHRDY for ISA Master	: Disabled	Onboard Fdd Controller	: Enabled
Memory Hole At 15MB Addr.	: Disabled	Onboard Serial Port 1	: COM1 at 3F8h
Cache Timing Control	: Normal	Onboard Serial Port 2	: COM2 at 2F8h
DRAM Timing Control	: Normal	Onboard Parallel Port	: 378H
Fast DRAM	: Disabled	Onboard Parallel Mode	: Normal
Burst Write	: Disabled		
CPU Write Back Cache	: Disabled		
486 Streaming	: Disabled	Esc: Quit	↑ ↓ →← : Select Item
Set Turbo Pin Function	: Turbo	F1 : Help	Pu/Pd/+/-:Modify
Set Mouse Lock	: Disabled	F5 : Old Values (Shift)F2 : Color	
		F6 : Load BIOS Defaults	
		F7 : Load BIOS Defaults	

***Decuple Refresh:** Reduce CPU loading. When CPU refresh DRAM, the system performance will be going down, if Enable Decuple Refresh, when DRAM refresh, the system don't hold.

Recommand : **Enable**

***Relocate 256K/384K:** If the system install VGA or install add on card, this segment don't relocate.

Recommand : **Enable**

***Video/System BIOS Cacheable:** Enable it, that improve system performance.

Recommand : **Enable**

***External Cache Scheme:** Write back/through if set write through system can get more performance.

Recommand : **Write back**

***Combine Alter & Tag:** Cache schem for improve performance.

Recommand : **Disable**

***Memory Holt At 15MB ADDR.:** Separate memory address space, Disable it normally.

Recommand : **Disable**, for some VGA card, need share on board DRAM.

***Cache/DRAM Timing Control:** Depend on system installation condition. For Example: If the system use fast DRAM and fast SRAM, modify the timing can get more better performance. If CPU use up 40MHZ CPU frequency, please setup cache time control medium.

Recommand : **Cache/DRAM Normal**, (If use DX4 CPU can set cache time to fast)

***Fast DRAM:** If system use fast DRAM Enable this register, get more performance.

Recommand : **Disable**, If the system use DRAM time < 60ns

***Burst Write:**

Recommand : **Disable**, If the CPU can support burse write (Ex. DX4)

***CPU Write Back Cache:** Cyrix CPU only.

Recommand : **Disable**, (If the CPU is Cyrix, can enable, improve CPU performance)

***486 Streaming:** Disable (Default)

Recommand : **Disable**, (If you use Intel P24T CPU enable it)

***Set Turbo Pin Function:** This pin is a Multi-Function pin. set to Turbo.

Recommand : **turbo**, If you want to use suspend switch, change to suspend

***Set Mouse Lock:** Enbale (Default)

Recommand : **Enable**, If the system don't use PS/2 mouse can release IRQ12 for other device

***Onboard Local Bus IDE:** If use onboard IDE, Enable it, please.

Recommand : Use on board IDE please **Enable**

REMARK: If use onboard IDE, please follow this step.

1. Onboard Local bus IDE Enable.(CMOS features setup)
2. Save & exit setup.
3. IDE HDD auto detection.
4. Save & exit setup

5-5 POWER MANAGEMENT SETUP

Selecting Power management Setup on the Main menu displays an information windows as following:

ROM PCI/ISA BIOS (2A4L6J11)
CMOS SETUP UTILITY
POWER MANAGEMENT SETUP

Power Management	: Disabled	IRQ3 Activity	: Primary
Doze Timer	: 32 sec	IRQ4 Activity	: Primary
Sleep Time	: 2 min	IRQ5 Activity	: Primary
Sleep Mode	: Sleep	IRQ7 Activity	: Primary
		IRQ8 Activity	: Primary
HDD Power Management	: Disabled	IRQ10 Activity	: Primary
VGA Activity Wakeup	: Disabled	IRQ11 Activity	: Primary
		IRQ12 Activity	: Primary
I/O Activity	: Disabled		
		Esc: Quit	↑ ↓ →← : Select Item
		F1 : Help	Pu/Pd/+/-:Modify
		F5 : Old Values (Shift)F2	: Color
		F6 : Load BIOS Defaults	
		F7 : Load BIOS Defaults	

VGA access event:
*IRQ1 (Keyboard)
*IRQ3 (COM2)
*IRQ4 (COM1)
*IRQ5 (Printer LPT2)
*IRQ6 (Floppy Disk)
*IRQ7 (Printer LPT1)
*IRQ9 (Redirect)
*IRQ10 (Reserved)
*IRQ11 (Reserved)
*IRQ12 (PS/2 mouse)
*IRQ14 (Hard Disk) (IDE 1 for J435&J437 Version)
*IRQ15 (Reserved) (IDE 2 for J435&J437 Version)

Caution: When the system(J435,J437) use secondary IDE, green function have to disable.

5-6 PCI CONFIGURATION SETUP

ROM PCI/ISA BIOS (2A4L6J11)
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

Slot 1 Using INT#	: AUTO	CPU to PCI WRITE BUFFER	: Enabled
Slot 2 Using INT#	: AUTO	PCI Master WRITE BUFFER	: Disabled
Slot 3 Using INT#	: AUTO	PCI Master PRE-FCH BUFFER	: Enabled
		PCI Master BURST READ	: Enabled
1st Available IRQ	: 10	PCI Dynamic Decoding	: Enabled
2nd Available IRQ	: 11	VL Bus 0-Wait State Write	: Disabled
3rd Available IRQ	: 9	FRAME Generation	: Normal
PCI IRQ Actived by	: Level	Local Memory Detect Point	: Fast
PCI IDE IRQ Map to	: PCI-AUTO	PCI Burst	: Enabled
Primary IDE INT#	: A	C2P Fast Back-to-Back	: Enabled
Secondary IDE INT#	: B	PCI Master 1 WS Write	: Disabled
		Esc: Quit	↑ ↓ →← : Select Item
		F1 : Help	Pu/Pd/+/-:Modify
		F5 : Old Values (Shift)F2	: Color
		F6 : Load BIOS Defaults	
		F7 : Load BIOS Defaults	

PCI IRQ AND TRIGGER LEVEL SETUP

When system install PCI device in PCI slot,
1. please check PCI slot number, SLOT1, SLOT2, SLOT3.
2. Select slot using INTA OR INTB OR INTC OR INTD, auto, (Default:auto)
3. Select PIRQ using which one IRQ (sequential 1st→2nd→3rd)
4. Select trigger level (edge or level) (Default:level)

NOTE: If use PCI VGA don't care which one slot and IRQ.

CPU TO PCI WRITE BUFFER

The buffers will improve significantly the system performance because the cycle to PCI slave can be terminated immediately after one or two CPU wait states.

Recommand : **Enable**