5AX

USER'S MANUAL

❇ **Support Intel Pentium, MMX, Cyrix/IBM, 6x86MX, MII, AMD K6, K6-2**
  K6-2+, K6-III , IDT Winchip 2, IDT Winchip 3, RISE MP6 CPUs.

❇ **Support 3 Steps ACPI LED.**

❇ **Support ATA 66 , UDMA 33 Hard Drive .**

❇ **Support Fully AGP 1.0 Specification.**

❇ **Support switching mode Voltage regulator on Board (1.3V~3.5V) .**

❇ **Support 66/75/83/95 MHz and 100MHz.**

❇ **Support Modem Ring On (COM A,COM B).**

❇ **Support Wake on Lan. (Your ATX power supply must support**
  larger than 720 mA 5V Stand-By current).

❇ **Support Keyboard Power ON/OFF function. (Your ATX power**
  supply supports larger than 300 mA 5V Stand-By current)
  (Dependent on the specification of keyboards).

❇ **Thermal Protection**

Pentium â **Processor PCI - ISA BUS MAINBOARD**
REV. 5.2 Second Edition
R-52-02-091210

The author assumes no responsibility for any errors or omissions which may appear in this document nor does it make a commitment to update the information contained herein.

Dec. 10, 1999 Taipei, Taiwan

I. CPU Jumper Setting Table:

SW: CPU INT./ EXT. FREQ. RATIO

O: ON   X: OFF

SW	4	5	6	7	8	SW	4	5	6	7	8
1.3V	X	X	X	X	O	2.5V	O	X	O	X	X
1.4V	X	O	X	X	O	2.6V	X	O	O	X	X
1.5V	X	X	O	X	O	2.7V	O	O	O	X	X
1.6V	X	O	O	X	O	2.8V	X	X	X	O	X
1.7V	X	X	X	O	O	2.9V	O	X	X	O	X
1.8V	X	O	X	O	O	3.0V	X	O	X	O	X
1.9V	X	X	O	O	O	3.1V	O	O	X	O	X
2.0V	X	O	O	O	O	3.2V	X	X	O	O	X
2.1V	O	X	X	X	X	3.3V	O	X	O	O	X
2.2V	X	O	X	X	X	3.4V	X	O	O	O	X
2.3V	O	O	X	X	X	3.5V	O	O	O	O	X
2.4V	X	X	O	X	X	---	---	---	---	---	---

CPU	AGP	JP7	JP8	JP9	JP10	CPU	AGP	JP7	JP8	JP9	JP10
66	66	2-3	2-3	2-3	1-2	110	73	1-2	1-2	1-2	2-3
75	60	1-2	2-3	2-3	2-3	115	77	1-2	2-3	1-2	1-2
75	75	2-3	1-2	2-3	1-2	120	80	1-2	2-3	1-2	2-3
83	66	1-2	2-3	2-3	1-2	125	83	2-3	1-2	1-2	1-2
95	63	1-2	1-2	2-3	2-3	130	87	2-3	1-2	1-2	2-3
100	66	1-2	1-2	2-3	1-2	135	90	2-3	2-3	1-2	1-2
105	70	1-2	1-2	1-2	1-2	140	93	2-3	2-3	1-2	2-3

SW	1	2	3
X1.5	X	X	X
X2	O	X	X
X2.5	O	O	X
X3	X	O	X
X3.5	X	X	X
X4	O	X	O
X4.5	O	O	O
X5	X	O	O
X5.5	X	X	O
X6	O	X	X

★Note: We don' t recommend you to setup your system speed to 105 , 110 , 115 ,

120 , 125 , 130 , 135 or 140 MHz because these frequencies are not the standard specifications for CPU, Chipset and most of the peripherals. Whether your system can run under 105, 110, 115,120, 125, 130, 135 or 140 MHz properly will depend on your hardware configurations: CPU, SDRAM, Cards, etc.

II. Quick Installation Guide:

O: ON   X: OFF

CPU / SW	1	2	3	4	5	6	7	8	JP7	JP8	JP9	JP10
1. Pentium[a] 133 MHz	O	X	X	O	O	O	O	X	2-3	2-3	2-3	1-2
2. Pentium[a] 166 MHz	O	O	X	O	O	O	O	X	2-3	2-3	2-3	1-2
3. Pentium[a] 200 MHz	X	O	X	O	O	O	O	X	2-3	2-3	2-3	1-2
4. Intel MMX-166MHz	O	O	X	X	X	X	O	X	2-3	2-3	2-3	1-2
5. Intel MMX-200MHz	X	O	X	X	X	X	O	X	2-3	2-3	2-3	1-2
6. Intel MMX-233MHz	X	X	X	X	X	X	O	X	2-3	2-3	2-3	1-2
7. AMD-K6/166 (2.9V)	O	O	X	O	X	X	O	X	2-3	2-3	2-3	1-2
8. AMD-K6/200 (2.9V)	X	O	X	O	X	X	O	X	2-3	2-3	2-3	1-2
9. AMD-K6/233 (3.2V)	X	X	X	X	X	O	O	X	2-3	2-3	2-3	1-2
10. AMD-K6/233 (66*3.5 2.2V)	X	X	X	X	O	X	X	X	2-3	2-3	2-3	1-2
11. AMD-K6/266 (66*4 2.2V) AMD-K6-2/266 (66*4 2.2V)	O	X	O	X	O	X	X	X	2-3	2-3	2-3	1-2
12. AMD-K6/300 (66*4.5 2.2V)	O	O	O	X	O	X	X	X	2-3	2-3	2-3	1-2
13. AMD-K6/300 (100*3 2.2V) AMD-K6-2/300 (100*3 2.2V)	X	O	X	X	O	X	X	X	1-2	1-2	2-3	1-2
14. AMD-K6-2/333 (66*5 2.2V)	X	O	O	X	O	X	X	X	2-3	2-3	2-3	1-2
15. AMD-K6-2/333 (95*3.5 2.2V)	X	X	X	X	O	X	X	X	1-2	1-2	2-3	2-3
16. AMD-K6-2/350 (100*3.5 2.2V)	X	X	X	X	O	X	X	X	1-2	1-2	2-3	1-2
17. AMD-K6-2/366 (66*5.5 2.2V)*	X	X	O	X	O	X	X	X	2-3	2-3	2-3	1-2
18. AMD-K6-2/380 (95*4 2.2V)	O	X	O	X	O	X	X	X	1-2	1-2	2-3	2-3
19. AMD-K6-2/400 (100*4 2.2V)	O	X	O	X	O	X	X	X	1-2	1-2	2-3	1-2
20. AMD-K6-2+/450 (100*4.5 2.2V)*	O	O	O	X	O	X	X	X	1-2	1-2	2-3	1-2
21. AMD-K6-2/450 (100*4.5 2.2V)	O	O	O	X	O	X	X	X	1-2	1-2	2-3	1-2
22. AMD-K6-2/450 (100*4.5 2.4V)	O	O	O	X	X	O	X	X	1-2	1-2	2-3	1-2
23. AMD-K6-2/475 (95*5 2.2V)*	X	O	O	X	O	X	X	X	1-2	1-2	2-3	2-3
24. AMD-K6-2/475 (95*5 2.4V)*	X	O	O	X	X	O	X	X	1-2	1-2	2-3	2-3
25. AMD-K6-2/500 (100*5 2.2V)*	X	O	O	X	O	X	X	X	1-2	1-2	2-3	1-2

26. AMD-K6-2/500 (100*5 2.4V)*	X	O	O	X	X	O	X	X	1-2	1-2	2-3	1-2
27. AMD-K6-2/550 (100*5.5 2.2V)*	X	X	O	X	O	X	X	X	1-2	1-2	2-3	1-2
28. AMD-K6-III/400 (100*4 2.2V)	O	X	O	X	O	X	X	X	1-2	1-2	2-3	1-2
29. AMD-K6-III/400 (100*4 2.4V)	O	X	O	X	X	O	X	X	1-2	1-2	2-3	1-2
30. AMD-K6-III/450 (100*4.5 2.2V)*	O	O	O	X	O	X	X	X	1-2	1-2	2-3	1-2
31. AMD-K6-III/450 (100*4.5 2.4V)*	O	O	O	X	X	O	X	X	1-2	1-2	2-3	1-2
32. AMD-K6-III/475 (95*5 2.2V)*	X	O	O	X	O	X	X	X	1-2	1-2	2-3	2-3

CPU \ SW	1	2	3	4	5	6	7	8	JP7	JP8	JP9	JP10
33. AMD-K6-III/475 (95*5 2.4V)*	X	O	O	X	X	O	X	X	1-2	1-2	2-3	2-3
34. AMD-K6-III/500 (100*5 2.2V)*	X	O	O	X	O	X	X	X	1-2	1-2	2-3	1-2
35. AMD-K6-III/500 (100*5 2.4V)*	X	O	O	X	X	O	X	X	1-2	1-2	2-3	1-2
36. AMD-K6-III/550 (100*5.5 2.2V)*	X	X	O	X	O	X	X	X	1-2	1-2	2-3	1-2
37. Cyrix/IBM 6x86MX-PR166 (66*2 2.9V)	O	X	X	O	X	X	O	X	2-3	2-3	2-3	1-2
38. Cyrix/IBM 6x86MX-PR200 (66*2.5 2.9V)	O	O	X	O	X	X	O	X	2-3	2-3	2-3	1-2
39. Cyrix/IBM 6x86MX-PR200 (75*2 2.9V)	O	X	X	O	X	X	O	X	1-2	2-3	2-3	2-3
40. Cyrix/IBM 6x86MX-PR233 (66*3 2.9V)	X	O	X	O	X	X	O	X	2-3	2-3	2-3	1-2
41. Cyrix/IBM 6x86MX-PR233 (75*2.5 2.9V)	O	O	X	O	X	X	O	X	1-2	2-3	2-3	2-3
42. Cyrix/IBM 6x86MX-PR233 (83*2 2.9V)	O	X	X	O	X	X	O	X	1-2	2-3	2-3	1-2
43. Cyrix/IBM 6x86MX-PR266 (66*3.5 2.9V)	X	X	X	O	X	X	O	X	2-3	2-3	2-3	1-2
44. Cyrix/IBM 6x86MX-PR266 (75*3 2.9V)	X	O	X	O	X	X	O	X	1-2	2-3	2-3	2-3
45. Cyrix/IBM 6x86MX-PR266 (83*2.5 2.9V)	O	O	X	O	X	X	O	X	1-2	2-3	2-3	1-2
46. Cyrix MII-300 (66*3.5 2.9V)	X	X	X	O	X	X	O	X	2-3	2-3	2-3	1-2
47. Cyrix MII-PR333 (66*4 2.9V)	O	X	O	O	X	X	O	X	2-3	2-3	2-3	1-2
48. Cyrix MII-PR333 (83*3 2.9V)	X	O	X	O	X	X	O	X	1-2	2-3	2-3	1-2
49. Cyrix MII-PR333 (75*3.5 2.9V)	X	X	X	O	X	X	O	X	1-2	2-3	2-3	2-3
50. Cyrix MII-PR366 * (100*2.5 2.9V)	O	O	X	O	X	X	O	X	1-2	1-2	2-3	1-2
51. Cyrix MII-PR400 * (100*3 2.9V)	X	X	X	O	X	X	O	X	1-2	1-2	2-3	1-2
52. IDT Winchip 2-200 (66*3 3.5V)	X	O	X	O	O	O	O	X	2-3	2-3	2-3	1-2

6

53. IDT Winchip 2-200 (100*2 3.5V)*	O	X	X	O	O	O	O	X	1-2	1-2	2-3	1-2
54. IDT Winchip 2-225 (75*3 3.5V)	X	O	X	O	O	O	O	X	1-2	2-3	2-3	2-3

CPU / SW	1	2	3	4	5	6	7	8	JP7	JP8	JP9	JP10
55. IDT Winchip 2-233 (66*3.5 3.5V)*	X	X	X	O	O	O	O	X	2-3	2-3	2-3	1-2
56. IDT Winchip 2-233 (100*2.33 3.5V)*	X	O	O	O	O	O	O	X	1-2	1-2	2-3	1-2
57. IDT Winchip 2-266 (66*4 3.5V)	O	X	O	O	O	O	O	X	2-3	2-3	2-3	1-2
58. IDT Winchip 2-266 (100*2.66 3.5V)*	X	X	O	O	O	O	O	X	1-2	1-2	2-3	1-2
59. IDT Winchip 2-300 (100*2.5 3.5V)*	O	O	X	O	O	O	O	X	1-2	1-2	2-3	1-2
60. IDT Winchip 3-266 (100*2.33 2.8V)*	X	O	O	X	X	X	O	X	1-2	1-2	2-3	1-2
61. RISE MP6-266 (100*2 2.8V)*	O	X	X	X	X	X	O	X	1-2	1-2	2-3	1-2

✶Note: If Cyrix 6x86 is being used, please check the CPU Date Code after 605.

🕯**The default setting is 100*3 at 2.2V for AMD K6/300 and AMD K6-2/300**

CPU / SW	1	2	3	4	5	6	7	8	JP7	JP8	JP9	JP10
AMD-K6/300 (100*3 2.2V) AMD-K6-2/300 (100*3 2.2V)	X	O	X	X	O	X	X	X	1-2	1-2	2-3	1-2

🕯 The settings of the processors marked with " *" above are just for your reference, these processors have not been tested yet !

☞ **The black part in the picture is the white extruding piece of the DIP switch.**

1. Pentium$^{\hat{a}}$ 133 MHz
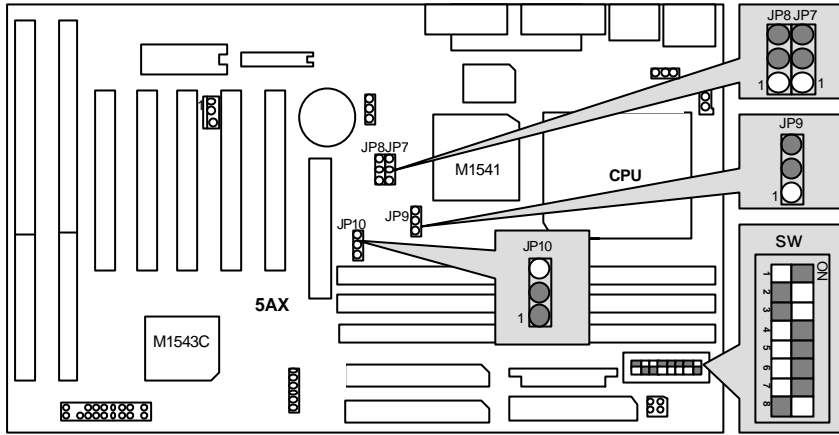
2. Pentium$^{\hat{a}}$ 166MHz
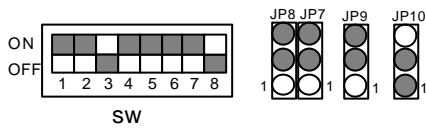
3. Pentium$^{\hat{a}}$ 200 MHz
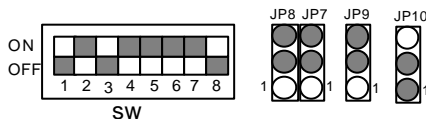
4. Intel MMX-166 MHz
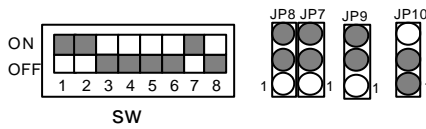
5.   Intel MMX-200 MHz
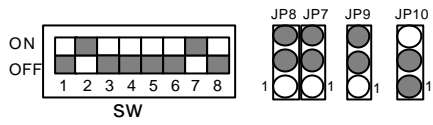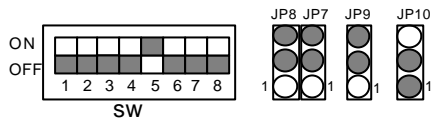

6.   Intel MMX-233 MHz
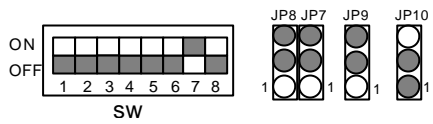
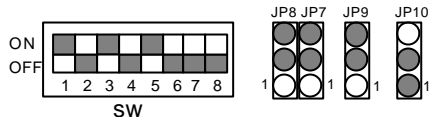7.   AMD-K6/166   (2.9V)
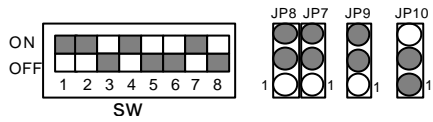
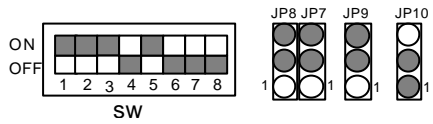8.   AMD-K6/200 (2.9V)
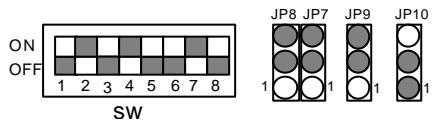
9.   AMD-K6/233 (3.2V)
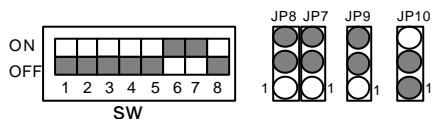
10. AMD-K6/233 (2.2V 66*3.5)
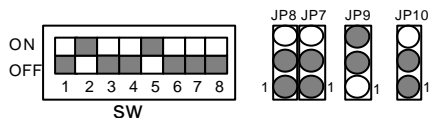
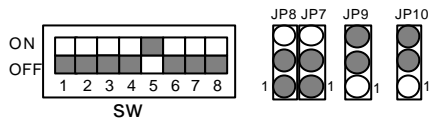11. AMD-K6/266 (2.2V 66*4); AMD-K6-2/266 (2.2V 66*4)

12. AMD-K6/300 (2.2V 66*4.5)

13. AMD-K6/300 (2.2V 100*3);AMD-K6-2/300 (2.2V 100*3)

14. AMD-K6-2/333 (2.2V 66*5)
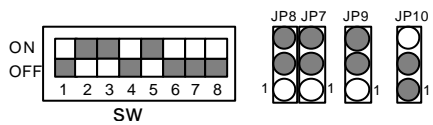
15. AMD-K6-2/333 (2.2V 95*3.5)
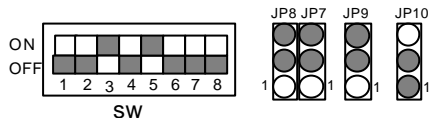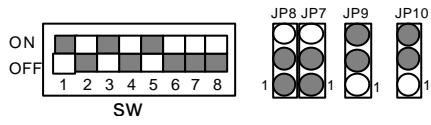
```
       JP8 JP7  JP9  JP10
ON  ┌──────────────┐
OFF └──────────────┘
     1 2 3 4 5 6 7 8
          SW
```

16. AMD-K6-2/350 (2.2V 100*3.5)

```
       JP8 JP7  JP9  JP10
ON  ┌──────────────┐
OFF └──────────────┘
     1 2 3 4 5 6 7 8
          SW
```

17. AMD-K6-2/366 (2.2V 66*5.5)

```
       JP8 JP7  JP9  JP10
ON  ┌──────────────┐
OFF └──────────────┘
     1 2 3 4 5 6 7 8
          SW
```

18. AMD-K6-2/380 (2.2V 95*4)

```
       JP8 JP7  JP9  JP10
ON  ┌──────────────┐
OFF └──────────────┘
     1 2 3 4 5 6 7 8
          SW
```

19. AMD-K6-2/400 (2.2V 100*4);

```
       JP8 JP7  JP9  JP10
ON  ┌──────────────┐
OFF └──────────────┘
     1 2 3 4 5 6 7 8
          SW
```
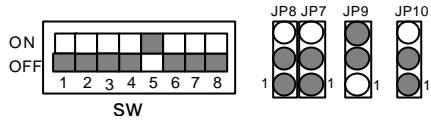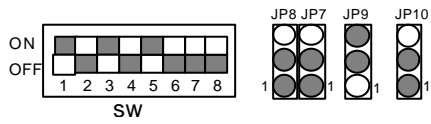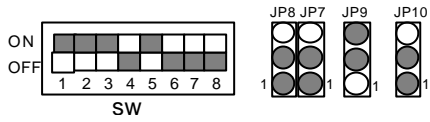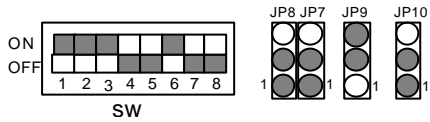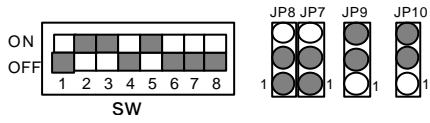
20. AMD-K6-2+/450 (2.2V 100*4.5)
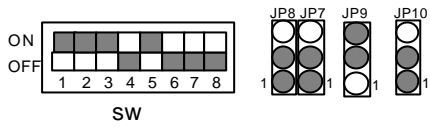
21. AMD-K6-2/450 (2.2V 100*4.5)

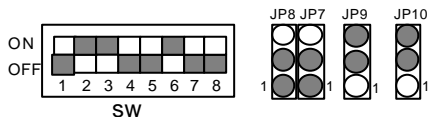22. AMD-K6-2/450 (2.4V 100*4.5)

23. AMD-K6-2/475 (2.2V 95*5)
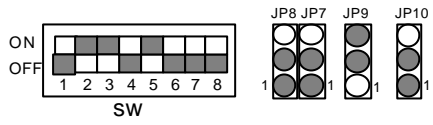
24. AMD-K6-2/475 (2.4V 95*5)

25. AMD-K6-2/500 (2.2V 100*5)

26. AMD-K6-2/500 (2.4V 100*5)

27. AMD-K6-2/550 (2.2V 100*5.5)

28. AMD-K6-III/400 (2.2V 100*4)
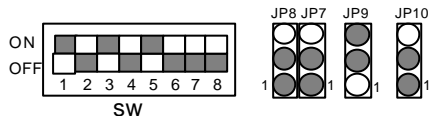
29. AMD-K6-III/400 (2.4V 100*4)
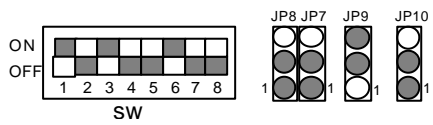
30. AMD-K6-III/450 (2.2V 100*4.5)
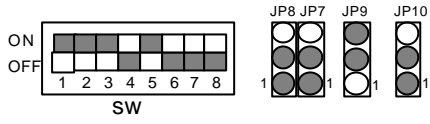
31. AMD-K6-III/450 (2.4V 100*4.5)
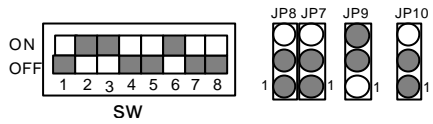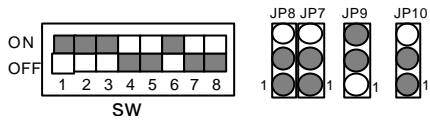

32. AMD-K6-III/475 (2.2V 95*5)
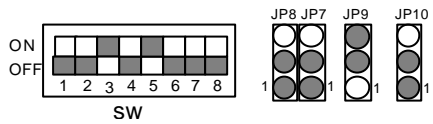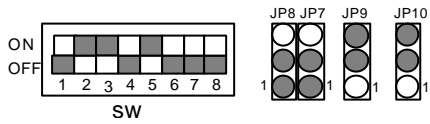

33. AMD-K6-III/475 (2.4V 95*5)
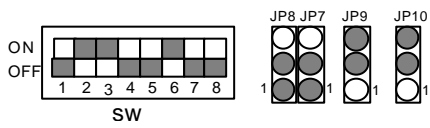
34. AMD-K6-III/500 (2.2V 100*5)
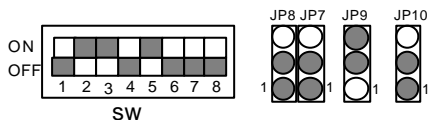
35. AMD-K6-III/500 (2.4V 100*5)
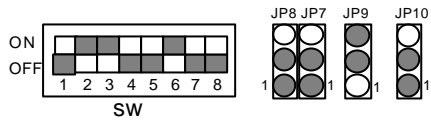
36. AMD-K6-III/550 (2.2V 100*5.5)
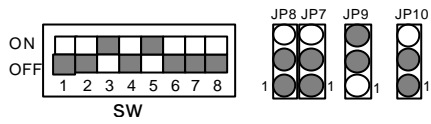
37. Cyrix / IBM 6x86MX-PR166 (2.9V 66*2)
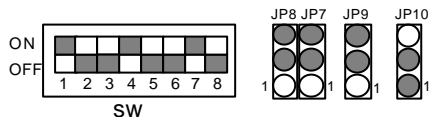
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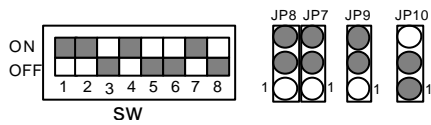
39. Cyrix / IBM 6x86MX-PR200 (2.9V 75*2)
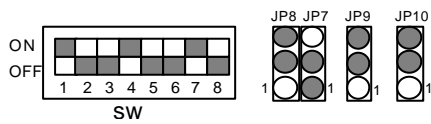
40. Cyrix / IBM 6x86MX-PR233   (2.9V 66*3)
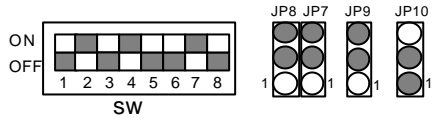
41. Cyrix / IBM 6x86MX-PR233   (2.9V 75*2.5)
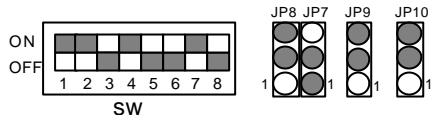
42. Cyrix / IBM 6x86MX-PR233   (2.9V 83*2)
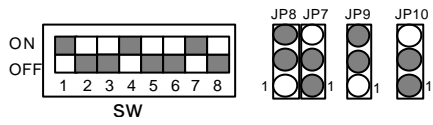
43. Cyrix / IBM 6x86MX-PR266   (2.9V 66*3.5)
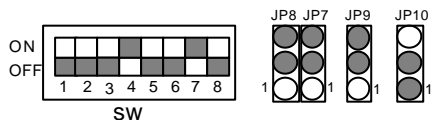
44. Cyrix / IBM 6x86MX-PR266   (2.9V 75*3)
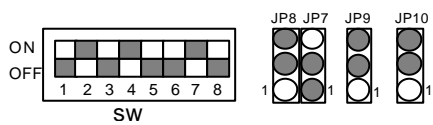
45. Cyrix / IBM 6x86MX-PR266   (2.9V 83*2.5)
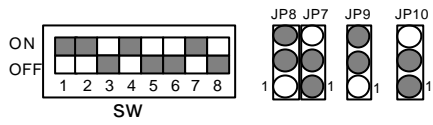
46. Cyrix MII-PR300   (2.9V 66*3.5)
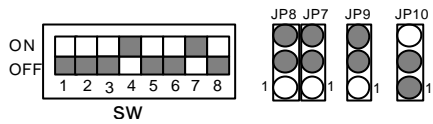
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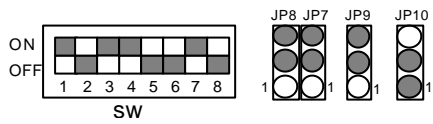
48. Cyrix MII-PR333 (2.9V 83*3)
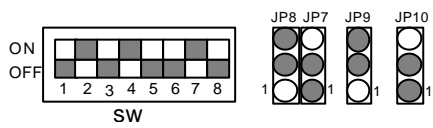
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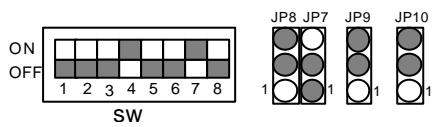
50. Cyrix MII-PR366 (2.9V 100*2.5)
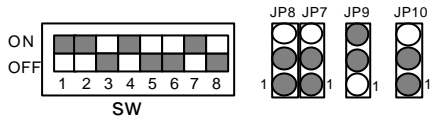
51. Cyrix MII-PR400 (2.9V 100*3)
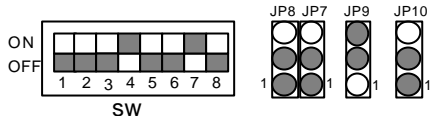
52. IDT Winchip 2-200 (3.5V 66*3)
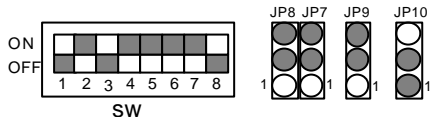
53. IDT Winchip 2-200 (3.5V 100*2)
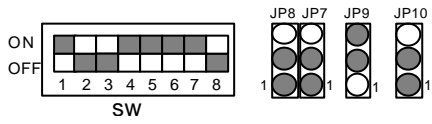
54. IDT Winchip 2-225 (3.5V 75*3)
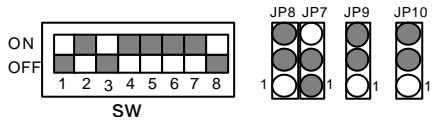
55. IDT Winchip 2-233   (3.5V 66*3.5)
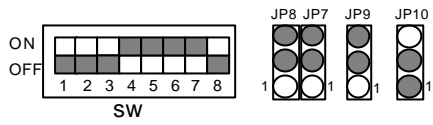
56. IDT Winchip 2-233   (3.5V 100*2.33)
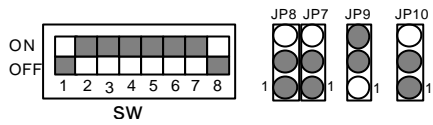
57. IDT Winchip 2-266   (3.5V 66*4)
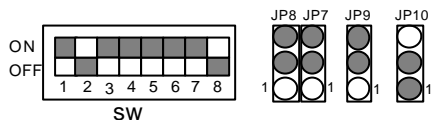
58. IDT Winchip 2-266   (3.5V 100*2.66)
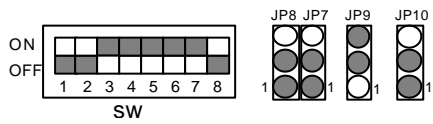
59. IDT Winchip 2-300   (3.5V 100*2.5)
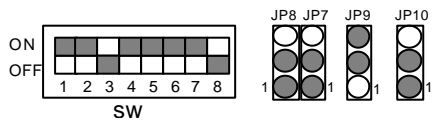
60. IDT Winchip 3-266   (2.8V 100*2.33)
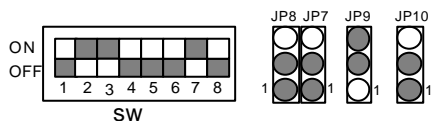
61. RISE MP6-266 (2.8V 100*2)
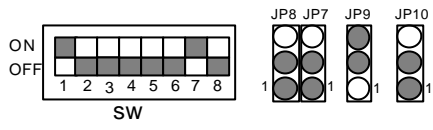
III. Quick Installation Guide of Jumper setting:

SPK : Speaker Connector

Pin No.	Function
1	VCC
2	NC
3	NC
4	Data

RES : Reset Switch

Open :
Normal operation.

Close :
For hardware reset system.
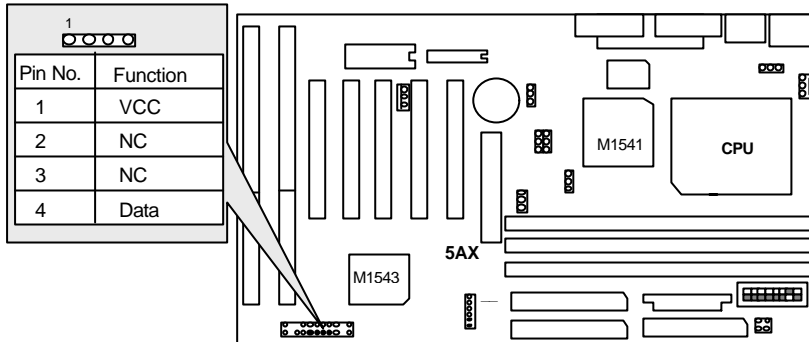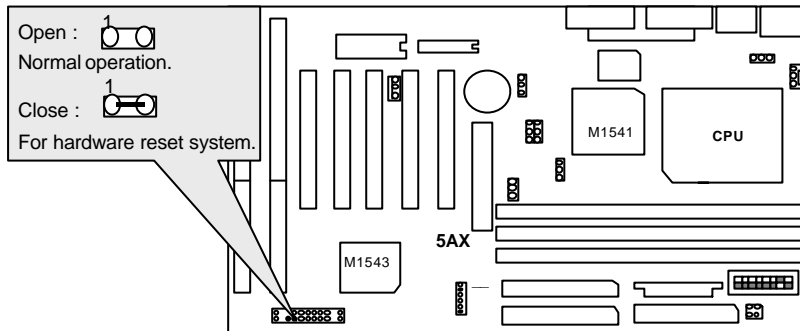
PWR LED : Power LED (As a 3 steps ACPI LED)

Pin No.	Function
1	LED anode (+).
2	LED cathode (-).
3	LED cathode (-).

HD : IDE Hard Disk Active LED

Pin No.	Function
1	LED anode (+)
2	LED cathode (-)
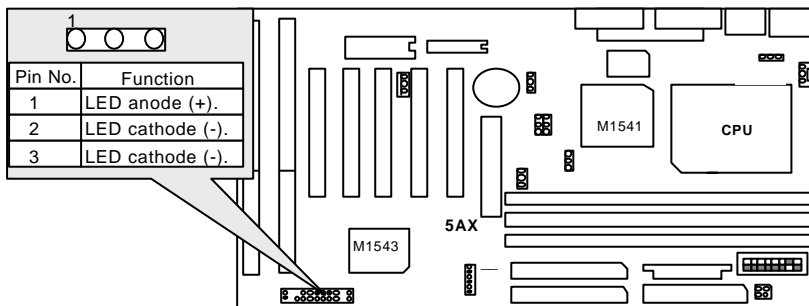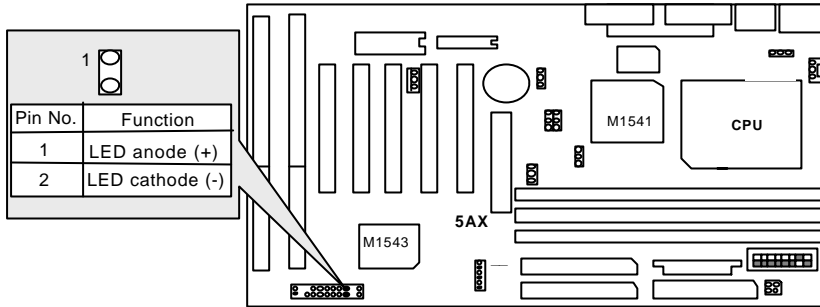
GN : Green Function Switch

Open :

Normal operation.

Close one time:

For system entering Green mode

GD : Green LED

Pin No.	Function
1	LED anode (+)
2	LED cathode (-)
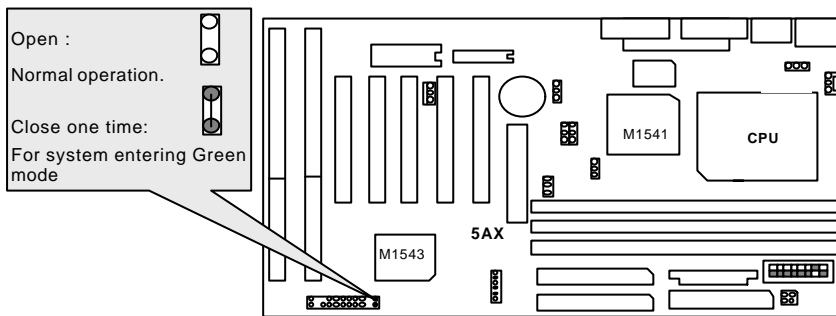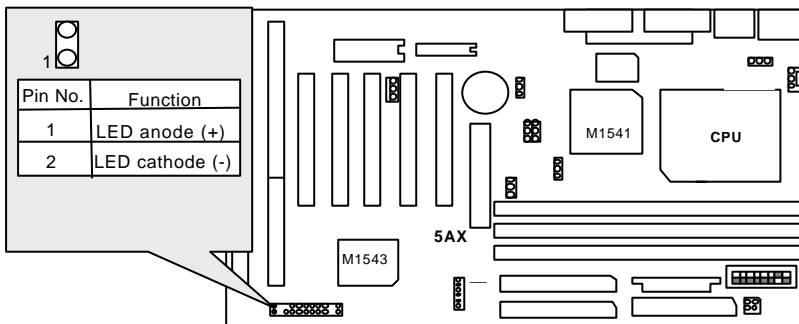
SOFT PWR : Power On/Off Switch
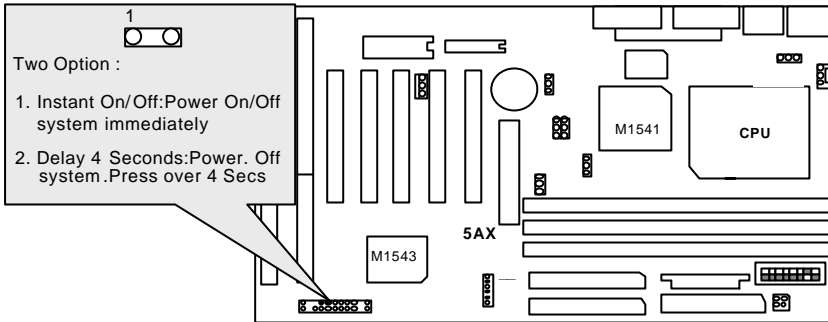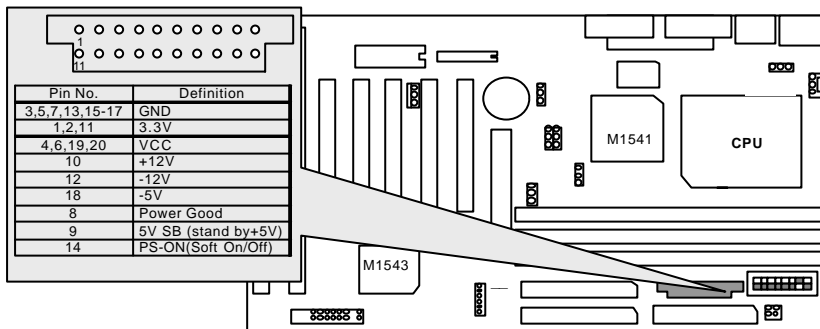
1

Two Option :

1. Instant On/Off:Power On/Off
   system immediately

2. Delay 4 Seconds:Power. Off
   system .Press over 4 Secs

ATX Power Connector

Pin No.	Definition
3,5,7,13,15-17	GND
1,2,11	3.3V
4,6,19,20	VCC
10	+12V
12	-12V
18	-5V
8	Power Good
9	5V SB (stand by+5V)
14	PS-ON(Soft On/Off)

JP1 : CPU Cooling Fan Power Connector

Pin No.	Function
1	GND
2	+12V
3	SENSE

25

JP5: Wake On Lan

Pin No.	Function
1	+5V SB
2	GND
3	Signal

LPT : LPT Port

USB: USB Port

PIN No.	Function
1	USB V0
2	USB D0-
3	USB D0+
4	GND
5	USB V1
6	USB D1-
7	USB D1+
8	GND
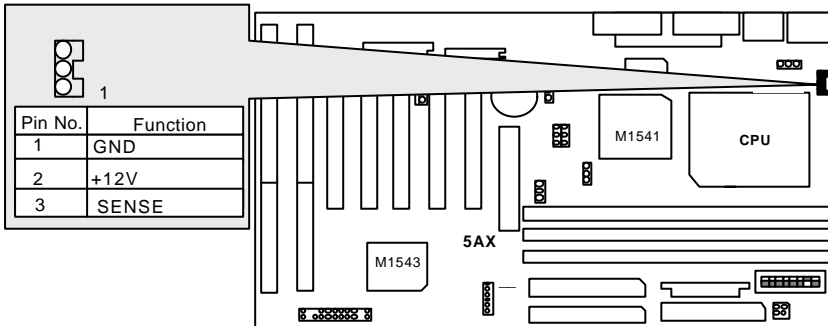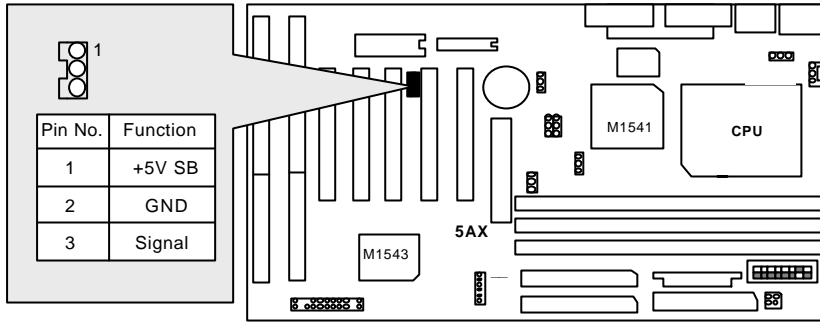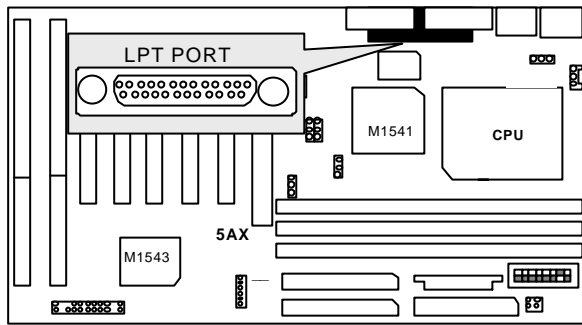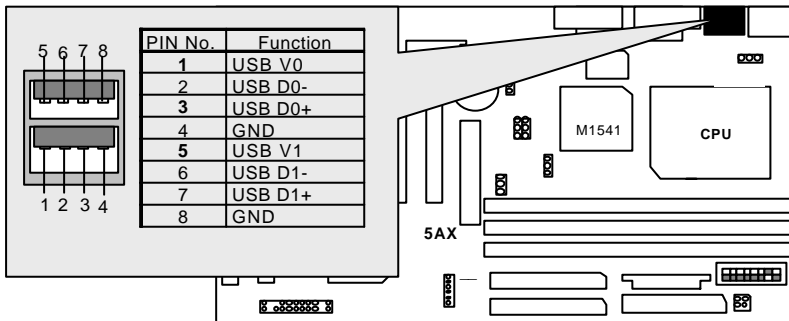
COM B : COM B Port
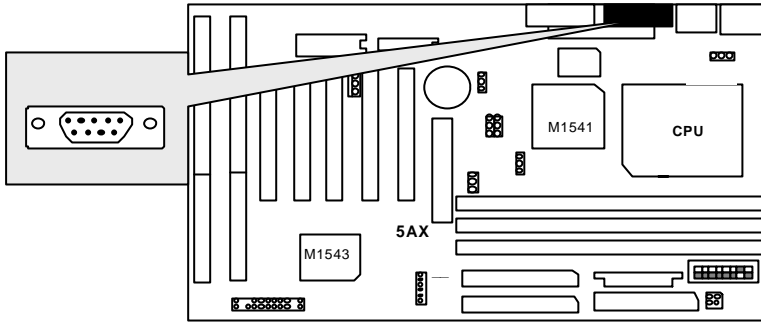
COM A : COM A Port

M.S. / K.B. : PS/2 Mouse / Keyboard Connector

PS/2 Mouse/ Keyboard	
Pin No.	Function
1	Data
2	NC
3	GND
4	VCC(+5V)
5	Clock
6	NC
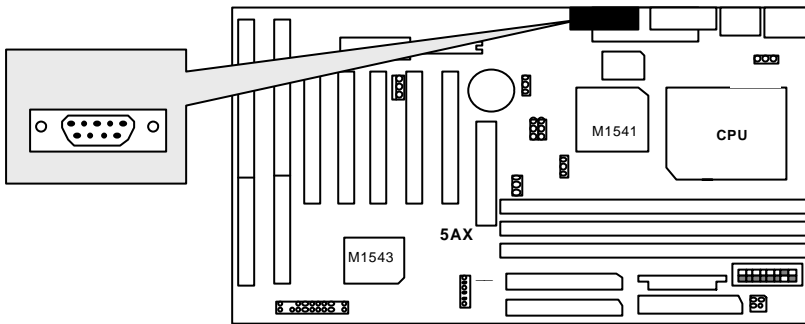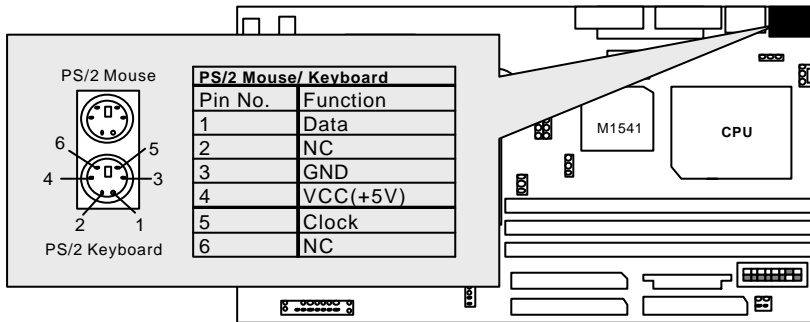
FLOPPY : Floppy Port
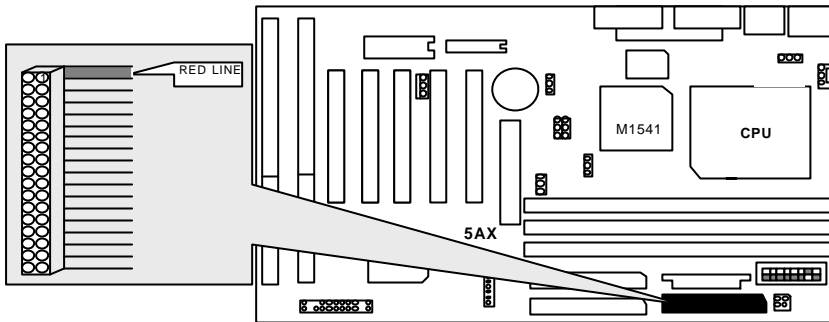
IDE1 : For Primary IDE Port
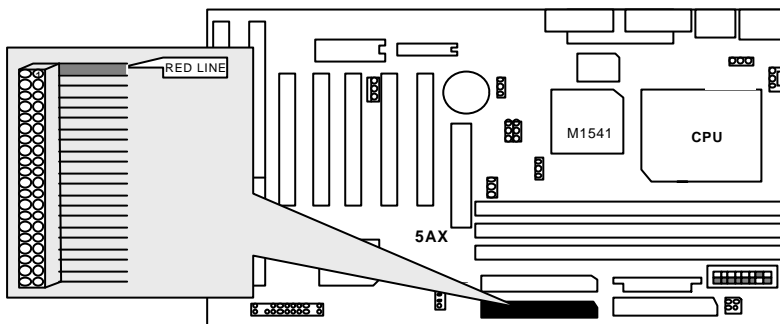
IDE2 : For Secondary IDE Port

JP3 : Keyboard Power On/Off

Default : 2-3

1

1-2 Short
Enabled Keyboard
Power On

1

2-3 Short
Disabled Keyboard
Power On

M1541

CPU

5AX

M1543

JP11 : VCC3 Connector

3   1
4   2

1-2 ,3-4 Short
VCC3(PSU)<->VCC3(MB)

3   1
4   2

1-3 , 2-4 Short
VCC3(PSU)<✕>VCC3(MB)

M1541

CPU

M1543

IR: Infrared Connector

1

PIN No.	Function
1	Power +
2	FIR
3	IR Data Input
4	GND
5	IR Data Output
6	Over Current

M1541

CPU

5AX

JP13 : VCC Voltage Setting

| 1-2 Short | VCC3 = 3.58 |
| 2-3 Short | VCC3 = 3.3 |

BT1 : For Battery

☛ Danger of explosion if battery is incorrectly replaced.

☛ Replace only with the same or equivalent type recommended by the manufacturer.

☛ Dispose of used batteries according to the manufacturer's instructions.

III. Top Performance Test Setting:

Users have to modify the value for each item in chipset features as follow
for top performance setting.

```
                    ROM PCI/ISA BIOS (2A5KKG09)
                       CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.

 Auto Configuration         : Enabled    Auto Detect DIMM/PCI Clk : Enabled
 Host Read DRAM Command Mode : Bypass    Spread Spectrum          : Disabled
 AT Bus Clock               : CLK 2/4
 DRAM Timing                : Fast
 SDRAM CAS Latency          : 2
 Pipelined Function         : Enabled
 Graphics Aperture Size     : 64 MB
 DRAM Data Integrity Mode   : Disabled
 Memory Hole At 15-16M      : Disabled
 ISA Line Buffer            : Enabled
 Passive Release            : Enabled
 Delay Transaction          : Disabled
 Primary Frame Buffer       : 2 MB
 VGA Frame Buffer           : Enabled
 Data Merge                 : Enabled
 IO Recovery Period         : 1 us       ESC : Quit        ↑↓←→ : Select Item
                                         F1  : Help        PU/PD/+/- : Modify
                                         F5  : Old Values  (Shift)F2 : Color
                                         F6  : Load BIOS  Defaults
                                         F7  : Load Setup Defaults
```

** Each value of items as above depends on your hardware configuration : CPU ,
SDRAM , Cards , etc.
Please modify each value of items If your system does not work properly.

PERFORMANCE LIST

The following list of performance data is the testing results of some popular benchmark testing programs.

These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

- CPU   Processor AMD K6-2 500, AMD K6-III 450
- DRAM   (128 x 1) MB SDRAM (LGS GM72L66841ET7G)
- CACHE SIZE   512 KB L2 Cache
- DISPLAY   GA-660 (32MB SDRAM)
- STORAGE   Onboard IDE (Quantum KA13600AT)
- O.S.   Windows®NT 4.0 + SP5
- DRIVER   Display Driver at 1024 x 768 x 16bits , 60Hz.
                   ALi Bus Master IDE Driver

Processor	AMD K6-2 500 (100x5)	AMD K6-III 450 (100x4.5)
Winbench99 CPU mark99	23.3	36.7
FPU Winmark 99	1610	1520
Business Disk Winmark 99	4400	4950
Hi-End Disk Winmark 99	12800	13100
Business Graphics Winmark 99	83.4	211
Hi-End Graphics Winmark 99	228	350
Winstone99 Business Winstone 99	26.6	32.1
Hi-En Winstone 99	21.2	24

TABLE OF CONTENTS

1. INTRODUCTION

1.1. PREFACE

Welcome to use the **5AX** motherboard. The motherboard is a Pipeline 512 KB CACHE Pentium® Processor based PC / AT compatible system with ISA bus and PCI Local Bus, and has been designed to be the fastest PC / AT system. There are some new features allow you to operate the system with the performance you want.

This manual also explains how to install the motherboard for operation, and how to set up your CMOS CONFIGURATION with BIOS SETUP program.

1.2. KEY FEATURES

❑ Pentium® Processor based PC / AT compatible mainboard with PCI / ISA / AGP Bus.

❑ 5 PCI Bus slots, 2 ISA Bus slots, 1 AGP slot.

❑ Supports :

• Pentium® Processor	133 / 166 / 200 MHz ; MMX (166 / 200 / 233),
• AMD	K6-(166 / 200 / 233 / 266 / 300); K6-2 (266 / 300 / 333 / 350 / 380 / 400 / 450 / 475 / 500 / 550) K6-2+(450) K6-III(400 / 450 / 475 / 500 / 550)
• Cyrix/IBM	6x86MX (PR166 / PR200 / PR233 / PR266) ; MII-PR300 / PR333 / PR366 / PR400
• IDT	Winchip 2-(200 / 225 / 233 / 266 / 300) Winchip 3-266
• RISE	MP6-266

❑ Supports true 64 bits CACHE and DRAM access mode.

❑ Supports 321 Pins (Socket 7) ZIF white socket on board.

❑ Supports 512 KB Pipeline Burst Sync. 2nd Level Cache.

- ❏ CPU L1 / L2 Write-Back cache operation.

- ❏ Supports 8 - 768 MB DRAM memory on board.

- ❏ Supports 3*168 pin 64/72 Bit DIMM module.

- ❏ Supports 2-channel Enhanced PCI IDE ports for 4 IDE Devices.

- ❏ Supports 2*COM (16550), 1*LPT (EPP / ECP), 1*1.44MB Floppy port.

- ❏ Supports Green function, Plug & Play function.

- ❏ Licensed AWARD BIOS, FLASH ROM for BIOS update.

- ❏ 30.5cm*18.5cm, ATX Form factor.

- ❏ Supports USB port & PS/2 Mouse and K/B port.

- ❏ Supports Keyboard Power On/Off.

- ❏ Supports 3 steps ACPI LED.

1.3. PERFORMANCE LIST

The following list of performance data is the testing results of some popular benchmark testing programs.

These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

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Hi-End Disk Winmark 99	12800	13100
Business Graphics Winmark 99	83.4	211
Hi-End Graphics Winmark 99	228	350
Winstone99 Business Winstone 99	26.6	32.1
Hi-En Winstone 99	21.2	24

1.4. BLOCK DIAGRAM
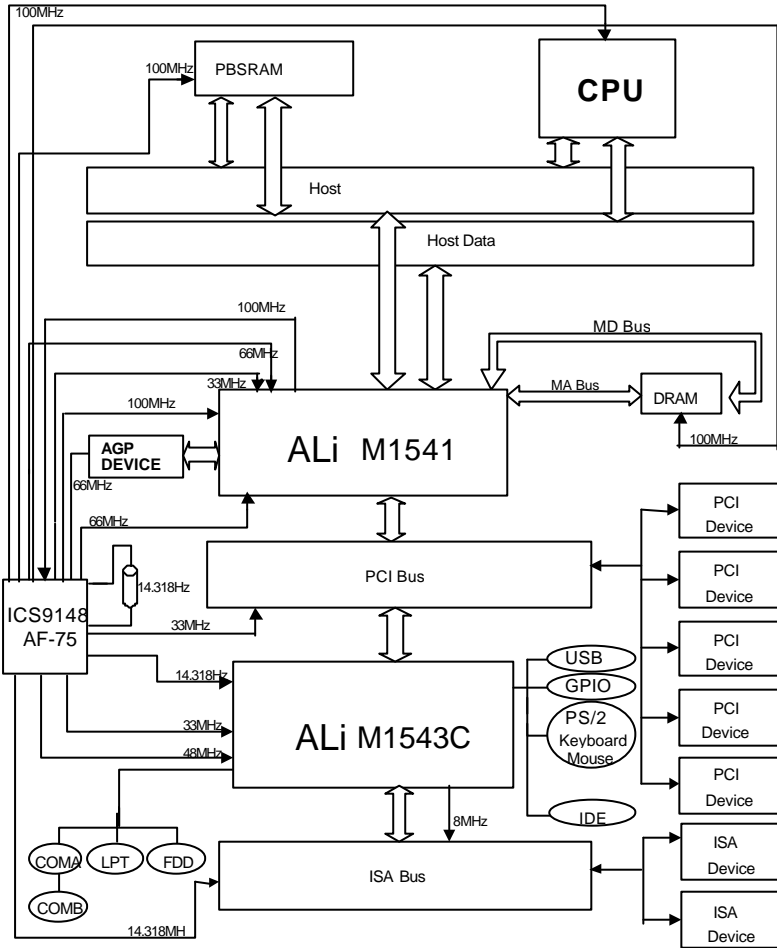
1.5. INTRODUCE THE PCI - BUS

Connecting devices to a CPU local bus can dramatically increase the speed of I/O-bound peripherals with only a slight increase in cost over traditional systems.

This price / Performance point has created a vast market potential for local bus products.

The main barrier to this market has been the lack of an accepted standard for local bus peripherals.

Many mainboard and chipset manufactures developed their own local bus implementations, but they are incompatible with each other.

The VL (Video Electronics Standards Association) local bus and PCI (Peripheral Component Interconnect) bus specification was created to end this confusion.

The PCI - bus standard, under development since Jun. 1992, which is designed to bring workstation-level performance to standard PC platform. The PCI - bus removes many of the bottlenecks that have hampered PC for several years.

On the PCI - bus, peripherals operate at the native speed of the computer system, thus enabling data transfer between peripherals and the system at maximum speed.

This performance is critical for bandwidth-constrained devices such as video, multimedia, mass storage, and networking adapters.

PCI - bus standard provides end-users with a low-cost, extendible and portable local bus design, which will allow system and peripherals from different manufactures to work together.

1.6. FEATURES

- ❑ 32 bits bus transfer mode.
- ❑ Bus Master or Slave access.
- ❑ Memory burst transfer to 132 MB/sec.
- ❑ 33 MHz operation speed.
- ❑ 10 device loading ability.
- ❑ CPU independent.

1.7. What is AGP

The Accelerated Graphics Port (AGP) is a new port on the Host-To-PCI bridge device that supports an AGP port. The main purpose of the AGP port is to provide fast access to system memory.

The AGP port can be used either as fast PCI port (32-bits at 66MHz vs. 32-bits at 33MHz) or as an AGP port which supports 2x data -rate, a read queue, and side band addressing. When the 2x-data rate is used the port can transmit data at 533Mb/sec (66.6*2*4). The read-queue can be used to pipeline reads – removing the effects of the reads -latency. Side band addressing can be used to transmit the data address on a separate line in order to further speed the transaction.

2. SPECIFICATION

2.1. HARDWARE

- CPU
  - Pentium® Processor
    133 / 166 / 200 MHz; MMX (166 / 200 / 233)
  - AMD
    K6- (166 / 200/ 233 / 266 / 300) ;
    K6-2 (266 / 300 / 333 / 350 / 366 / 380 / 400 / 450
        / 475 / 500 / 550)
    K6-2+(450)
    K6-III (400 / 450 /475 / 500 / 550)
  - Cyrix/IBM
    6x86MX(PR166 / PR200 / PR233 / PR266);
    MII-PR300 / PR333 / PR366 / PR400
  - IDT
    Winchip 2-(200 / 225 / 233 / 266 / 300)
    Winchip 3-266
  - RISE
    MP6-266
  - 321 pins (socket 7) ZIF white socket on board.
  - 3.52V / 1.3V-3.5V Dual Power Ready.
  - Included in processor.
- SPEED
  - 66 / 75 / 83 / 95 /100MHz system speed.
  - 66 MHz AGP-Bus speed.
  - 33 MHz PCI-Bus speed.
  - 8 MHz AT bus speed.
- DRAM MEMORY
  - 3 banks 168 pins DIMM module socket on board.
  - Use 8 / 16 / 32 / 64 / 128 / 256 MB DIMM module DRAM.
  - 8 ~ 768 MB DRAM size.
  - Supports 3.3V SDRAM / EDO type DRAM.
  - Supports ECC or Non-ECC type DRAM.
- CACHE MEMORY
  - 16 / 24 / 32 / 64KB L1cache included in CPU.
  - 512 KB 2nd Level cache on board.
  - Supports Write Back cache function for both CPU & on board cache.

- I/O BUS SLOTS
  - 5 xMaster / Slave PCI-BUS Slots.
  - 2 x16 bits ISA BUS Slots.
  - 1 xAGP Slot.
- IDE PORTS
  - 2-channel Enhanced IDE port on board.(Using IRQ14,15)
  - Supports UDMA 33 / ATA66.
  - Supports Mode 3,4 IDE & ATAPI CD– ROM.
- I/O PORTS
  - Supports 2 x16550 COM ports. (Using IRQ4, 3)
  - Supports 1 x EPP/ECP LPT port. (Using IRQ7 or 5 and DMA3 or 1)
  - Supports 1 x 1.44/2.88 MB Floppy port. (Using DMA2 & IRQ6)
  - Supports PS/2 Mouse. (Using IRQ12)
- GREEN FUNCTION
  - Suspend mode support.
  - Green switch & ACPI LED support.
  - IDE & Display power down support.
  - Monitor all IRQ / DMA / Display / I/O events.
- BIOS
  - 1Mbit FLASH ROM.
  - Supports Plug & Play Function.
- DIMENSION
  - ATX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- BIOS
  - Licensed AWARD BIOS.
  - AT CMOS Setup, BIOS / Chipset Setup, Green Setup, Hard Disk Utility included.
- O.S.
  - Operation with MS-DOS®, Windows ®95, Windows ®98,WINDOWS™ NT, OS/2, NOVELL and SCO UNIX.

2.3. ENVIRONMENT

- Ambient Temp.
  - 0°C to +50°C (Operating).
- Relative Hum.
  - 0 to +85% (Operating).
- Altitude
  - 0 to 10,000 feet (Operating).
- Vibration
  - 0 to 1,000 Hz.
- Electricity
  - 4.9 V to 5.2 V.
  - Max. 20A current at 5V.

3. HARDWARE INSTALLATION

3.1. UNPACKING

The mainboard package should contain the following:

- The **5AX** mainboard.

- USER'S MANUAL for mainboard.

- Cable set for IDE   Floppy.

- CD (TUCD) for Mainboard Utility.

The mainboard contains sensitive electric components which can be easily damaged by static electricity, so the mainboard should be left in its original packing until it is installed.

Unpacking and installation should be done on a grounded anti-static mat.

The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damage on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage.

Press down on all of the socket IC's to make sure that they are properly seated. Do this only on with the board placed on a firm flat surface.

❉ **DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.**

It is assumed that the chassis is designed for a standard ATX mainboard mounting. Place the chassis on the anti-static mat and remove the cover.

Take the plastic clips, Nylon stand-off and screws for mounting the system board, and keep them separate.

3.2. MAINBOARD LAYOUT

≪Figure 3.1≫
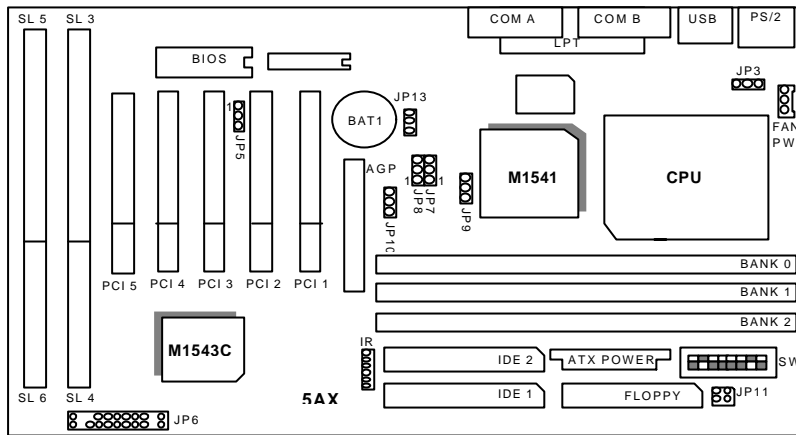
3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS

♦ I/O Port Connectors	
IDE 1	For Primary IDE port.
IDE 2	For Secondary IDE port.
FLOPPY	For Floppy port.
USB	For USB port.
COM B	For Serial port2 (COM B){Support Modem Ring On}.
COM A	For Serial port1 (COM A){Support Modem Ring On}.
LPT	For LPT port.
PS/2	For PS/2 Mouse & Keyboard Connector.
ATX PWR	For ATX Power Connector.

JP6 : 2*11 PIN Jumper
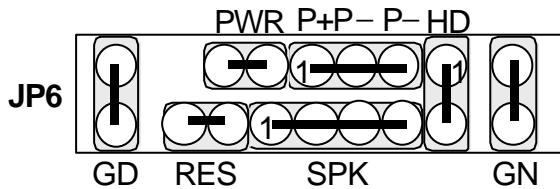
PWR: Soft Power Connector

On－Off : For POWER ON or Suspend IN / OUT.
On 4 sec : For POWER OFF before VGA Enable or CMOS
                setup select "delay 4sec." for POWER OFF
                mode

RES:Reset Switch

Open: Normal Operation
Short: For Hardware Reset System

P+P–P–: Power LED

PIN 1: anode (+)
PIN 2: cathode (–)
PIN 3: cathode (–)

SPK: Speaker Connector

PIN 1: VCC
PIN 2: NC
PIN 3: NC
PIN 4: Data

HD: IDE Hard Disk Active LED

PIN 1: LED anode (+)
PIN 2: LED cathode (–)

GN: Green Switch

Open: Normal operation
Short: Entering Green Mode

GD: Green Function Active LED

PIN 1: LED athode (+)
PIN 2: LED cathode (–)

♦ JP5: Wake on Lan

Pin No.	Function
1	+5V SB
2	GND
3	Signal

♦ FAN PWR: CPU cooling FAN Power Connector

Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ JP3: Keyboard Power On/Off Connector

Pin No.	Function
1,2 Close	Enabled Keyboard power on.
2,3 Close	Disabled Keyboard power on. (Default)

♦ JP11: VCC3 Connector

Pin No.	Function
1-2,3-4 Close	VCC3(PSU)<->VCC3(MB)
1-3,2-4 Close	VCC3(PSU)< >VCC3(MB)

♦ IR :Infrared Connector

PIN No.	Function
1	Power +
2	FIR
3	IR Data Input
4	GND
5	IR Data Output
6	Over Current

♦ JP13: VCC Voltage Setting

Pin No.	Function
1,2 Close	VCC3=3.58
2,3 Close	VCC3=3.3

3.4. SRAM INSTALLATION

Sync. SRAM (Pipeline Burst SRAM)

If Sync SRAM Chip is installed, it consists of Pipeline Burst 1 Pc 64 K x 64 512KByte.

3.5. DRAM INSTALLATION

The mainboard can be installed with 8 / 16 / 32 / 64 / 128 / 256 MB 168 pins DIMM module DRAM, and the DRAM speed must be 67~100 MHz for SDRAM. The DRAM memory system on mainboard consists of bank 0, 1 & bank 2.

Because the 168 pins DIMM module is 64 bits width, using 1 PCS which can match a 64 bits system. The total memory size is 8 MB ~ 768 MB DRAM. The DRAM installation position refer to Figure 3.1, and notice the Pin 1 of DIMM module must match with the Pin 1 of DIMM socket. Insert the DRAM DIMM module into the DIMM socket at Vertical angle. If there is a wrong direction of Pin 1, the DRAM DIMM module couldn't be inserted into socket completely.

3.6. CPU INSTALLATION AND JUMPERS SETUP

The system speed depends on the frequency of Clock Generator. The user can change SW selection to set up the system speed to 66 / 75 / 83 / 95 /100MHz for 3.3V/2.5V Pentium$^{®}$ Processor 133 / 166 / 200 MHz; MMX (166 / 200 / 233), AMD K6-(166 / 200/ 233 / 266 / 300) ; K6-2 (266 / 300 / 333 / 350 / 380 / 400 / 450 / 475 / 500/550);K6-2+(450); K6-III (400 / 450 / 475 / 500 / 550) ;Cyrix/IBM 6x86MX (PR166 / PR200 / PR233 / PR266); MII-PR300/ PR333/ PR366/ PR400 ;
IDT Winchip 2-(200 / 225 / 233 / 266 / 300); IDT Winchip 3-266; RISE MP6-266.
The mainboard can use Pentium$^{®}$ Processor, MMX, AMD -K6, AMD-K6-2, AMD-K6-2+, AMD-K6-III;Cyrix / IBM 6x86MX , Cyrix MII, IDT Winchip2, IDT Winchip 3, RISE MP6 CPU, and the CPU speed must match with the frequency of Clock generator. It will cause system hanging up if the Clock generator frequency is faster than CPU's.

- ☀ **The CPU is a sensitive electric component and it can be easily damaged by static electricity, so users must keep it away from metal surface when the CPU is installed onto mainboard.**
- ☀ **When the user installs the CPU on socket, please notice that the PIN 1 of CPU is in the same corner as the PIN 1 of socket!**

✎ **Before the CPU is installed, the mainboard must be placed on a flat plane in order to avoid being broken by the pressure of CPU installation.**

SW: CPU INT./ EXT. FREQ. RATIO

O: ON   X: OFF

SW	4	5	6	7	8	SW	4	5	6	7	8
1.3V	X	X	X	X	O	2.5V	O	X	O	X	X
1.4V	X	O	X	X	O	2.6V	X	O	O	X	X
1.5V	X	X	O	X	O	2.7V	O	O	O	X	X
1.6V	X	O	O	X	O	2.8V	X	X	X	O	X
1.7V	X	X	X	O	O	2.9V	O	X	X	O	X
1.8V	X	O	X	O	O	3.0V	X	O	X	O	X
1.9V	X	X	O	O	O	3.1V	O	O	X	O	X
2.0V	X	O	O	O	O	3.2V	X	X	O	O	X
2.1V	O	X	X	X	X	3.3V	O	X	O	O	X
2.2V	X	O	X	X	X	3.4V	X	O	O	O	X
2.3V	O	O	X	X	X	3.5V	O	O	O	O	X
2.4V	X	X	O	X	X	---	---	---	---	---	---

CPU	AGP	JP7	JP8	JP9	JP10	CPU	AGP	JP7	JP8	JP9	JP10
66	66	2-3	2-3	2-3	1-2	110	73	1-2	1-2	1-2	2-3
75	60	1-2	2-3	2-3	2-3	115	77	1-2	2-3	1-2	1-2
75	75	2-3	1-2	2-3	1-2	120	80	1-2	2-3	1-2	2-3
83	66	1-2	2-3	2-3	1-2	125	83	2-3	1-2	1-2	1-2
95	63	1-2	1-2	2-3	2-3	130	87	2-3	1-2	1-2	2-3
100	66	1-2	1-2	2-3	1-2	135	90	2-3	2-3	1-2	1-2
105	70	1-2	1-2	1-2	1-2	140	93	2-3	2-3	1-2	2-3

SW	1	2	3
X1.5	X	X	X
X2	O	X	X
X2.5	O	O	X
X3	X	O	X
X3.5	X	X	X
X4	O	X	O
X4.5	O	O	O
X5	X	O	O
X5.5	X	X	O
X6	O	X	X

★Note: We don' t recommend you to setup your system speed to 105 , 110 , 115 , 120 , 125 , 130 , 135 or 140 MHz because these frequencies are not the standard specifications for CPU, Chipset and most of the peripherals. Whether your system can run under 105, 110, 115,120, 125, 130, 135 or 140 MHz properly will depend on your hardware configurations: CPU,

SDRAM, Cards, etc.

3.7. CMOS RTC & ISA CFG CMOS SRAM

Built-in Real Time Clock (RTC) With 256B CMOS SRAM in M5819.

3.8. SPEAKER CONNECTOR INSTALLATION

There is a speaker in AT system for sound purpose. The 4 - Pins connector **SPK** is used to connect speaker. The speaker can work well in both direction of connector when it is installed to the connector **SPK** on mainboard.

3.9. ACPI LED CONNECTOR INSTALLATION

This mainboard uses the existing power LED as ACPI LED .The ACPI LED will light on when system is power-on .The ACPI LED is off when the system is power-off. The ACPI LED will blink when system is in Green mode.This connector should be installed to ACPI LED jumper of the mainboard in correct direction.

3.10. HARDWARE RESET SWITCH CONNECTOR INSTALLATION

The RESET switch on panel provides users with HARDWARE RESET function which is almost the same as power-on/off. The system will do a cold start after the RESET switch is pushed and released by user. The RESET switch is a 2 PIN connector and should be installed to **RES** on mainboard.

3.11. GREEN FUNCTION INSTALLATION

There is one jumper for the purpose of power saving, **GN**, to indicate the power saving function . This mainboard uses the existing power LED as ACPI LED . If the ACPI LED is blinking, the system is in green mode. The **GN** switch will force the system into green mode .

3.12. PERIPHERAL DEVICE INSTALLATION

After installation of the device and setup of the jumpers, the mainboard can be mounted into the case and fixed by screw. To complete the mainboard installation, the peripheral devices could be installed now. The basic system needs a display interface card and a storage device.
If a PCI - Bus device is to be installed in the system, any one of three PCI - Bus slots can be used for Slave or Master PCI - Bus device.
After installing the peripheral device, the user should check everything again and prepare to power-on the system.

4.   BIOS CONFIGURATION

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration.

This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

4.1. ENTERING SETUP

Power ON the computer and press <Del> immediately will allow you to enter Setup.

The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> Key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

• **Press DEL to enter SETUP.**

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" bottom on the system case.

You may also restart by simultaneously press <Ctrl>,<Alt>, and <Del> keys.

4.2. CONTROL KEYS

Up arrow	Move to previous item.
Down arrow	Move to next item.
Left arrow	Move to the item in the left hand.
Right arrow	Move to the item in the right hand.
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 th e numeric value or make changes.
PgDn key	Decrease the numeric value or make changes.
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu.
F2 key	Change color from total 16 colors.
F3 key	Calendar, only for Status Page Setup Menu.
F4 key	Reserved.
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu.
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu.
F7 key	Load the default.
F8 key	Reserved.
F9 key	Reserved.
F10 key	Save all the CMOS changes, only for Main Menu.

4.3. GETTING HELP

4.3.1. Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

4.3.2. Status Page Setup Menu / Option Page Setup Menu

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>.

4.4. THE MAIN MENU

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 4.1) will appear on the screen.

The Main Menu allows you to select setup functions and exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
              ROM PCI/ISA BIOS (2A5KKG09)
                  CMOS SETUP UTILITY
                 AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP          INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP          SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP       USER PASSWORD

   POWER MANAGEMENT SETUP       IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURATION        SAVE & EXIT SETUP

   LOAD BIOS DEFAULTS           EXIT WITHOUT SAVING

   LOAD SETUP DEFAULTS

   Esc : Quit                   ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup      (Shift)F2 : Change Color
```

Figure 4.1: Main Menu

• Standard CMOS setup

   This setup page includes all the items in a standard compatible BIOS.

• BIOS features setup

   This setup page includes all the items of Award special enhanced features.

• Chipset features setup

   This setup page includes all the items of chipset special features.

- Power management setup

  This setup page includes all the items of Green function features.

- PNP/PCI configuration

  This setup page includes all the items of PNP/PCI configuration features.

- Load BIOS defaults

  BIOS defaults indicates the most appropriate value of the system parameter which the system would be in safe configuration.

- Load Setup defaults

  Setup defaults indicates the most appropriate value of the system parameter which the system would be in best performance configuration.

- Integrated Peripherals

  This setup page includes all the items of peripherals features.

- Supervisor Password

  Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

- User Password

  Change, set, or disable password. It allows you to limit access to the system.

- IDE HDD auto detection

  Automatically configure hard disk parameter.

- Save & exit setup

  Save CMOS value changes to CMOS and exit setup.

- Exit without save

  Abandon all CMOS value changes and exit setup.

4.5. STANDARD CMOS SETUP MENU

The items in Standard CMOS Setup Menu (Figure 4.2) are divided into 9 categories . Each category includes no, one or more than one setup items. Use the arrows to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Figure 4.2: Standard CMOS Setup Menu

● Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

Day	The day, from Sun to Sat, determined by the BIOS and is display-only
Date	The date, from 1 to 31 (or the maximum allowed in the month)
Month	The month, Jan. through Dec.
Year	The year, from 1994 through 2079

● Time

The time format in <hour> <minute> <second>.

The time is calculated base on the 24-hour military-time clock.

For example, 1 p.m. is 13:00:00.

● Primary HDDs / Secondary HDDs

The category identify the types of hard disk from drive C to drive F

4 devices that has been installed in the computer.

There are three options for definable type; User, Auto and None .

Type User is user-definable; and type Auto means automatically detecting HDD's type and None means No IDE HDD installed.

If you select Type User, related information is asked to be entered to the following items.

Enter the information directly from the keyboard and press <Enter>.

Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precomp
LANDZONE	landing zone
SECTORS	number of sectors

If a hard disk has not been installed select NONE and press <Enter>.

● Drive A type / Drive B type

The category identify the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25 in.	5-1/4 inch PC-type standard drive; 360 kilobyte capacity.
1.2M, 5.25 in.	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity (3-1/2 inch when 3 Mode is Enabled).
720K, 3.5 in.	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in.	3-1/2 inch double-sided drive; 1.44 megabyte capacity.
2.88M, 3.5 in.	3-1/2 inch double-sided drive; 2.88 megabyte capacity.

● Floppy 3 Mode Support (for Japan Area)

Disable	Normal Floppy Drive.
Drive A	Drive A is 3 mode Floppy Drive.
Drive B	Drive B is 3 mode Floppy Drive.
Both	Drive A & B are 3 mode Floppy Drive.

● Video

The category detects the type of adapter used for the primary system monitor that must match your video display card and monitor.

Although secondary monitors are supported, you do not have to select the type in setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA, or PGA monitor adapters
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

● Halt on

The category determines whether the computer will stop if an error is detected during power up.

NO Errors	The system boot will not be stopped for any error that may be detected
All Errors	Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors

- Memory

    The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

    Base Memory

    The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

    The value of the base memory is typically 512 K for systems with 512 K memory installed on the motherboard, or 640 K for systems with 640 K or more memory installed on the motherboard.

    Extended Memory

    The BIOS determines how much extended memory is present during the POST.

    This is the amount of memory located above 1 MB in the CPU's memory address map.

    Expanded Memory

    Expanded Memory in memory defined by the Lotus / Intel / Microsoft (LIM) standard as EMS.

    Many standard DOS applications can not utilize memory above 640, the Expanded Memory Specification (EMS) swaps memory which not utilized by DOS with a section, or frame, so these applications can access all of the system memory.

    Memory can be swapped by EMS is usually 64K within 1 MB or memory above 1 MB, depends on the chipset design.

    Expanded memory device driver is required to use memory as Expanded Memory.

    Other Memory

    This refers to the memory located in the 640 to 1024 address space. This is memory that can be used for different applications.

    DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.

4.6. BIOS FEATURES SETUP


```
                    ROM PCI/ISA BIOS (2A5KKG09)
                        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
  CPU Write Allocate         : Enabled     D0000-D3FFF Shadow  : Disabled
  Quick Power On Self Test   : Enabled     D4000-D7FFF Shadow  : Disabled
  Boot Sequence              : A,C,SCSI    D8000-DBFFF Shadow  : Disabled
  VGA Boot From              : PCI         DC000-DFFFF Shadow  : Disabled
  Swap Floppy Drive          : Disabled
  Boot Up Floppy Seek        : Enabled
  Boot Up NumLock Status     : On
  Boot Up System Speed       : High
  Gate A20 Option            : Fast
  Security Option            : Setup
  PCI/VGA Palette Snoop      : Disabled
  OS Select For DRAM > 64MB  : Non-OS2     ESC : Quit         ↑↓→← : Select Item
  HDD S.M.A.R.T. capability  : Disabled    F1  : Help         PU/PD/+/- : Modify
  Report No FDD For WIN 95   : Yes         F5  : Old Values   (Shift)F2 : Color
                                           F6  : Load BIOS  Defaults
                                           F7  : Load Setup Defaults
```

Figure 4.3: BIOS Features Setup

● Virus Warning

This category flashes 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 the following error message will appear, in the mean time, you can run anti-virus program to locate the problem.

The default value 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 appears when anything attempts to access the boot sector or hard disk partition table.

● CPU Internal Cache / External Cache

These two categories speed up memory access. However, it depends on CPU / chipset design.

The default value is Enabled.

Enabled	Enable cache function.
Disabled	Disable cache function.

●   CPU Write Allocate

The default value is Enabled.

Enabled	Set CPU Write Allocate to Enabled.
Disabled	Set CPU Write Allocate to Disabled.

●   Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If it set to Enable, BIOS will skip some check items during POST.

The default value is Enabled.

Enabled	Enable quick POST.
Disabled	Normal POST.

●   Boot Sequence

This category determines which drive computer searches first for the disk operating system (i.e., DOS). Default value is A, C, SCSI.

X1, X2, X3	System will first search for X1 disk drive then X2 disk drive and then X3 disk drive.

●   VGA Boot From

The default value is PCI.

AGP	System will boot from AGP Display Card
PCI	System will boot from PCI VGA Card

●   Swap Floppy Drive

The default value is Disabled.

Enabled	Floppy A & B will be swapped under DOS.
Disabled	Floppy A & B will be normal definition.

- Boot Up Floppy Seek

  During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360 type is 40 tracks while 720 , 1.2 and 1.44 are all 80 tracks.

  The default value is Enabled.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS ca n not tell from 720, 1.2 or 1.44 drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360 .

- Boot Up NumLock Status

  The default value is On.

On	Keypad is number keys.
Off	Keypad is arrow keys.

- Boot Up System Speed

  The default value is High.

High	Set Boot Up System Speed: High.
Low	Set Boot Up System Speed: Low.

- Gate A20 Option

  The default value is Fast.

Fast	Set Boot Up System Speed: High.
Normal	Set Boot Up System Speed: Low.

- Security option

  The default value is Setup.

Setup	The system will boot and access to Setup will be denied if the correct password is not entered at the prompt.
System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

✦ **To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. If the user does not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.**

● PCI/VGA Palette Snoop

The default value are Disabled.

Enabled	For having Video Card on ISA Bus and VGA Card on PCI Bus.
Disabled	For VGA Card only.

● OS Select For DRAM>64MB

The default value is Non-OS2.

Non-OS2	Using non-OS2 operating system.
OS2	Using OS2 operating system and DRAM>64MB.

● HDD S.M.A.R.T. Capability

The default value is Disable.

Enable	Enable HDD S.M.A.R.T. Capability
Disable	Disable HDD S.M.A.R.T. Capability

● Report No FDD For WIN 95

The default value is Yes.

No	Function disabled
Yes	Report No FDD For WIN 95

● Video BIOS Shadow

It determines whether video BIOS will copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.
The default value is Enable.

Enabled	Video shadow is enabled.
Disabled	Video shadow is disabled.

- C8000 - CFFFF Shadow / D0000 - DFFFF Shadow

  These categories determine whether optional ROM will be copied to RAM by 16 byte. The default value are Disabled.

Enabled	Optional shadow is enabled.
Disabled	Optional shadow is disabled.

4.7. CHIPSET FEATURES SETUP
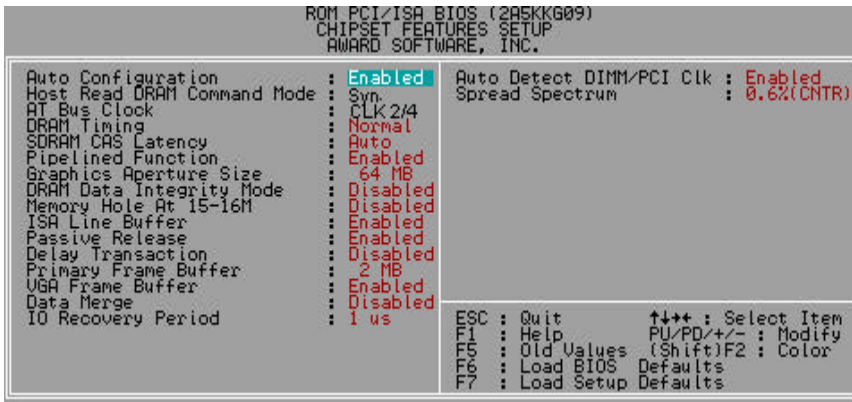
Figure 4.4: Chipset Features Setup

- Auto Configuration

  The default value is Enabled.

Enabled	For General State.
Disabled	For Special SDRAM Timing and ISA CLK.

- Host Read DRAM Command Mode.

  The default value is Syn.

Bypass	Set DRAM Cycle Start at T3 clock after ADS#.
Syn.	Set DRAM Cycle Start at T3+1 clock after ADS#.

- AT Bus Clock

  The default value is CLK2/4.

CLK2/3	Set AT Bus Clock to CLK2/3.
CLK2/4	Set AT Bus Clock to CLK2/4.
7.159MHz	Set AT Bus Clock to 7.159MHz.

- DRAM Timing

  The default value is Normal.

Normal	For normal DRAM timing operation.
Fast	For Faster DRAM timing operation.
Slow	For Slower DRAM timing operation.

- SDRAM CAS Latency

  The default value is AUTO.

3	For Slower SDRAM DIMM module.
2	For Faster SDRAM DIMM module.
Auto	CAS latency time will be set automatically if you have SPD on SDRAM

- Pipelined Function

  The default value is Enable.

Enable	Enable Pipelined Function.
Disable	Disable Pipelined Function.

- Graphics Aperture Size

  The default value is 64MB.

16MB	Set Graphics Aperture Size to 16MB.
32MB	Set Graphics Aperture Size to 32MB.
64MB	Set Graphics Aperture Size to 64MB.
128MB	Set Graphics Aperture Size to 128MB.
256MB	Set Graphics Aperture Size to 256MB.

- DRAM Data Integrity Mode

  The default value is Disable.

ECC	Set DRAM Data Integrity Mode to ECC Mode. **(only work at 66, 75 MHz)**
Parity	Set DRAM Data Integrity Mode to Parity Mode. **(only work at 66, 75 MHz)**
Disable	Disable DRAM Data Integrity Mode.

- Memory Hole at 15M-16M

  The default value is Disabled.

Enabled	Set Address=15 -16MB relocate to ISA BUS.
Disabled	Normal Setting.

- ISA Line Buffer

  The default value is Enabled.

Enabled	Enable ISA Line Buffer.
Disabled	Disable ISA Line Buffer.

- Passive Release

  The default value is Enabled.

Enabled	Enable Passive Release.
Disabled	Disable Passive Release.

- Delay Transaction

  The default value is Disabled.

Enabled	Enable Delay Transaction.
Disabled	Disable Delay Transaction.

- Primary Frame Buffer

  The default value is 2MB.

1MB	Set Primary Frame Buffer to 1MB.
2MB	Set Primary Frame Buffer to 2MB.
4MB	Set Primary Frame Buffer to 4MB.
8MB	Set Primary Frame Buffer to 8MB.
16MB	Set Primary Frame Buffer to 16MB.
ALL	Set Primary Frame Buffer to ALL.
Disabled	Disable Primary Frame Buffer.

- VGA Frame Buffer

  The default value is Enabled.

Enabled	Enable VGA Frame Buffer.
Disabled	Disable VGA Frame Buffer.

- Data Merge

  The default value is Disabled.

Enabled	Enable Data Merge.
Disabled	Disable Data Merge.

- IO Recovery Period

  The default value is 1 us.

0 us~ 3 us	It' s recommended not to program the period longer than 1 us.

- Auto Detect DIMM/PCI Clk

  The default value is Enabled.

Enabled	Enabled Auto Detect DIMM/PCI Clk.
Disabled	Disabled Auto Detect DIMM/PCI Clk.

- Spread Spectrum

  The default value is 0.6% (CNTR)

Disabled	Normal
0.6% (CNTR)	Set Spread Spectrum 0.6%(Center Spread) for reducing EMI effect.

4.8. POWER MANAGEMENT SETUP

```
          ROM PCI/ISA BIOS (2A5KKG09)
              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
CPU Write Allocate     : Enabled     D0000-D3FFF Shadow : Disabled
Quick Power On Self Test : Enabled   D4000-D7FFF Shadow : Disabled
Boot Sequence          : A,C,SCSI    D8000-DBFFF Shadow : Disabled
VGA Boot From          : PCI         DC000-DFFFF Shadow : Disabled
Swap Floppy Drive      : Disabled
Boot Up Floppy Seek    : Enabled
Boot Up NumLock Status : On
Boot Up System Speed   : High
Gate A20 Option        : Fast
Security Option        : Setup
PCI/VGA Palette Snoop  : Disabled
OS Select For DRAM > 64MB : Non-OS2  ESC : Quit         ↑↓→← : Select Item
HDD S.M.A.R.T. capability : Disabled F1  : Help         PU/PD/+/- : Modify
Report No FDD For WIN 95  : Yes      F5  : Old Values   (Shift)F2 : Color
                                     F6  : Load BIOS  Defaults
                                     F7  : Load Setup Defaults
```

Figure 4.5: Power Management Setup

- Power Management

  The default value is Enabled.

Enabled	Enable Green function.
Disabled	Disable Green function.

- PM Control by APM

  The default value is Yes.

Yes	Enable software APM function.
No	Disable software APM function.

- MODEM use IRQ

  The default value is 3.

NA	No use IRQ for Modem.
3~5,7,9~11	Assign Available IRQ# for Modem.

- Video off Option

  The default value is Suspend.

Suspend	Set Video off if system enter Suspend Mode.
Always On	Set Video always on.

- Video Off Method

  The default value is DPMS Support.

V/H SYNC + Blank	BIOS will turn off V/H-SYNC when gets into Green mode for Green monitor power saving.
Blank Screen	BIOS will only black monitor when gets into Green mode.
DPMS Support	BIOS will use DPMS Standard to control VGA card. (The Green type VGA card will turn of V/H-SYNC automatically.)

- HDD Power Down

  The default value is Disable.

Disable	Disable HDD Power Down mode function.
1-15 mins.	Enable HDD Power Down mode between 1 to 15 mins.

- Suspend Mode

  The default value is Disable.

Disabled	Disable Suspend Mode.
1 min - 1 Hour	Setup the timer to enter Suspend Mode.

- Throttle Duty Cycle

  The default value is Disable.

12.5 -25%	Set Throttle Duty Cycle is 12.5-25%.
37.5 -50%	Set Throttle Duty Cycle is 37.5-50%.
62.5 -75%	Set Throttle Duty Cycle is 62.5-75%.
Disable	Disable Throttle Duty Cycle.

- FAN off Option

  The default value is Suspend.

Suspend	Set FAN off if system enter Suspend Mode.
Always On	Set FAN always on.

- CPU Temperature

  The default value is Auto.

Auto	Set CPU Temperature Automatically.
65°C / 149°F	Monitor CPU Temp. at 65°C / 149°F. if Temp. > 65°C / 149°F, the speed of CPU will be slow down.
70°C / 158°F	Monitor CPU Temp. at 70°C / 158°F. if Temp. > 70°C / 158°F, the speed of CPU will be slow down.
75°C / 167°F	Monitor CPU Temp. at 75°C / 167°F. if Temp. > 75°C / 167°F, the speed of CPU will be slow down.
80°C / 176°F	Monitor CPU Temp. at 80°C / 176°F. if Temp. > 80°C / 176°F, the speed of CPU will be slow down.
Disable	Disable the Function.

- Primary HDD

  The default value is Disabled.

Enabled	Disable Primary HDD Ports Activity.
Disabled	Enable Primary HDD Ports Activity.

- Floppy

  The default value is Disabled.

Enabled	Enable Floppy Ports Activity.
Disabled	Disable Floppy Ports Activity.

- COM Ports

  The default value is Enable.

Enabled	Enable COM Ports Activity.

- Keyboard

  The default value is Enable.

Enabled	Enable Keyboard Activity.

- LPT Ports

  The default value is Disabled.

Enabled	Enable LPT Ports.
Disabled	Disable LPT Ports.

- Power Button

  The default value is Instant Off.

Instant off	Soft switch ON/OFF for POWER ON/OFF.
Delay 4Sec.	Soft switch ON 4sec. for POWER OFF.

4.9. PNP/PCI CONFIGURATION


```
         ROM PCI/ISA BIOS (2A5KKG09)
             PNP/PCI CONFIGURATION
               AWARD SOFTWARE, INC.

PNP OS Installed     : No        PCI IRQ Actived By    : Level
Resources Controlled By : Manual    PCI IDE IRQ Map To   : PCI-AUTO
Reset Configuration Data : Disabled    Primary   IDE INT#   : A
                                       Secondary IDE INT#   : B
IRQ-3  assigned to : PCI/ISA PnP
IRQ-4  assigned to : PCI/ISA PnP
IRQ-5  assigned to : PCI/ISA PnP
IRQ-7  assigned to : Legacy ISA
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     ESC : Quit         ↑↓←→ : Select Item
DMA-3  assigned to : PCI/ISA PnP     F1  : Help         PU/PD/+/- : Modify
DMA-5  assigned to : PCI/ISA PnP     F5  : Old Values   (Shift)F2 : Color
DMA-6  assigned to : PCI/ISA PnP     F6  : Load BIOS  Defaults
DMA-7  assigned to : PCI/ISA PnP     F7  : Load Setup Defaults
```
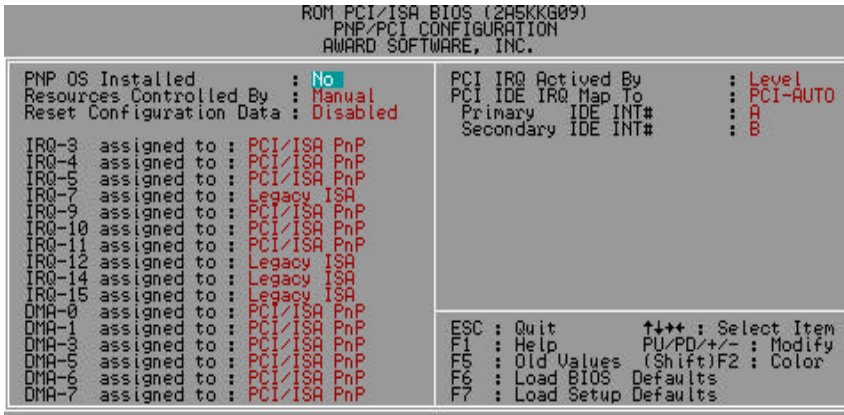
Figure 4.6: PCI Slot Configuration

- PNP OS Installed

   The default value is No.

Yes	Enable PNP OS Installed function.
No	Disable PNP OS Installed function.

- Resources Controlled by

   The default value is Manual.

Manual	User can set the PnP resource (I/O Address, IRQ & DMA channels) used by legacy ISA DEVICE.
Auto	BIOS automatically use these PnP rescuers.

- Reset Configuration Data

   The default value is Disabled.

Disabled	Disable this function.
Enabled	Enable clear PnP information in ESCD.

- IRQ (7,12,14,15), IRQ(3,4,5,9,10,11)&DMA(0,1,3,5,6,7) assigned to

    The default value is "Legacy ISA" or "PCI/ISA PnP".

Legacy ISA	The resource is used by Legacy ISA device.
PCI/ISA PnP	The resource is used by PCI/ISA PnP device (PCI or ISA).

- PCI IRQ Actived By

    The default value is Level.

Level	Set PCI IRQ Actived by Level.
Edge	Set PCI IRQ Actived by Edge.

- PCI IDE IRQ Map To

    The default value is PCI-AUTO.

PCI-AUTO	Map PCI IDE IRQ to PCI slot automatically.
ISA	Map PCI IDE IRQ to ISA slot.

- Primary/Secondary IDE INT#

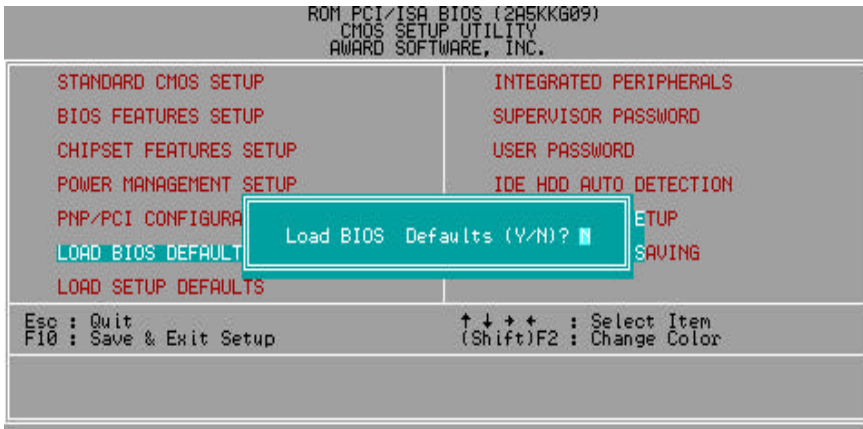 | A | Set INTA for primary/secondary PCI IDE. |
    |---|---|
    | B | Set INTB for primary/secondary PCI IDE. |
    | C | Set INTC for primary/secondary PCI IDE. |
    | D | Set INTD for primary/secondary PCI IDE. |

4.10. LOAD BIOS DEFAULTS

Figure 4.7: Load BIOS Defaults

● Load BIOS Defaults

To load BIOS defaults value to CMOS , enter "Y". If not, enter "N".
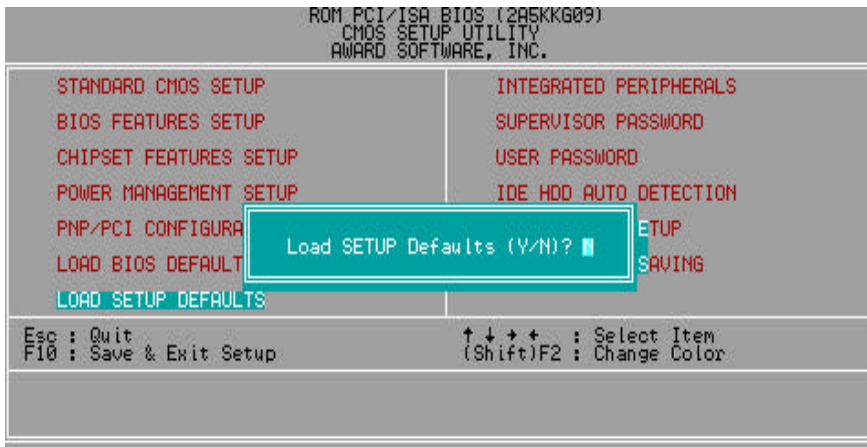
4.11. LOAD SETUP DEFAULTS

Figure 4.8: Load Setup Defaults

● Load SETUP Defaults

To load SETUP defaults value to CMOS , enter "Y". If not, enter "N".

✱ **If there is any problem occurred, loading SETUP DEFAULTS step is recommended.**

4.12. INTEGRATED PERIPHERALS

Figure 4.9: Integrated peripherals

@ When KB PWR ON/OFF Function set Enabled, KB PWR ON/OFF Password : Enter will show up.

* These three items will show up when RTC Alarm Controller is enabled.

% These two items will show up when Onboard IrDA Port is Assign Available Address# for IrDA port.

These two items will show up when IrDA Mode is IrDA 1.1.

● On-Chip Primary IDE

The default value is Enabled.

Enabled	Enable onboard 1st channel IDE port.
Disabled	Disable onboard 1st channel IDE port.

● Master PIO (for onboard IDE 1st channel).

The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Mode0~4	Manually set the IDE Accessing mode.

- Slave PIO (for onboard IDE 1st channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Mode0~4	Manually set the IDE Accessing mode.

- Master Ultra DMA (for onboard IDE 1sd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Disabled	Disable UDMA function.

- Slave Ultra DMA (for onboard IDE 1sd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Disabled	Disable UDMA function.

- On-Chip Secondary IDE

  The default value is Enabled.

Enabled	Enable onboard 2nd channel IDE port.
Disabled	Disable onboard 2nd channel IDE port.

- Master PIO (for onboard IDE 2nd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Mode0~4	Manually set the IDE Accessing mode.

- Slave PIO (for onboard IDE 2nd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Mode0~4	Manually set the IDE Accessing mode.

- Master Ultra DMA (for onboard IDE 2nd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Disabled	Disable UDMA function.

- Slave Ultra DMA (for onboard IDE 2nd channel).

  The default value is Auto.

Auto	BIOS will automatically detect the IDE HDD Accessing mode.
Disabled	Disable UDMA function.

- IDE HDD Block Mode

  The default value is Enabled.

Enabled	Enable IDE HDD Block Mode
Disabled	Disable IDE HDD Block Mode

- On-Chip USB Controller

  The default value is Enabled.

Disabled	Disable USB Controller.
Enabled	Enable USB Controller.

- USB Keyboard Support

  The default value is Disabled.

Disabled	Disable USB Keyboard Support.
Enabled	Enable USB Keyboard Support.

- Ring / Wake On Lan Control

    The default value is Enable.

Enabled	Enable Modem Ring On / Wake On Lan function.
Disabled	Disable this function.

- Onboard FDC Controller

    The default value is Enabled.

Enabled	Enable onboard Floppy port.
Disabled	Disable onboard Floppy port.

- Onboard Serial Port 1

    The default value is 3F8/IRQ4.

Auto	BIOS will automatically setup the port 1 address.
3F8/IRQ4	Enable onboard Serial port 1 and address is 3F8.
2F8/IRQ3	Enable onboard Serial port 1 and address is 2F8.
3E8/IRQ4	Enable onboard Serial port 1 and address is 3E8.
2E8/IRQ3	Enable onboard Serial port 1 and address is 2E8.
Disabled	Disable onboard Serial port 1.

- Onboard Serial Port 2

    The default value is 2F8/IRQ3.

Auto	BIOS will automatically setup the port 2 address.
3F8/IRQ4	Enable onboard Serial port 2 and address is 3F8.
2F8/IRQ3	Enable onboard Serial port 2 and address is 2F8.
3E8/IRQ4	Enable onboard Serial port 2 and address is 3E8.
2E8/IRQ3	Enable onboard Serial port 2 and address is 2E8.
Disabled	Disable onboard Serial port 2.

- Onboard Parallel port

  The default value is 378/IRQ7

378/IRQ7	Enable onboard LPT port and address is 378/IRQ7.
278/IRQ5	Enable onboard LPT port and address is 278/IRQ5.
3BC/IRQ7	Enable onboard LPT port and address is 3BC/IRQ7.
Disabled	Disable onboard LPT port.

- Parallel port Mode

  The default value is SPP

SPP	Using Parallel port as Standard Parallel Port
EPP	Using Parallel port as Enhanced Parallel Port.
ECP	Using Parallel port as Extended Capabilities Port.
EPP+ECP	Using Parallel port as ECP & EPP mode.

- KB PWR ON/OFF Function

  The default value is Power Key

Power Key	Support Win98 Keyboard Power ON/OFF Function.
Enabled	Enabled KB PWR ON/OFF Function
Disabled	Disabled KB PWR ON/OFF Function

  KB PWR ON/OFF Password

  The default value is Enter.

  ✒KB PWR ON/OFF Function Set Enabled, KB PWR ON/OFF Password : Enter will show up. When users enabled KB PWR ON/OFF Function, please set password with three different characters, and press the three different characters password at the same time.
  For example, if users set "abc" as password , then he would press "a" "b" "c" at the same time. (a-b-c is hot key) .

- RTC Alarm Controller

  The default value is Disabled.

Disabled	Disable this function.
Enabled	Enable alarm function to POWER ON system.

  If RTC Alarm Controller is Enabled.

Date Alarm :	NA,1~31
Hour Alarm :	0~24
MinuteAlarm :	0~59

- Onboard IrDA Port

  The default value is Disabled

Disabled	Disable onboard IrDA port.
2E0H	Enable onboard IrDA port and address is 2E0.
3E0H	Enable onboard IrDA port and address is 3E0.
2E8H	Enable onboard IrDA port and address is 2E8.
3E8H	Enable onboard IrDA port and address is 3E8.
2F8H	Enable onboard IrDA port and address is 2F8.
3F8H	Enable onboard IrDA port and address is 3F8.

- IR IRQ Seclect

  The default value is IRQ 10

IRQ 10 ~ 11,4~3	Assign Available IRQ# for Ir .

- IrDA Mode

  The default value is IrDA1.0

IrDA1.0	Support Ir Specification 1.0.
IrDA1.1	Support Ir Specification 1.1.

- FIR transceiver Type

  The default value is IBM like

IBM like	Support IBM like Device.
HP like	Support HP like Device.

- DMA channel for IrDA1.1

  The default value is 1

1	Set DMA channel is 1.
3	Set DMA channel is 3.

4.13. SUPERVISOR / USER PASSWORD

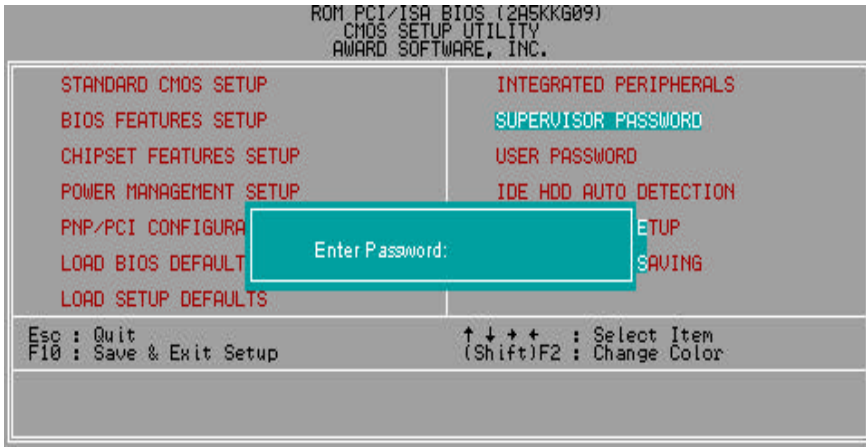When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Figure 4.10: Password Setting

Type the password, up to eight characters, and press <Enter>. The password typed now will clear previously entered password from CMOS memory.

You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled.

Once the password is disabled, the system will boot and you can enter Setup freely.

    PASSWORD DISABLED

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup.

If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.
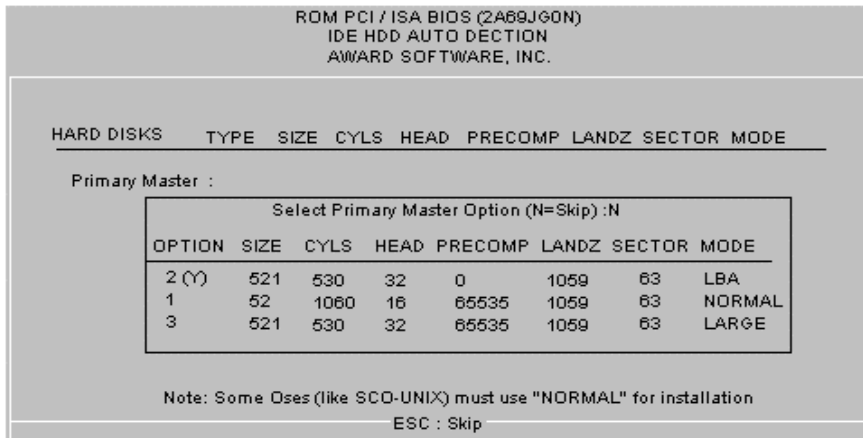
4.14. IDE HDD AUTO DETECTION


```
            ROM PCI / ISA BIOS (2A69JG0N)
               IDE HDD AUTO DECTION
               AWARD SOFTWARE, INC.


HARD DISKS    TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE

Primary Master :
          Select Primary Master Option (N=Skip) :N

    OPTION  SIZE   CYLS   HEAD  PRECOMP  LANDZ  SECTOR  MODE

    2 (Y)   521    530    32      0      1059    63     LBA
    1       52     1060   16    65535    1059    63     NORMAL
    3       521    530    32    65535    1059    63     LARGE


   Note: Some Oses (like SCO-UNIX) must use "NORMAL" for installation
                     ESC : Skip
```

Figure 4.11: IDE HDD Auto Detection

Type "Y" will accept the H.D.D. parameter reported by BIOS.

Type "N" will keep the old H.D.D. parameter setup. If the hard disk cylinder NO. is over 1024, then the user can select LBA mode or LARGE mode for DOS partition larger than 528 MB.

4.15. SAVE & EXIT SETUP
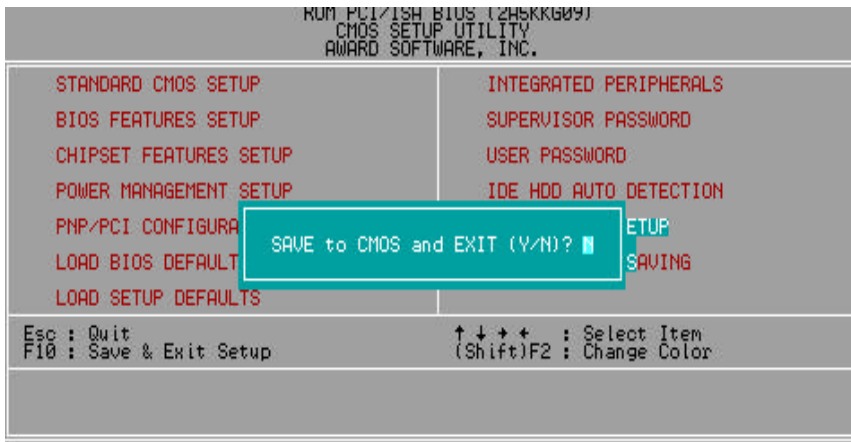
Figure 4.12: Save & Exit Setup

Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS .

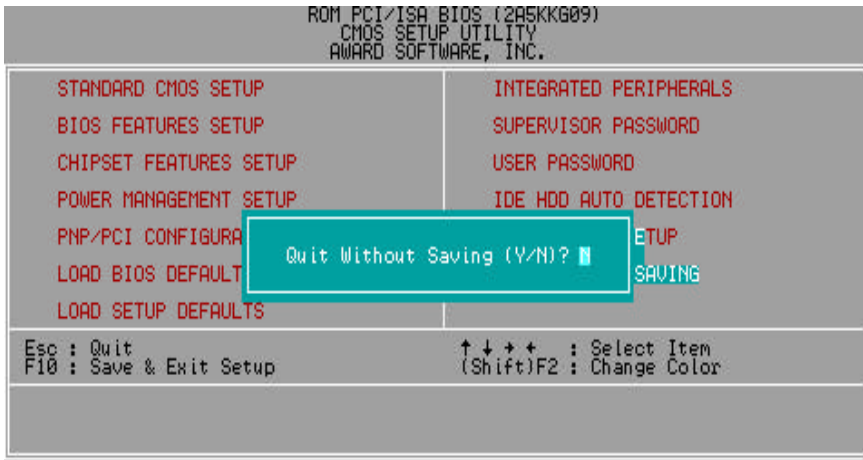Type "N" will return to Setup Utility.

4.16. EXIT WITHOUT SAVING

Figure 4.13: Exit Without Saving

Type "Y" will quit the Setup Utility without saving to RTC CMOS.

Type "N" will return to Setup Utility.

Appendix A: Troubleshooting

How to remove *"?PCI Universal Serial Bus"* under the Windows 95 ?

Method 1:

1.Please Install the file "USBSUPP.EXE" attached in Windows95 OSR2.1 CD

2.Run this file and then system will restart.

3.Please go to the Device Manager , and remove "?PCI Universal Serial Bus".

4.Please press "Refresh" button.

5.System will request your USB Driver in the directory c:\windows\system\openhci.sys

6.Choose this directory and press "OK", System will find Open HCI' s USB Driver.

7.Restart your system.

Method 2:

1. Go to the web site of ALi (http://www.ali.com.tw/eframes.htm)

2. Download ALi USB Host Controller Supplement.

3. Install the file according to readme.

Appendix B : BIOS Flash Procedure

BIOS update procedure:

✓ Please check your BIOS vendor (AMI or AWARD) on the motherboard.

✓ It is recommended you copy the AWDFlash.exe or AMIFlash.exe in driver CD (D:\>Utility\BIOSFlash) and the BIOS binary files into the directory you made in your hard disk.   i.e:C:\>Utility\ (C:\>Utility : denotes the driver and the directory where you put the flash utilities and BIOS file in.)

✓ Restart your computer into MS-DOS mode or command prompt only for Win95/98, go into the directory where the new BIOS file are located Use the utility AWDFlash.exe or AMIFlash.exe to update the BIOS.

✓ Type the following command once you have enter the directory where all the files are located
 C:\utility\ AWDFlash or AMIFlash <filename of the BIOS binary file intended for flashing>

✓ Once the process is finished, reboot the system

●Note : Please download the newest BIOS from our website (www.gigabyte.com.tw) or contact your local dealer for the file.

FCC Compliance Statement:
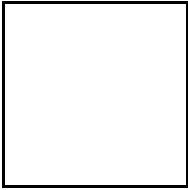
This equipment has been tested and found to comply with limits for a Class B digital device , pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of th e following measures:

-Reorient or relocate the receiving antenna

-Move the equipment away from the receiver

-Plug the equipment into an outlet on a circuit different from that to which the receiver is connected

-Consult the dealer or an experienced radio/television technician for additional suggestions

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void Your authority to operate such equipment.

This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions 1) this device may not cause harmful interference and 2) this device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

We, Manufacturer/Importer
(full address)

G.B.T. Technology Trading GMBH
Ausschlager Weg 41, 1F, 20537 Hamburg, Germany

declare that the product
(description of the apparatus, system, installation to which it refers)

Mother Board
GA-5AX

is in conformity with
(reference to the specification under which conformity is declared)
in accordance with 89/336 EEC-EMC Directive

☐ **EN 55011**	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM high frequency equipment	☐ **EN 61000-3-2*** ☒ **EN60555-2**	Disturbances in supply systems caused by household appliances and similar electrical equipment "Harmonics"
☐ **EN55013**	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment	☐ **EN61000-3-3*** ☒ **EN60555-3**	Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations"
☐ **EN 55014**	Limits and methods of measurement of radio disturbance characteristics of household electrical appliances, portable tools and similar electrical apparatus	☒ **EN 50081-1**	Generic emission standard Part 1: Residual, commercial and light industry
		☒ **EN 50082-1**	Generic immunity standard Part 1: Residual, commercial and light industry
☐ **EN 55015**	Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries	☐ **EN 55081-2**	Generic emission standard Part 2: Industrial environment
☐ **EN 55020**	Immunity from radio interference of broadcast receivers and associated equipment	☐ **EN 55082-2**	Generic immunity standard Part 2: Industrial environment
☒ **EN 55022**	Limits and methods of measurement of radio disturbance characteristics of information technology equipment	☐ **ENV 55104**	Immunity requirements for household appliances tools and similar apparatus
☐ **DIN VDE 0855** ☐ **part 10** ☐ **part 12**	Cabled distribution systems; Equipment for receiving and/or **distribution** from sound and television signals	☐ **EN 50091- 2**	EMC requirements for uninterruptible power systems (UPS)
☒ **CE marking**		CE	(EC conformity marking)

The manufacturer also declares the conformity of above mentioned product
with the actual required safety standards in accordance with LVD 73/23 EEC

☐ **EN 60065**	Safety requirements for mains operated electronic and related apparatus for household and similar general use	☐ **EN 60950**	Safety for information technology equipment including electrical business equipment
☐ **EN 60335**	Safety of household and similar electrical appliances	☐ **EN 50091-1**	General and Safety requirements for uninterruptible power systems (UPS)

Manufacturer/Importer

Signature : *Rex Lin*

(Stamp)   Date : MAY. 29, 1998   Name　:　Rex Lin

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