
**INTEL I440 LX CHIPSET
ATX FORM FACTOR
PENTIUM II SYSTEM BOARD
USER'S MANUAL
(VER : 6ALX2)**

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CHAPTER 1: INTRODUCTION

1-1 OVERVIEW :

THE I440 LX MAIN BOARD IS DESIGNED WITH INTEL 82440LX PCISSET WHICH PROVIDES AN INTEGRATED IDE CONTROLLER WITH TWO HIGH PERFORMANCE IDE INTERFACES FOR UP TO FOUR IDE DEVICES (HARD DEVICES , CD-ROM DEVICES , ETC), AND USB (UNIVERSAL SERIAL BUS) FEATURES ENHANCES THE OVERALL PERFORMANCE ANDE EXTENSION FOR THIS BOARD.

IT SUPPORTS INTEL PENTIUM II CPUS FAMILY RUNNING AT 200-300 MHZ SPEED, CPU SUPPORTS INTERNAL 512K L2 CACHE MEMORY IS IDEAL FOR MS-DOS, WINDOWS, WIN95, WINDOW NT, NOVELL, OS/2, UNIX., SOFTWARES.

THE PERFORMANCE, SPEED AND EXTENSIBILITY OF I440LX MAIN BOARD MAKE IT THE PERFECT CHOICE FOR BUILDING A LAN SERVER, A HIGH-END WORKSTATION OR A MULTI-USER SYSTEM.

1-2 SPECIFICATIONS

CPU	: 200 - 300 MHZ INTEL PENTIUM II CPU.
MEMORY	: 3 OF 168-PIN DIMM UP TO 384MB. DIMM FOR JEDEC 3.3V TYPE SDRAM (SYNCHRONOUS DRAM) EDO RAM CANNOT USE 5V DIMM.
EXP.SLOT	: 3 X ISA, 4 X PCI SLOTS AND 1X A.G.P. SLOT
CHIPSET	: INTEL I440 LX CHIPSET INTEL 82443LX PCI AND A.G.P CONTROLLER. INTEL 82371AB I/O BRIDGE
CACHE SIZE	: NONE (CPU INTERNAL L2 CACHE 512K).
BIOS	: AWARD FULL PnP (PLUG & PLAY) BIOS.
I/O FUNCTION	: ON BOARD 2 x PCI IDE DEVICES , 1 x FDC , 2 x SERIAL PORTS(16550 FAST COM),1x PARALLEL PORT DEVICE /EPP/ECP, OPTIONAL USB CONNECTOR .
BOARD SIZE	: 30.5 CM x 19 CM.
GREEN FUNCTION	: COMPLIED WITH APM (ADVANCED POWER MANAGEMENT).
SPECIAL FUNCTION	: LM78 SUPPORTS HARDWARE MONITORING IS OPTIONAL.

1-3 UNPACKING :

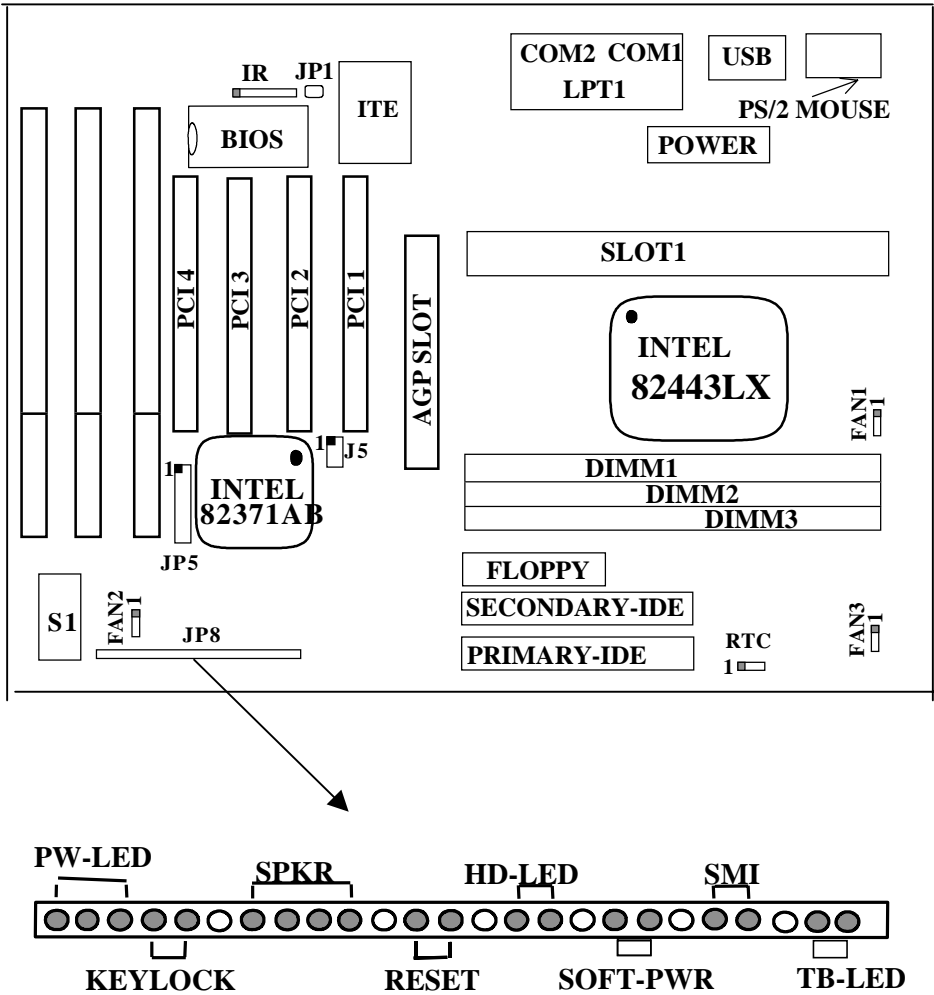
THE MAIN BOARD PACKAGE CONTAINS:

- * I440LX MAIN BOARD
- * MANUAL
- * CABLES
- * DRIVER & UTILITY / CD
- * RETENTION MODULES

IF ANY OF THESE ITEMS IS MISSING OR DAMAGED,CONTACT THE DEALER FROM WHOM YOU PURCHASED. LEAVE THE I440LX IN ITS ORIGINAL PACKING UNTIL YOU ARE READY TO INSTALL IT.






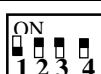
CHAPTER 2. INSTALLATION

2-1 LAYOUT REFERENCE



2-2 JUMPER SETTINGS



1.S1 : CPU TYPE SELECTOR

CPU SPEED	CLOCK SPEED	RATIO	S1
PENTIUM II 200 MHZ	(66MHZ)	3	
PENTIUM II 233 MHZ	(66MHZ)	3.5	
PENTIUM II 266 MHZ	(66MHZ)	4	
PENTIUM II 300 MHZ	(66MHZ)	4.5	
*PENTIUM II 333 MHZ	(66MHZ)	5X	
*PENTIUM II 366MHZ	(66MHZ)	5.5X	

***PENTIUM II 333 and 366MHZ is for reference only. These 2 CPUs are not available when the manual is published.**

EXPLANATION OF JUMPER SETTING

S1 : CPU CLOCK & FREQUENCY RATIO SELECTOR

	60MHz	66.6MHz
S1(1)		

CHAPTER 2. INSTALLATION

	3 X	3.5 X	3.5 X	4.5 X	5.X	5.5X
S1 (2-4)						

The following is for **jumperless** 6ALX2. Please modify **“CPU Clock Ratio”** in **“3-4 Chipset Features Setup.”** First, go to **“3-4 Chipset Features Setup”** and set proper **“CPU Clock Ratio.”** Then, go to **“3-1 Award BIOS Setup”** and save the change. The user does not have to set jumpers as **“2-2 Jumper Settings.”**

CHIPSET FEATURES SETUP

ROM PCI BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.

AUTO CONFIGURATION :ENABLED DRAM SPEED SELECTION :60NS MA WAIT STATE :SLOW EDO RAS# TO CAS DELAY :2 EDO RAS# PRECHARGE TIME :3 EDO DRAM READ BURST :X333 EDO DRAM WRITE BURST :X333 DRAM DATA INTEGRITY MODE :NON-ECC CPU-TO-PCI IDE POSTING :ENABLED SYSTEM BIOS CACHEABLE :ENABLED VIDEO BIOS CACHEABLE :ENABLED VIDEO RAM CACHEABLE :DISABLED 8 BIT I/O RECOVERY TIME :1 16 BIT I/O RECOVERY TIME :2 MEMORY HOLE AT 15M-16M :DISABLED PASSIVE RELEASE :ENABLED DELAYED	SDRAM CAS LATENCY TIME :3 CPU CLOCK RATIO : 5.5/366MHZ AUTO DETECT DIMM/PCI CLK : DISABLED SPEED SPECTRUM : DISABLED CLOCK TURBO MODE : DISABLED ESC : QUIT F1 : HELP F5 : OLD VARI
---	--

*CPU CLOCK RATIO

Press “+” or “-” to choose “CPU Clock Ratio” according to your CPU frequency. The screen will show the following choices:

- | | |
|-------------------------|-------------------------|
| P-II 133 v “2.0/133MHZ” | P-II 166 v “2.5/166MHZ” |
| P-II 200v “3.0/200MHZ” | P-II 233 v “3.5/233MHZ” |
| P-II 266 v “4.0/266MHZ” | P-II 300v “4.5/300MHZ” |
| P-II 333 v “5.0/333MHZ” | P-II 366v “5.5/366MHZ.” |

Also note that wrong **“CPU Clock Ratio”** leads to wrong system setup.

*CLOCK TURBO MODE

If this item is modified to **“ENABLED,”** CPU BUS SPEED may increase from 66MHZ to 75MHZ, but interface card for PCI SLOT must bear a higher frequency over 33MHZ.

Without the card, this functioned is not suggested to be used.

2. RTC : BATTERY SELECTOR (BLACK JUMPER CAP)

	NORMAL	CLEAR CMOS
RTC	1-2 (DEFAULT)	2-3

☞ **CUSTOMERS NEED TO CLEAR CMOS, THEN RECONFIGURE IT IF FORGET PASSWORD FOR BIOS SETUP.**

3. SOFTPWR : ATX POWER SWITCH

The system power is controlled by a momentary switch (when "power switch type" is set to momentary) connected to this lead. Pushing the button once will turn on the system and pushing another time will turn off the system. The system power LED shows the status of the system's power. This connection does not have a function when a standard power supply is used.

**4. OTHER JUMPER SETTINGS AND CONNECTORS :
PRIMARY**

: PRIMARY IDE CONNECTOR.

SECONDARY : SECONDARY IDE CONNECTOR

FLOPPY : FLOPPY DISK CONNECTOR .

PRINTER : PARALLEL PORT CONNECTOR.

COM1 : SERIAL PORT 1 CONNECTOR.

COM2 : SERIAL PORT 2 CONNECTOR.

MOUSE : PS/2 MOUSE CONNECTOR.

KBD : PS/2 KEYBOARD CONNECTOR.

USB : USB (UNIVERSAL SERIAL BUS) CONNECTOR

J5 : SB-LINK (OPTIONAL).

JP5 : AUTO SENSOR FAN CONNECTOR (OPTIONAL).

5. FAN1, FAN2, FAN3 : CPU FAN CONNECTOR

CPU FAN PIN OUT					
PIN1	SENSOR	PIN2	+12V	PIN3	GND

NOTE : USB (UNIVERSAL SERIAL BUS) AND IRCON CONNECTOR ARE OPTIONAL.

6. IR1 : IR (INFRARED) CONNECTOR

IR CONNECTOR PIN OUT						
PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
RX	GND	TX	+5V	RXH	VCC	GND

NOTE : IR1 USES THE SAME I/O PORT AS COM2. THERE IS NO ANY HARDWARE JUMPER SETTING FOR IRCON/COM2 ON THIS MAIN BOARD BUT CUSTOMERS NEED TO SET PROPER BIOS SETTING FOR "IRDA1.0", "ASKIR" OR "standard"(DEFAULT) UNDER "INFRA RED (IR) FUNCTION" OF "INTEGRATED PERIPHERALS"

2-3 MEMORY INSTALLATION

THERE ARE NO JUMPERS FOR THE DIMM CONFIGURATION. THE MOTHER BOARD SUPPORTS 168-PIN DIMMS OF 4MB, 8MB, 16MB, 32MB, 64MB TO FORM A MEMORY SIZE BETWEEN 8MB TO 192MB. PLEASE NOTE THIS MOTHER BOARD CANNOT SUPPORT ANY 5V DIMM , **ONLY ACCEPT 3.3V SDRAM , EDO DRAM. USER MUST CHECK IT BEFORE INSTALLATION.**

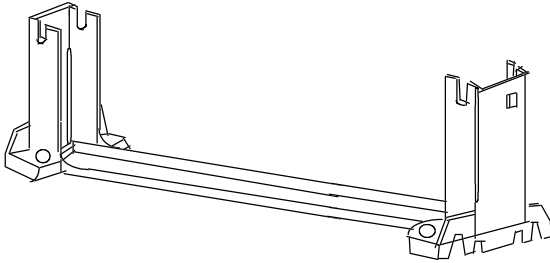
TOTAL	DIMM1	DIMM2	DIMM3
8MBytes	8MB	---	---
16MBytes	8MB	8MB	---
24MBytes	8MB	8MB	8MB
32MBytes	8MB	8MB	16MB
32MBytes	16MB	16MB	---
32MBytes	32MB	---	---
40MBytes	16MB	16MB	8MB
48MBytes	16MB	16MB	16MB
64MBytes	64MB	---	---
64MBytes	32MB	32MB	---
96MBytes	32MB	32MB	32MB
128MBytes	64MB	64MB	---
192MBytes	64MB	64MB	64MB

CHAPTER 2.INSTALLATION

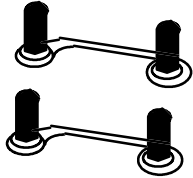
2-4 ASSEMBLING PROCEDURE

1. CHECK IF ALL THE FOLLOWING COMPONENTS ARE INCLUDED IN YOUR PACKAGE, TOTALLY 5 SEPERATE PIECEPARTS.

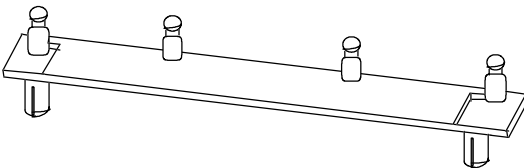
RETENTION MECHANISM (RM): 1 PC



RM ATTACH MOUNT (RMAM): 2 PCS

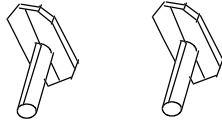


HEAT SINK SUPPORT BASE (HASSBASE): 1 PC

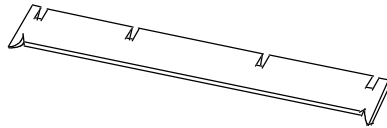


CHAPTER 2.INSTALLATION

HSS PIN (HSSPIN): 2 PCS



HSS TOP BAR (HSSTOP): 1 PC



2. MAKE SURE THAT THE POWER SUPPLY IS TURNED OFF.
3. INSERT THE RMAM UP THROUGH THE BOTTOM OF THE MOTHERBOARD.
4. INSERT THE 2 PINS OF THE HSSPIN DOWNWARD THROUGH THE MOTHERBOARD TO SECURE. TAKE NOTE THAT THE 2 PINS ARE OF DIFFERENT SIZES. YOU CANNOT INSERT THE LARGER PIN INTO THE SMALLER HOLE.
5. PUT THE RM DOWN ON SLOT ONE AND FASTEN UP THE 4 SCREWS. TAKE NOTE THAT ONE TIP OF THE SLOT ONE HAS A SMALL PROTRUSION, SO YOU CAN ONLY INSERT IT ONE WAY.
6. CLIP THE HSSTOP INTO THE HSSBASE.
7. INSERT THE P-II CPU ALONG THE RM INTO SLOT ONE TILL ITS TOP CLICKS INTO THE 2 HOLES ON THE TOP OF THE RM.
8. SLIDE THE HSSTOP INTO THE HSSBASE THROUGHT THE FINS ON THE ATX HEATSINK.

CHAPTER 3. BIOS SETUP

3-1. AWARD BIOS CMOS SETUP

ROM PCI BIOS (2A69JL1A)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : QUIT	□□□□ : SELECT ITEM
F10 : SAVE & EXIT SETUP	(SHIFT) F2 : CHANGE COLOR
Time, Date,Hard Disk Type...	

THE MENU DISPLAYS ALL THE MAJOR SELECTION ITEMS AND ALLOW USER TO SELECT ANY ONE OF SHOWN ITEM. THE SELECTION IS MADE BY MOVING CURSOR(PRESS ANY DIRECTION KEY) TO THE ITEM AND PRESS <ENTER> KEY. AN ON-LINE HELP MESSAGE IS DISPLAYED AT THE BOTTOM OF THE SCREEN AS CURSOR IS MOVING TO VARIOUS ITEMS WHICH PROVIDES USER BETTER UNDERSTANDING OF EACH FUNCTION. WHEN A SELECTION IS MADE, THE MENU OF SELECTED ITEM WILL APPEAR. SO THE USER CAN MODIFY ASSOCIATED CONFIGURATION PARAMETERS.

3-2. STANDARD CMOS SETUP

CHOOSE "STANDARD CMOS SETUP" IN THE CMOS SETUP UTILITY MENU (FIGURE3-1). THE STANDARD CMOS SETUP ALLOWS USER TO CONFIGURE SYSTEM SETTING SUCH AS CURRENT DATE AND TIME, TYPE OF HARD DISK DRIVE INSTALLED IN THE SYSTEM, FLOPPY DRIVE TYPE, AND THE TYPE OF DISPLAY MONITOR. MEMORY SIZE IS AUTO DETECTED BY THE BIOS AND DISPLAYED FOR YOUR REFERENCE. WHEN A FIELD IS HIGHLIGHTED (DIRECTION KEYS TO MOVE CURSOR AND <ENTER> KEY TO SELECT). THE ENTRIES IN THE FIELD WILL BE CHANGED BY PRESSING <PAGEDOWN> OR <PAGEUP> KEY OR USER CAN ENTER NEW DATA DIRECTLY FROM THE KEYBOARD.

ROM PCI BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

DATE (mm:dd:yy) : WED JUN 1, 1995								
TIME (hh:mm:ss) : 00 : 00 : 00								
HARD DISK	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZ	SECTOR	MODE
PRIMARY MASTER	:	USER(428MB)	899	15	65535	898	62	
NORMAL								
PRIMARY SLAVE	:	NONE (0MB)						
SECONDARY MASTER	:	NONE (0MB)						
SECONDARY SLAVE	:	NONE (0MB)						
DRIVE A : 1.2M , 5.25 IN								
DRIVE b : 1.44M , 3.5 IN								
floppy 3 mode support : disabled								
VIDEO : EGA/VGA								
HALT ON : ALL ERRORS								
ESC : QUIT								PU/PD/+/- : MODIFY
F1 : HELP								(SHIFT) F2 : CHANGE COLOR

NOTE: IF HARD DISK PRIMARY MASTER/SLAVE AND SECONDARY MASTER/SLAVE WERE USED AUTO, THEN THE HARD DISK SIZE AND MODEL WILL BE AUTO DETECTED ON DISPLAY DURING POST.

NOTE: THE "HALT ON:"FIELD IS TO DETERMINE WHEN TO HALT THE SYSTEM BY THE BIOS IF ERROR OCCURRED DURING POST.

CHAPTER 3. BIOS SETUP

3-3. BIOS FEATURES SETUP

SELECT THE "BIOS FEATURES SETUP" OPTION IN THE CMOS SETUP UTILITY MENU ALLOWS USER TO CHANGE SYSTEM RELATED PARAMETERS IN THE DISPLAYED MENU. THIS MENU SHOWS ALL OF THE MANUFACTURER'S DEFAULT VALUES OF i440LX MAIN BOARD. AGAIN, USER CAN MOVE THE CURSOR BY PRESSING DIRECTION KEYS AND <PAGEDOWN> OR <PAGEUP> KEY TO MODIFY THE PARAMETERS, PRESSING [F1] KEY TO DISPLAY HELP MESSAGE OF THE SELECTED ITEM. THIS SETUP PROGRAM ALSO PROVIDE 2 CONVINENT WAYS TO LOAD THE DEFAULT PARAMETER DATA FROM BIOS [F6] OR CMOS [F7] AREA IF SHOWN DATA IS CORRUPTED. THIS PROVIDES THE SYSTEM A CAPABILITY TO RECOVER FROM ANY POSSIBLE ERROR.

ROM PCI BIOS
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 L2 CACHE ECC CHECKING : ENABLED	D0000-D3FFF SHADOW :DISABLED
QUICK POWER ON SELF TEST :ENABLED	D4000-D7FFF SHADOW :DISABLED
BOOT SEQUENCE :A,C, SCSI	D8000-DBFFF SHADOW :DISABLED
SWAP FLOOPY DRIVE :DISABLED	DC000-DFFFF SHADOW :DISABLED
BOOT UP FLOOPY SEEK :ENABLED	
BOOT UP NUMLOCK STATUS :ON	
BOOT UP SYSTEM SPEED :high	
GATE A20 OPTION :NORMAL	
TYPOMATIC RATE SETTING :DISABLED	
TYPOMATIC RATE(CHARS/SEC) :6	
TYPOMATIC DELAY(MSEC) :250	
SECURITY OPTION :setup	
PS/2 mouse function control :Enabled	
PCI VGA PALETTE SNOOP :DISABLED	ESC : QUIT □□□ □ : SELECT
OS SELECT FOR DRAM > 64MB :NON-OS2	ITEM
Report no FDD for win 95 :No	F1 : HELP PU/PD/+/- : MODIFY
	F5 : OLD VALUES (SHIFT) F2 : COLOR
	F7 : LOAD SETUP DEFAULTS

EXTERNAL CACHE:

THIS OPTION SELECTS THE TYPE OF CACHING ALGORITHM USED BY BIOS AND THE COMPUTER FOR L2 (EXTERNAL) SECONDARY CACHE MEMORY. THE SETTINGS ARE ENABLED OR DISABLED.

ENABLED: ENABLE CACHE

DISABLED: DISABLE CACHE

EXTERNAL CACHE:

THIS OPTION SELECTS THE TYPE OF CACHING ALGORITHM USED BY BIOS AND THE COMPUTER FOR L2 (EXTERNAL) SECONDARY CACHE MEMORY. THE SETTINGS ARE ENABLED OR DISABLED.

ENABLED: ENABLE CACHE

QUICK POWER ON SELF TEST:

THIS CATEGORY SPEEDS UP POWER ON SELF TEST. (POST) AFTER YOU POWER ON THE COMPUTER, IF IT IS SET TO ENABLE, BIOS WILL SHORTEN OR SKIP SOME CHECK ITEMS DURING POST.

ENABLE : ENABLE QUICK POST

DISABLED: NORMAL POST

BOOT SEQUENCE:

THIS CATEGORY DETERMINES WHICH DRIVE COMPUTER SEARCHES FIRST FOR THE DOS (DISK OPERATING SYSTEM). DEFAULT VALUE IS A,C.

A,C: SYSTEM WILL FIRST SEARCH FOR FLOPPY DISK DRIVE THEN HARD DISK DRIVE.

C,A: SYSTEM WILL FIRST SEARCH FOR HARD DISK DRIVE THEN FLOPPY DISK DRIVE.

SWAP FLOPPY DRIVE:

THE SWAP FLOPPY DRIVE. DEFAULT VALUE IS DISABLED. **ENABLED:** FLOPPY A&B WILL BE SWAPPED UNDER THE DOS **DISABLED:** FLOPPY A&B WILL BE NOT SWAPPED.

BOOT UP FLOPPY SEEK:

DURING POST, BIOS WILL DETERMINE IF THE FLOPPY DISK DRIVE INSTALLED IS 40 OR 80 TRACKS. 360K TYPE IS 40 TRACKS WHILE 720K, 1.2M AND 1.44M ARE ALL 80 TRACKS. THE DEFAULT VALUE IS ENABLED.

BOOT UP NUMLOCK STATUS:

THE DEFAULT VALUE IS ON.

ON: KEYPAD IS NUMBER KEYS.

OFF: KEYPAD IS ARROW KEYS.

BOOT UP SYSTEM SPEED:

IT SELECTS THE DEFAULT SYSTEM SPEED-THE SPEED THAT THE SYSTEM WILL RUN AT IMMEDIATELY AFTER POWER UP.

HIGH: SET THE SPEED TO HIGH.

LOW: SET THE SPEED TO LOW.

VIDEO BIOS SHADOW:

IT DETERMINES WHETHER VIDEO BIOS WILL BE COPIED TO RAM, HOWEVER, IT IS OPTIONAL FROM CHIPSET DESIGN. VIDEO SHADOW WILL INCREASE THE VIDEO SPEED.

ENABLED : VIDEO SHADOW IS ENABLED

DISABLED: VIDEO SHADOW IS DISABLED

C8000-CBFFF SHADOW:

CC000-CFFFF SHADOW:

D0000-D3FFF SHADOW:

D4000-D7FFF SHADOW:

D8000-DBFFF SHADOW:

DC000-DFFFF SHADOW:

THESE CATEGORIES DETERMINE WHETHER OPTIONAL ROM WILL BE COPIED TO RAM BY 16K BYTE OR 32K BYTE PER/UNIT AND THE SIZE DEPENDS ON CHIPSET.

ENABLED : OPTIONAL SHADOW IS ENABLED.

DISABLED: OPTIONAL SHADOW IS DISABLED.

CHAPTER 3. BIOS SETUP

3-4. CHIPSET FEATURES SETUP

ROM PCI BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

AUTO CONFIGURATION	:ENABLED	SDRAM CAS latency time	:3
DRAM SPEED SELECTION	:60NS		
MA WAIT STATE	:SLOW		
EDO RAS# TO CAS DELAY	:2		
EDO RAS# PRECHARGE TIME	:3		
EDO DRAM READ BURST	:X333		
EDO DRAM WRITE BURST	:X222		
DRAM DATA INTEGRITY MODE	:NON-ECC		
CPU-TO-PCI IDE POSTING	:ENABLED		
SYSTEM BIOS CACHEABLE	:ENABLED		
VIDEO BIOS CACHEABLE	:ENABLED		
VIDEO RAM CACHEABLE	:DISABLED		
8 BIT I/O RECOVERY TIME	:1		
16 BIT I/O RECOVERY TIME	:2		
MEMORY HOLE AT 15M-16M	:DISABLED		
PASSIVE RELEASE	:ENABLED	ESC : QUIT	□□□□ : SELECT TEM
DELAYED TRANSACTION	:DISABLED	F1 : HELP	PU/PD/+/- : MODIFY
AGP APERTARE SIGE (MB)	:64	F5 : OLD VALUED (SHIFT)	F2 : COLOR
SDRAM RAS TO CAS DELAY	:SLOW	F6 : LOAD BIOS DEFAULTS	
SDRAM RAS# PRECHARGE TIME	:SLOW	F7 : LOAD SETUP DEFAULTS	

AUTO CONFIGURATION [THE BIOS will automatically detect the CPU speed and will auto-configure the bus frequency, DRAM speed, cache and read/write cycle.]

DRAM RAS# Precharge Time [The DRAM Precharge time by RAS.]
: 4
: 3 (default)

RAS TO CAS Delay[Control the DRAM page miss and row miss leadoff timing.]

: 2
: 3 (default)

DRAM Read Burst (B/E/F) [The timing used depends on the type of DRAM on a per-basis. The DRAM read burst timing are controlled by register.]

- : X2222
- : X3333
- : X4444 (default)

DRAM Write Burst (B/E/F) [Slower rate may be required in certain system designs to support layout with longer trace length or slower DRAM. The DRAM write burst timing are controlled by register.]

- : X2222
- : X3333
- : X4444 (default)

System BIOS Cacheable[Define whether system BIOS area cacheable or not.]

- :Enabled
- :Disabled (default)

Video BIOS Cacheable[Define whether video BIOS area cacheable or not.]

- :Enabled
- :Disabled (default)

8 BIT I/O RECOVERY TIME:

THIS FIELD DEFINES THE RECOVERY TIME FROM 1 TO 8 FOR 8-BIT I/O.

16 BIT I/O RECOVERY TIME:

TO DEFINE THE RECOVERY TIME FROM 1 TO 4 FOR 16-BIT I/O.

Memory Hole AT 15M-16M[This field enable a memory hole in main memory space. CPU cycles matching an enabled hold are passed on to PCI. Note that a selected can not be changed while the L2 cache is enabled.]

- :Enabled
- :Disabled (default)

CHAPTER 3. BIOS SETUP

3-5. POWER MANAGEMENT SETUP

ROM PCI BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

POWER MANAGEMENT	:DISABLED	**RELOAD GLOBAL TIMER EVENTS**
PM CONTROL BY APM	:Yes	IRQ (3-7, 9-15), NMI : ENABLED
VIDEO OFF METHOD	:V/H	PRIMARY IDE 0 : DISABLED
SYNC+Blank		PRIMARY IDE 1 : DISABLED
VIDEO OFF AFTER	: STANDBY	SECONDARY IDE 0 : DISABLED
MODEM use IRQ	:3	FLOPPY DISK : DISABLED
DOZE MODE	:DISABLED	SERIAL PORT : ENABLED
STANDBY MODE	:DISABLED	PARALLEL PORT : DISABLED
SUSPEND MODE	:DISABLED	
HDD POWER DOWN	:Disabled	
THROTTLE DUTY CYCLE	: 62.5%	
ZZ ACTIVE IN SUSPEND	: DISABLE	
SOFT-OFF BY PWR-BTTN	INSTANT-OFF	ESC : QUIT <input type="checkbox"/> <input type="checkbox"/> : SELECT ITEM
CPUFAN OFF IN SUSPEND	: ENABLED	F1 : HELP PU/PD/+/- : MODIFY
RESUME BY RING	: ENABLED	F5 : OLD VALUES (SHIFT) F2 : COLOR
RESUME BY ALARM	: DISABLED	F7 : LOAD SETUP DEFAULTS
IRQ 8 BREAK SUSPEND	: DISABLED	

POWER MANAGEMENT:

Disabled :Global Power Management will be disabled.

User Define:Users can configure their own power management.

Min.Saving :Pre-define timer value are used such that all timers are in their MAX . value

Max.Saving :Pre-define timer values are used such that all timers are in their MIN . value.

PM Control by APM:

NO : System BIOS will ignore APM.

Yes : System BIOS will wait for APM's prompt before it enter any PM mode, e.g. DOZE, STANDBY or SUSPEND.

**** NOTE **** : 1. IF APM is installed, and there is a task running, even if the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode!
2. IF APM is not installed, this option has no effect.

CHAPTER 3. BIOS SETUP

Video Off Method :
Blank Screen : The system BIOS will only blanks off the screen when disabled.
V/H SYNC+Blank : BIOS will also turn off the V/H SYNC signal from VGA card to monitor.

DPMS : Display Power Management by VGA Card support.
Doze Mode : disabled , 1 Min --- 1 Hour
Standby Mode : disabled , 1 Min --- 1 Hour
Suspend Mode : disabled , 1 Min --- 1 Hour
HDD Power Down : disabled , 1 Min ---15 Min
Wake-up Event : TO IRQ3, IRQ4 , IRQ8 , IRQ12 check point.
Any activity. The system will wake up.

Power down Activities : To COM ports, LPT ports and Drive ports
IRQ3.....IRQ15 check point Then Into Green function.

CHAPTER 3. BIOS SETUP

3-6. PNP / PCI CONFIGURATION SETUP

ROM PCI BIOS

PNP / PCI CONFIGURATION SETUP

AWARD SOFTWARE, INC.

PNP OS INSTALLED : NO	PCI IRQ MAP TO : PCI-AUTO
RESOURCES CONTROLLED BY : MANUAL	PRIMARY IDE INT# : A
Reset configuration data : disabled	SECONDARY IDE INT# : B
IRQ-3 assigned to : legacy ISA	USED MEM base addr : N/A
IRQ-4 assigned to : legacy ISA	ASSIGN IRQ FOR USB : ENABLED
IRQ-5 assigned to : PCI/ ISA PnP	ASSIGN IRQ FOR VGA : ENABLED
IRQ-7 assigned to : PCI/ ISA PnP	
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 : PCI/ISA PnP	
IRQ-14 assigned to : PCI/ISA PnP	
IRQ-15 assigned to : PCI/ISA PnP	
DMA-0 assigned to : PCI/ ISA PnP	
DMA-1 assigned to : PCI/ ISA PnP	ESC : QUIT <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> : SELECT ITEM
DMA-3 assigned to : PCI/ ISA PnP	F1 : HELP PU/PD/+/- : MODIFY
DMA-5 assigned to : PCI/ ISA PnP	F5 : OLD VALUED (SHIFT) F2 : COLOR
DMA-6 assigned to : PCI/ ISA PnP	F7 : LOAD SETUP DEFAULTS
DMA-7 assigned to : PCI/ ISA PnP	

(1-3) AVAILABLE IRQ : (NA, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 15)

PCI IRQ ACTIVATED BY : LEVEL

PCI IDE IRQ MAP TO : PCI-AUTO (PCI-SLOT 1, 2, 3)

PRIMARY IDE INT# : A (B, C, D)

SECONDARY IDE INT# : B (C, D, A)

PCI SLOTS ROUTING METHOD:

PCI 1: A, B, C, D

PCI 2: B, C, D, A

PCI 3: C, D, A, B

CHAPTER 3. BIOS SETUP

3-7. INTEGRATED PERIPHERALS

ROM PCI BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD block mode :Enabled IDE primary master PIO :Auto IDE primary slave PIO :Auto IDE secondary master PIO :Auto IDE secondary slave PIO :Auto IDE PRIMARY MASTER UDMA : AUTO IDE PRIMARY SLAVE UDMA : AUTO IDE SECONDARY MASTER UDMA: AUTO IDE SECONDARY SLAVE UDMA : AUTO on-chip primary PCI IDE :Enabled on-chip secondary PCI IDE :EnableD USB KEYBOARD SUPPORT : DISABLED	ONBOARD PARALLEL PORT : 378/IRQ7: 378/IRQ7 PARALLEL PORT MODE :SPP
KBC INPUT CLOCK : 8 MHZ onboard FDC controller :Enabled onboard serial port 1 :3F8/IRQ4 onboard serial port 2 :2F8/IRQ3 UR2 MODE : STANARD	ESC : QUIT <input type="checkbox"/> <input type="checkbox"/> : SELECT ITEM F1 : HELP PU/PD/+/- : MODIFY F5 : OLD VALUED (SHIFT) F2 : COLOR F7 : LOAD SETUP DEFAULTS

IDE HDD Block Mode[This feature enhances hard disk performance by making multi sector transfer, instead of one sector per transfer, Most of IDE drivers, except very early designs ,can use this feature.]

:Enabled (default)
:Disabled

IDE Primary Master PIO[Detect your Primary Master hard disk device.]

:AUTO (default)
:Mode 0,1,2,3,4

IDE Primary Slave PIO[Detect your Primary Slave hard disk device.]

:AUTO (default)
:Mode 0,1,2,3,4

IDE Secondary Master PIO[Detect your Secondary Master hard disk device.]

:AUTO (default)
:Mode 0,1,2,3,4

IDE Secondary Slave PIO [Detect your Secondary Slave hard disk device.]

: AUTO (default)
: Mode 0,1,2,3,4

On-Chip Primary PCI IDE [Select use Chip support Primary PCI IDE.]

: Enabled (default)

: Disabled

On-Chip Secondary PCI IDE [Select use Chip support Secondary PCI IDE.]

: Enabled (default)

: Disabled

PCI slot IDE 2nd Channel [Use external IDE. AS ISA IDE or PCI IDE.]

: Enabled (default)

: Disabled

On-board FDD Controller : Enabled (default)

: Disabled

On-board Serial Port 1 : COM1 (default)

: COM2

: COM3

: COM4

: Disabled

On-board Serial Port 2 : COM1

: COM2 (default)

: COM3

: COM4

: Disabled

On-board Parallel Port : 378H (default)

: 278H

: 3BCH

: Disabled

On-board Parallel Mode : SPP(default)

: EPP

: ECP

: ECP+EPP

3-8. SUPERVISOR/USER PASSWORD

The " SUPERVISOR/USER PASSWORD SETTING " utility sets the password. The mainboard may be shipped with the default password "award_sw" , or with the password disabled. If you want to change the password, you must first enter the current password (" award_sw " in this case). Then at the prompt, type your new password. The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after the password . At the next prompt, confirm the new password by typing it and pressing <Enter> again. when you use this feature, the " security option" line in BIOS FEATURES SETUP will determine whether the password will be required. To disable the password, press the <Enter> key instead of entering a new password when the " Enter password" dialog box appears. A message will appear confirming that the password is disable. You may receive your mainboard set up this way.

THERE are two kinds of password functions in the setup menu : one is **SUPERVISOR PASSWORD**, and the other is **USER PASSWORD**.

THE differences between them are:

SUPERVISOR PASSWORD:THE supervisor password function allows you the right to change the options of setup menu once you enter the setup menu.

USER PASSWORD:THE user password function only allows you to enter the setup menu but do not have the right to change the options of the setup menu except user password, save & exit setup, and exit without saving.

3-9 .IDE HDD AUTO DETECTION

THE "IDE HDD AUTO DETECTION" UTILITY IS A VERY USEFUL TOOL ESPECIALLY WHEN YOU DO NOT KNOW WHICH KIND OF HARD DISK TYPE YOU ARE USING. YOU CAN USE THIS UTILITY TO DETECT THE CORRECT DISK TYPE INSTALLED IN THE SYSTEM AUTOMATICALLY OR YOU CAN SET HARD DISK TYPE TO AUTO IN THE STANDARD CMOS SETUP. YOU DON'T NEED THE "IDE HDD AUTO DETECTION" UTILITY. THE BIOS WILL AUTO-DETECT THE HARD DISK SIZE AND MODEL ON DISPLAY DURING POST.

NOTE: HDD MODES

THE AWARD BIOS SUPPORTS 3 HDD MODES: NORMAL, LBA & LARGE

NORMAL MODE

GENERIC ACCESS MODE IN WHICH NEITHER THE BIOS NOR THE IDE CONTROLLER WILL MAKE ANY TRANSFORMATIONS DURING ACCESSING.

THE MAXIMUM NUMBER OF CYLINDERS, HEAD & SECTORS FOR NORMAL MODE ARE 1024, 16 & 63.

	no. CYLINDER	(1024)
X	no. HEAD	(16)
X	no. SECTOR	(63)
X	<u>no. PER SECTOR</u>	<u>(512)</u>
		528 MEGABYTES

IF USER SET THIS HDD TO NORMAL MODE, THE MAXIMUM ACCESSIBLE HDD SIZE WILL BE 528 MEGABYTES EVEN THOUGH ITS PHYSICAL SIZE MAY BE GREATER THAN THAT!

LBA (LOGICAL BLOCK ADDRESSING) mode

A NEW HDD ACCESSING METHOD TO OVERCOME THE 528 megabyte BOTTLENECK. THE NUMBER OF CYLINDERS, HEADS & SECTORS SHOWN IN SETUP MAY NOT BE THE NUMBER PHYSICALLY CONTAINED IN THE HDD.

CHAPTER 3. BIOS SETUP

DURING HDD ACCESSING, THE IDE CONTROLLER WILL TRANSFORM THE LOGICAL ADDRESS DESCRIBED BY SECTOR, HEAD & CYLINDER INTO ITS OWN PHYSICAL ADDRESS INSIDE THE HDD.

THE MAXIMUM HDD SIZE SUPPORTED BY LBA MODE IS 8.4 GIGABYTES WHICH IS OBTAINED BY THE FOLLOWING FORMULA:

$$\begin{array}{r} \text{no. CYLINDER} \quad (1024) \\ X \text{ no. HEAD} \quad (255) \\ X \text{ no. SECTOR} \quad (63) \\ \hline X \text{ no. BYTES PER SECTOR} \quad (512) \end{array}$$

8.4 GIGABYTES

LARGE MODE

EXTENDED HDD ACCESS MODE SUPPORTED BY AWARD SOFTWARE.

SOME IDE HDDS CONTAIN MORE THAN 1024 CYLINDER WITHOUT LBA SUPPORT (IN SOME CASES, USER DO NOT WANT LBA). THE AWARD BIOS PROVIDES ANOTHER ALTERNATIVE TO SUPPORT THESE KINDS OF LARGE MODE:

<u>CYLS.</u>	<u>HEAD</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS TRICKS DOS (OR OTHER OS) THAT THE NUMBER OF CYLINDERS IS LESS THAN 1024 BY DIVIDING IT BY 2. AT THE SAME TIME, THE NUMBER OF HEADS IS MULTIPLIED BY 2. A REVERSE TRANSFORMATION PROCESS WILL BE MADE INSIDE INT 12H IN ORDER TO ACCESS THE RIGHT HDD ADDRESS THE RIGHT HDD ADDRESS!

MAXIMUM HDD SIZE:

$$\begin{array}{r} \text{no. CYLINDER} \quad (1024) \\ X \text{ no. HEAD} \quad (32) \\ X \text{ no. SECTOR} \quad (63) \\ \hline X \text{ no. BYTES PER SECTOR} \quad (512) \end{array}$$

1 GIGABYTES

NOTE: TO SUPPORT LBA OR LARGE MODE OF HDDS, THERE MUST BE SOME SOFTWARES INVOLVED. ALL THESE SOFTWARES ARE LOCATED IN THE AWARD HDD SERVICE ROUTINE (INT 13H). IT MAY BE FAILED TO ACCESS A HDD WITH LBA (LARGE) MODE SELECTED IF YOU ARE RUNNING UNDER AN OPERATING SYSTEM WHICH REPLACES THE WHOLE INT 13H. UNIX OPERATING SYSTEMS DO NOT SUPPORT EITHER LBA OR LARGE AND MUST UTILITY THE STANDARD MODE. UNIX CAN SUPPORT DRIVES LARGER THAN 528MB.

3-10 .LOAD SETUP DEFAULTS

"LOAD SETUP DEFAULTS" loads optimized settings which are stored in the BIOS ROM. THE AUTO-CONFIGURED SETTINGS ONLY AFFECT THE BIOS FEATURE SETUP AND CHIPSET FEATURES SETUP SCREENS. THERE IS NO EFFECT ON THE STANDARD CMOS SETUP. TO USE THIS FEATURE, HIGHLIGHT IT ON THE MAIN SCREEN AND PRESS THE <ENTER> KEY. A LINE WILL APPEAR ON SCREEN ASKING IF YOU WANT TO LOAD THE SETUP DEFAULT VALUES. PRESS THE <Y> KEY AND THEN PRESS THE <ENTER> KEY . THE SETUP DEFAULTS WILL THEN LOAD. PRESS <N> IF YOU DON'T WANT TO

3-11 SAVE & EXIT SETUP

THE "SAVE & EXIT SETUP" OPTION WILL BRING YOU BACK TO BOOT UP PROCEDURE WITH ALL THE CHANGES, YOU JUST MADE WHICH ARE RECORDED IN THE CMOS RAM.

3-12 EXIT WITHOUT SAVING

THE "EXIT WITHOUT SAVING" OPTION WILL BRING YOU BACK TO NORMAL BOOT UP PROCEDURE WITHOUT SAVING ANY DATA INTO CMOS RAM. ALL OF THE OLD DATA IN THE CMOS WILL NOT BE DESTROYED.

3-13 I/O & MEMORY MAP

MEMORY MAP

ADDRESS RANGE	SIZE	DESCRIPTION
00000-7FFFF	512K	CONVENTIONAL MEMORY
80000-9FBFF	127K	EXTENDED CONVENTIONAL MEMORY
9FC00-9FFFF	1K	EXTENDED BIOS DATA AREA IF PS/2 MOUSE IS INSTALLED
A0000-C7FFF	160K	AVAILABLE FOR HI DOS MEMORY
C8000-DFFFF	96K	AVAILABLE FOR HI DOS MEMORY AND ADAPTER ROMS
E0000-EEFFF	60K	AVAILABLE FOR UMB
EF000-EFFFF	4K	VIDEO SERVICE ROUTINE FOR MONOCHROME & CGA ADAPTER
F0000-F7FFF	32K	BIOS CMOS SETUP UTILITY
F8000-FCFFF	20K	BIOS RUNTIME SERVICE ROUTINE (2)
FD000-FDFFF	4K	PLUG AND PLAY ESCD DATA AREA
FE000-FFFFF	8K	BIOS RUNTIME SERVICE ROUTINE (1)

I/O MAP

000-01F	DMA CONTROLLER (MASTER)
020-021	INTERRUPT CONTROLLER (MASTER)
022-023	CHIPSET CONTROL REGISTERS. I/O POSTS
040-05F	TIMER CONTROL REGISTERS
060-06F	KEYBOARD INTERFACE CONTROLLER (8042)
070-07F	RTC PORTS & CMOS I/O PORTS
080-09F	DMA REGISTER
0A0-0BF	INTERRUPT CONTROLLER (SLAVE)
0C0-0DF	DMA CONTROLLER (SLAVE)
0F0-0FF	MATH COPROCESSOR
1F0-1FB	HARD DISK CONTROLLER
278-27F	PARALLEL PORT 2
2B0-2DF	GRAPHICS ADAPTER CONTROLLER
2F8-2FF	SERIAL PORT 2
360-36F	NETWORK PORTS
378-37F	PARALLEL PORT 1
3B0-3BF	MONOCHROME & PARALLEL PORT ADAPTER
3C0-3CF	EGA ADAPTER
3D0-CDF	CGA ADAPTER
3F0-3F7	FLOPPY DISK CONTROLLER
3F8-3FF	SERIAL PORT-1

3-14 TIME & DMA CHANNELS MAP

TIME MAP: TIMER CHANNEL 0 SYSTEM TIMER INTERRUPT
TIMER CHANNEL 1 DRAM REFRESH REQUEST
TIMER CHANNEL 2 SPEAKER TONE GENERATOR

DMA CHANNELS: DMA CHANNEL 0 AVAILABLE
 DMA CHANNEL 1 ONBOARD ECP (OPTION)
DMA CHANNEL 2 FLOPPY DISK (SMC CHIP)
DMA CHANNEL 3 ONBOARD ECP (DEFAULT)
DMA CHANNEL 4 CASCADE FOR DMA CONTROLLER 1
DMA CHANNEL 5 AVAILABLE
 DMA CHANNEL 6 AVAILABLE
 DMA CHANNEL 7 AVAILABLE

3-15 INTERRUPT MAP

NIMI: NON-MASKABLE INTERRUPT

IRQ(H/W): 0 SYSTEM TIMER INTERRUPT FROM TIMER 0
 1 KEYBOARD OUTPUT BUFFER FULL
 2 CASCADE FOR IRQ8-15
 3 SERIAL PORT2
 4 SERIAL PORT1
 5 PARALLEL PORT 2
 6 FLOPPY DISK (SMC CHIP)
 7 PARALLEL PORT 1
 8 RTC CLOCK
 9 AVAILABLE
 10 AVAILABLE
 11 AVAILABLE
 12 PS/2 MOUSE
 13 MATH COPROCESSOR
 14 ONBOARD HARD DISK (IDE1) CHANNEL
 15 ONBOARD HARD DISK (IDE2) CHANNEL

3-16 RTC & CMOS RAM MAP

RTC & CMOS:00 SECONDS
01 SECOND ALARM
02 MINUTES
03 MINUTES ALARM
04 HOURS
05 HOURS ALARM
06 DAY OF WEEK
07 DAY OF MONTH
08 MONTH
09 YEAR
0A STATUS REGISTER A
0B STATUS REGISTER B
0C STATUS REGISTER C
0D STATUS REGISTER D
0E DIAGNOSTIC STATUS BYTE
0F SHUTDOWN BYTE
10 FLOPPY DISK DRIVE TYPE BYTE
12 HARD DISK TYPE BYTE
13 RESERVE
14 EQUIPMENT TYPE
15 BASE MEMORY LOW BYTE
16 BASE MEMORY HIGH BYTE
17 EXTENSION MEMORY LOW BYTE
18 EXTENSION MEMORY HIGH BYTE
19-2D
2E-2F
30 RESERVED FOR EXTENSION MEMORY LOW BYTE
31 RESERVED FOR EXTENSION MEMORY HIGH BYTE
32 DATE CENTURY BYTE
33 INFORMATION FLAG
34-3F RESERVE
40-7F RESERVED FOR CHIPSET SETTING DATA

---END---

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