HT286 MAIN BOARD

USER'S MENU

CONTENTS

CHAPTER 1 INTRODUCTION

Congratulations on the purchase of your new HT Main Board.

The HT-286 12/16Mhz Main Board which you received has passed strict quality control procedures to ensure trouble-free operation. we are confident that you will be completely satisfied with it's high speed performances, capabilities and operation.

The operation manual has simple instructions for the installation and operation of the main board.

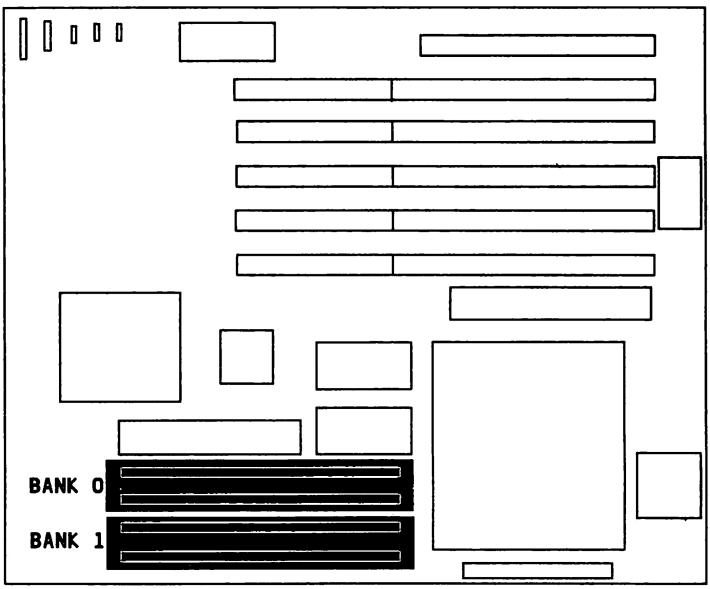
CHAPTER 2 FEATURES

* 80286 CPU 12/16MHz 0\1 WAIT STATE
* INTEL 80287 MATH COPROCESSOR SOCKET
* RAM SIZE , CPU SPEED , I/O SPEED , SHADOW VIDEO & BIOS ARE ALL ADJUSTABLE BY ON BOARD BIOS OR CONFIGURED
* SYSTEM CAN BE STARTED BY 256K DRAM (256K x 1 ; 256K x 4 DRAM) ,256K * 9/1M * 9 SIP MODULE
* MEMORY EXPENTIABLE UP TO 4MEGA BYTES WITH PARITY ON BOARD
* SOPPORTS EMS 4.0
* CPU SPEED IS SWITCHABLE BY HARDWARE/SOFTWARE(BY KEYBOARD)
* REAL TIME CLOCK/CALENDER WITH BATTERY-BACKED UP TO CMOS MEMORY FOR SYSTEM CONFIGURATION DATA
* OFF BOARD BATTERY CONNECTOR BUILT IN
* PROVIDE KEYLOCK INTERFACE
* 7-CHANNEL DMA
* 16 LEVEL INTERRUPTS
* A MEMORY CONTROLLER THAT PROVIDES SHADOW RAM

HOW TO INSTALL SIP RAM ON BOARD

Please refer to the figure 3.2 for the bank 0 and bank 1 position.

● **FIGURE 3.2 THE ON BOARD DRAM POSITION**

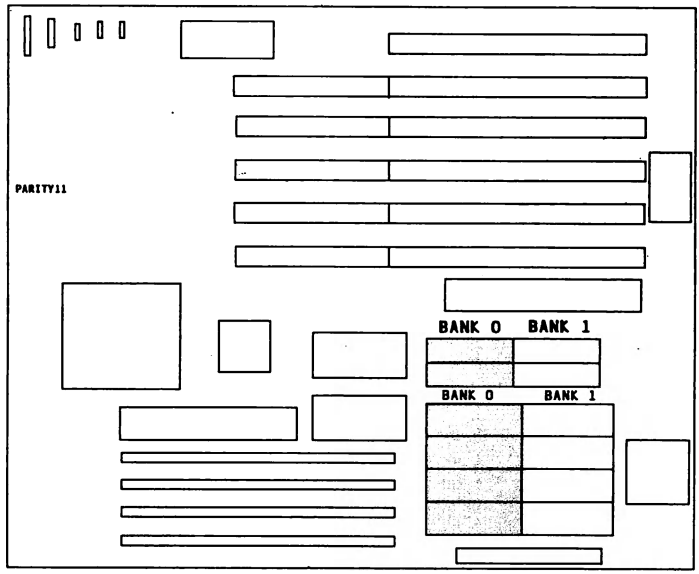


● **SIP RAM MODULE SIZE INSTALLATION AND SET**

BANK 0	BANK 1	TOTAL
0	0	0K
41256 * 2PCS	0	512K
41256 * 2PCS	41256 * 2PCS	1024K
41256 * 2PCS	411000 * 2PCS	2.5M
411000 * 2PCS	0	2048K
411000 * 2PCS	411000 * 2PCS	4096K

41256,411000,4164

● FIGURE 3.1.1
RAM INSERT
POSITION



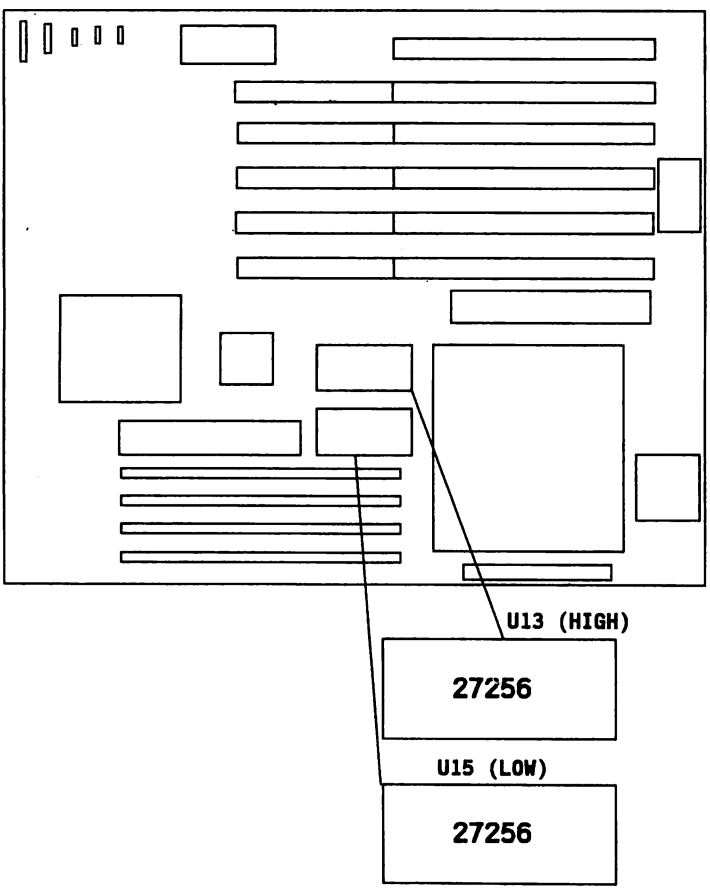
● DIP RAM
INSTALL TYPE
MODE AND SET

INSERT ADDRESS	RAM TYPE	TOTAL
1.U20,U21,U22,U23	44256 * 4	512K
U18,U19	41256 * 2	
2.U26,U27,U28,U29	44256 * 8	1024K
U20,U21,U22,U23	41256 * 4	

3-2 ROM INSTALLATION

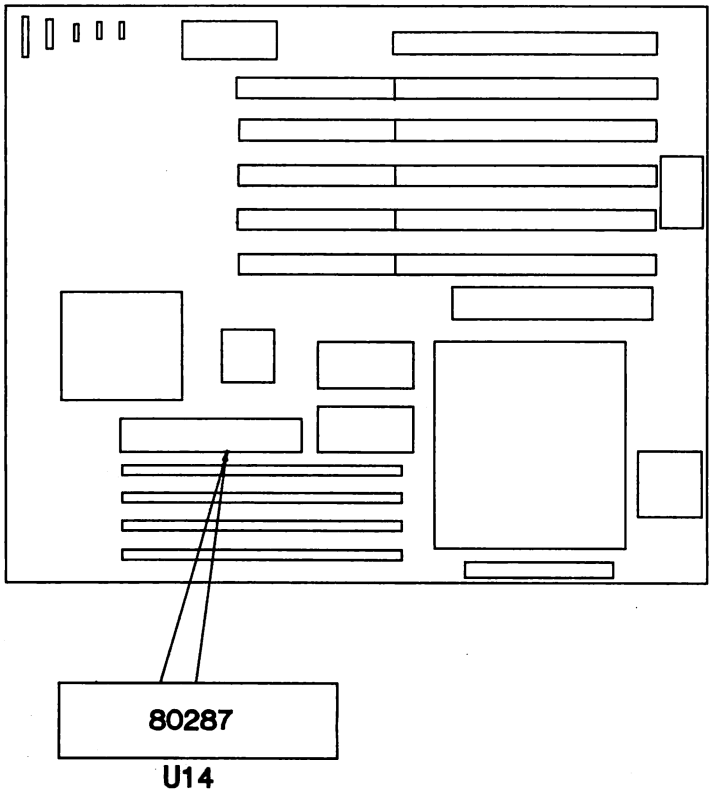
Motherboard consists of U13,U15 socket.The sockets have 28 pins.16 bits PC/AT contains 2 pcs of BIOS.But in use shadow system can improve you BIOS up to 300% - 400% of performance.

You can choose AMI,PHOENIX or AWARD BIOS for ROM installation.But we supply AMI BIOS.



3-3 CO-PROCESSOR 80287 INSTALLATION

If you intend to increase the co-processor speed for CAD/CAE software , then plug a INTEL 80287 into the U14 40 pin socket on the motherboard.



3-4 DISPLAY ADAPTER SET UP (JP1)

The Jumper JP1 is used to set the display function only. The pin 1 and pin 2 are both open when the monochrome display card is installed.The pin 1 and pin 2 are both short when the color display card is installed.

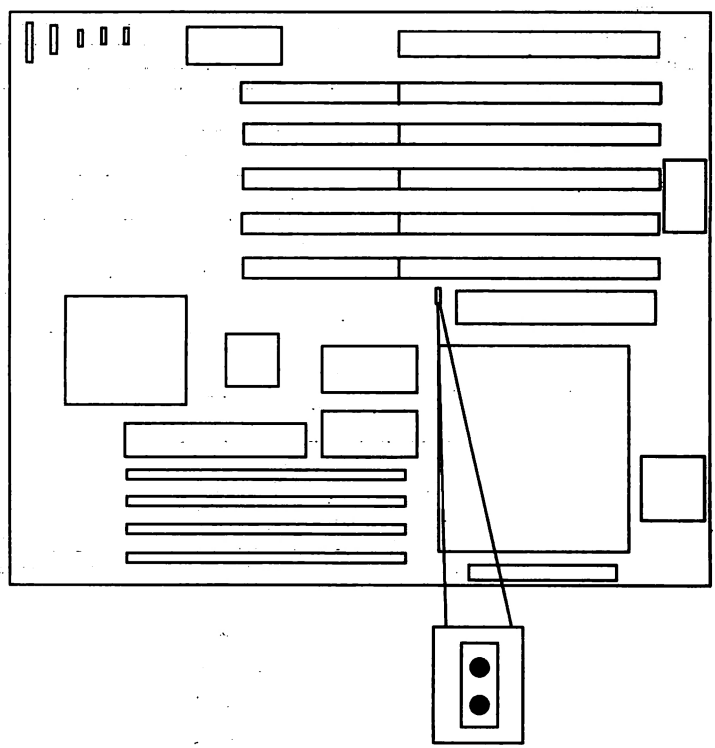
Please refer to the table below for setting up the Jumper JP1.

●TABLE 3.4
JUMFER JP1
SET UP

JUMPER	MEANING	SETTING	USAGE
JP1	DISPLAY TYPE	PIN 1.2	
		OPEN	MONOCHROME
		SHORT	COLOR

Please refer to the efollowing figure for setting up the Jumper JP1.

●FIGURE 3.4
THE ON BOARD
JP1 POSITION



JP1

3-5 SPEAKER CONNECTOR

J2 is used to connect speaker.

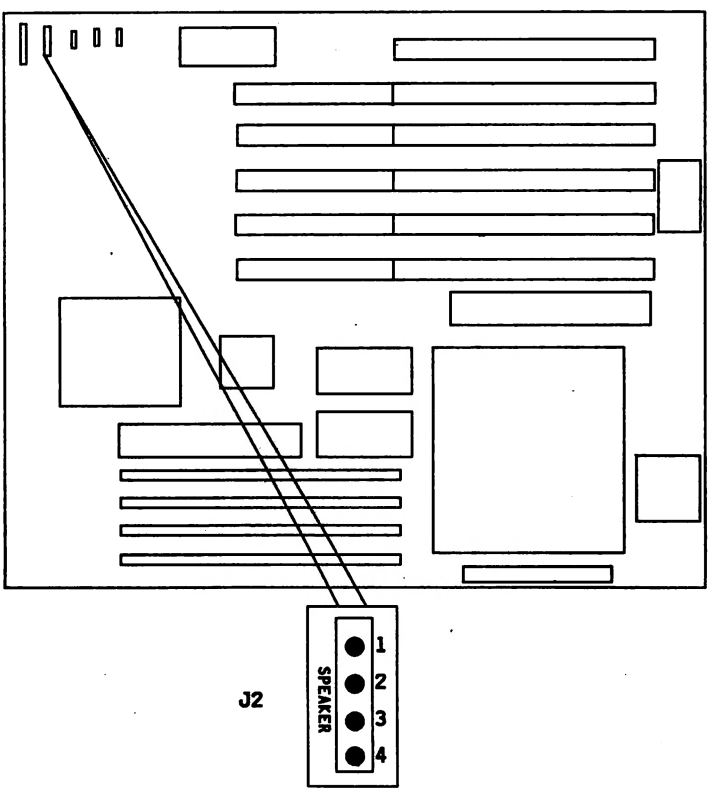
Pin assignment states are as follows:

● TABLE 3.6 J2 ASSIGNMENT

CONNECTOR	USAGE	PIN	DESCRIPTION
J2	Speaker	1	data out
		2	not used
		3	GROUND
		4	+ 5V

Please refer to the following figure for setting up the Jumper J2.

● FIGURE 3.5 THE ON BOARD J2 POSITION



3-6 TURBO LED CONNECTOR

J3 is a turbo LED connector used to connect the case turbo LED cable.

If system board select is in turbo mode.the turbo LED will be lit.

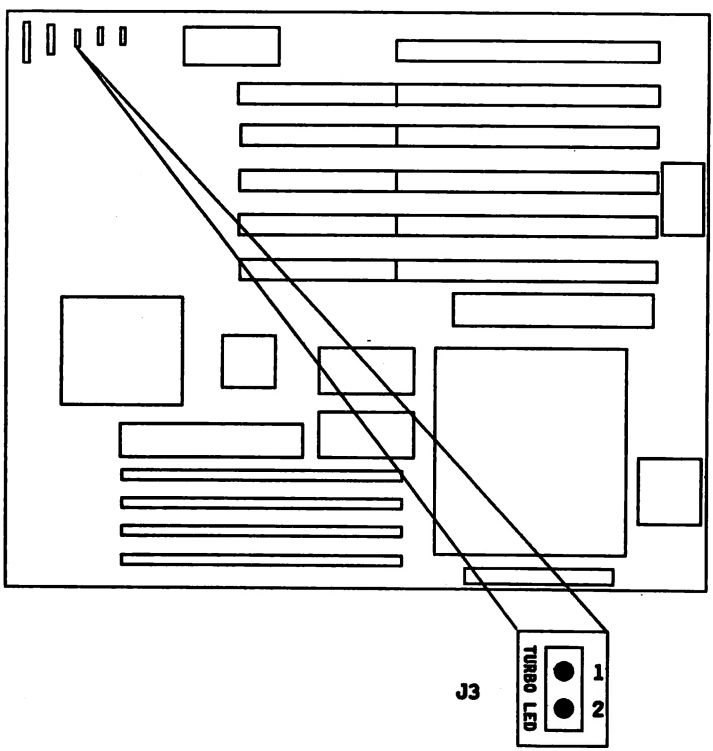
Pin assignment states are as follows:

●TABLE 3.6
JUMPER J3
SET UP

CONNECTOR	USAGE	PIN	DESCRIPTION
J3	Turbo LED	1	+ anode
		2	- cathode

Please refer to the following figure for setting up the Jumper J3.

●FIGURE 3.6
THE ON BOARD
J3 POSITION



3-7 CONNECTOR FUNCTIONS

TURBO SWITCH CONNECTOR (J4)

J4 is a turbo switch connector which is used to select the system board's system clock.

When J4 is short and it's on the normal mode,then the CPU speed is 8/6 MHz.
When J4 is open and it's on the turbo mode,then the CPU speed is 16/12 MHz.

The turbo switch connector pin assignments are as follows:

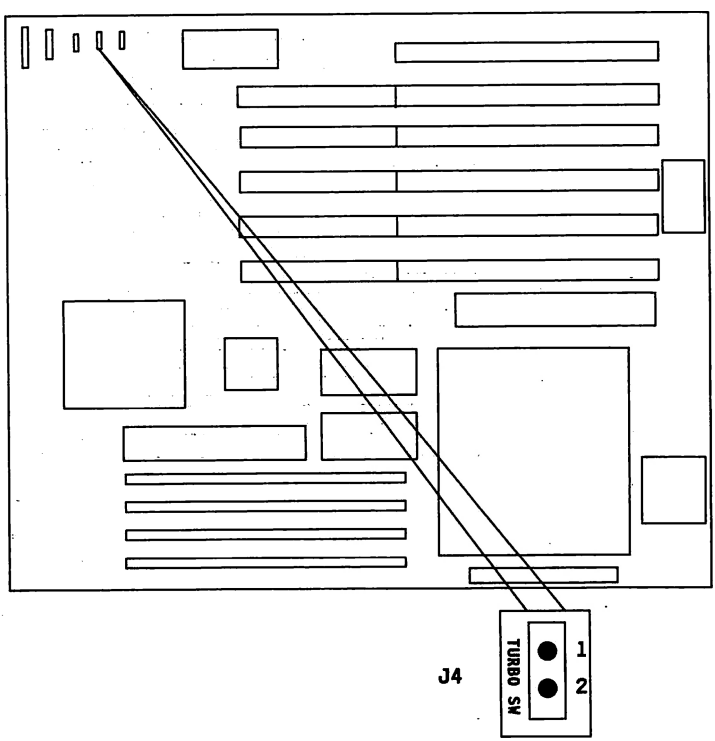
● TABLE 3.7 J4 ASSIGNMENT

CONNECTOR	USAGE	PIN	DESCRIPTION
J4	Turbo sw	1	select pin
		2	GROUND

If you connect the turbo switch cable on the case whit J3 then you can change the system clock(16/8MHz) with the turbo switch on the case.

Please refer to the following figure for the on board J3 position:

● FIGURE 3.7 THE ON BOARD J3 POSITION



3-8 KEYLOCK & POWER LED CONNECTOR

J1 is a keylock connector used to enable or disable keyboard and to move power-LED on the case.

If you connect the key-lock and power-LED cable to J1,the case's power LED will light up and display the power-on state.You can also use the keyboard lock on the case enable or disable the keyboard.

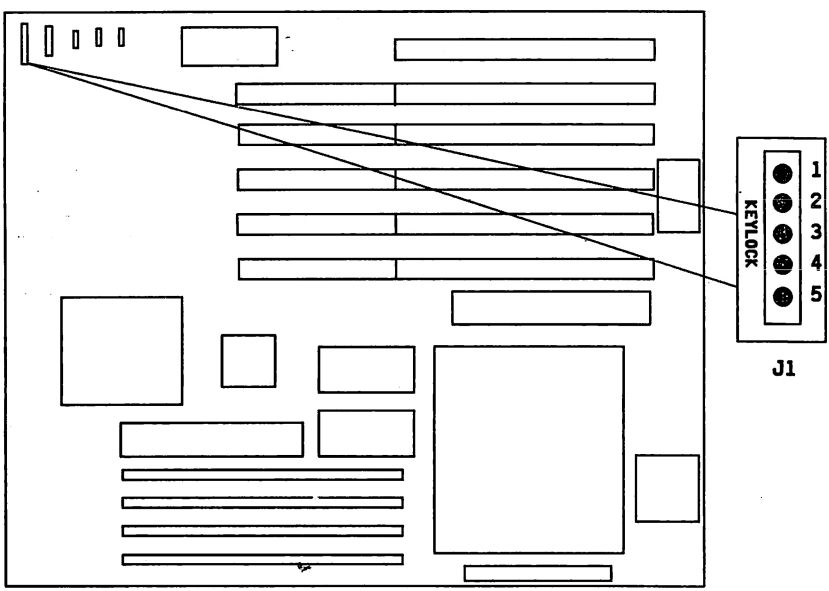
Pin assignment states are as follows:

● TABLE 3.8 J1 ASSIGNMENTS

CONNECTOR	USAGE	PIN	DESCRIPTION
J1	KEYLOCK & POWER LED	1	LED power
		2	not used
		3	GROUND
		4	keyboard inhibiter
		5	GROUND

Please refer to the following figure for setting up the jumper J1

● FIGURE 3.8 THE ON BOARD J1 POSITION



3-9 RESET SWITCH CONNECTOR (J4)

J5 is a RESET switch connector,used to restart the system.You can connect the RESET switch cable on the case with J5.When you press the RESET buttom on the case.the system will re-start the computer from the RAM test stage.This is a hardware RESET step similar to the power-on function.

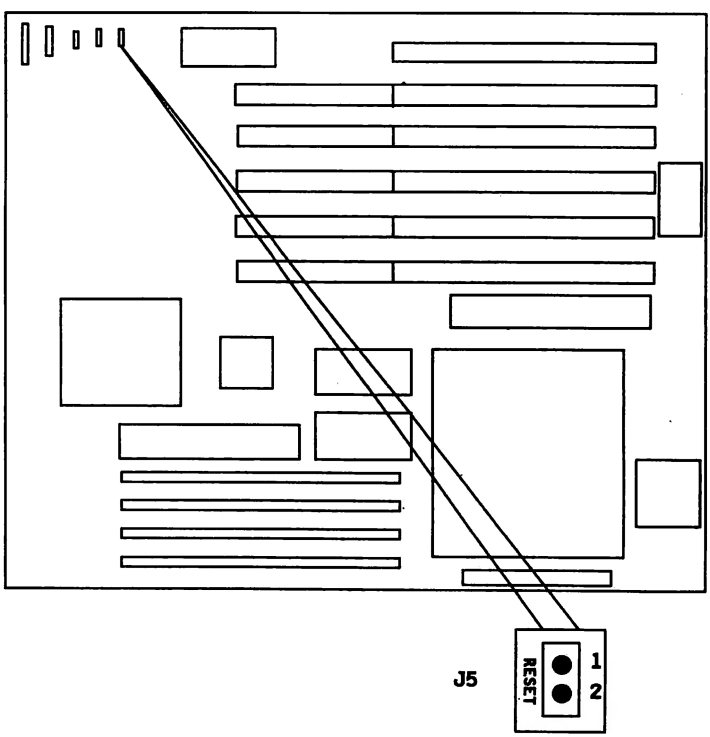
Pin assignment states are as follows:

●TABLE 3.9 J5 ASSIGNMENTS

CONNECTOR	USAGE	PIN	DESCRIPTION
J5	Reset sw	1	Reset in
		2	GROUND

Please refer to the following figure for setting up the jumper J5

●FIGURE 3.9 THE ON BOARD J5 POSITION



3-10 EXTERNAL BATTERY CONNECTOR

There is an on-board battery on the system board.You can also use on external battery to connect with J6 instead of using an on board battery.

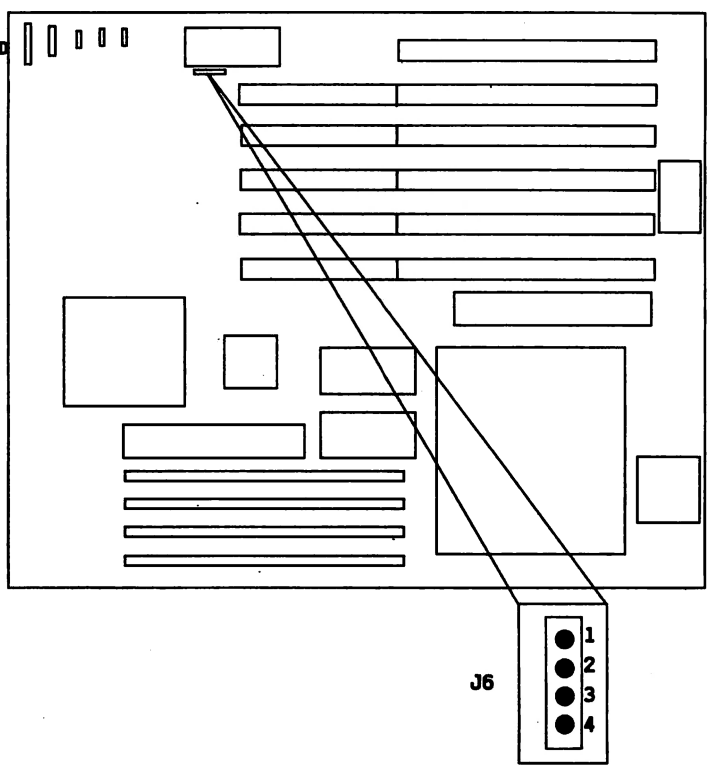
Pin assignment states are as follows:

●TABLE 3.10
J6
ASSIGNMENTS

PIN	DISCRIPTION
1	battery (+)
2	Not used
3,4	GROUND

Please refer to the following figure for setting up the jumper J6

●FIGURE 3.10
THE ON BOARD
J6 POSITION



3-11 KEYBOARD CONNECTOR (CN1)

CN1 is a 5 pin,connector which is used to connect the keyboard to the motherboard.

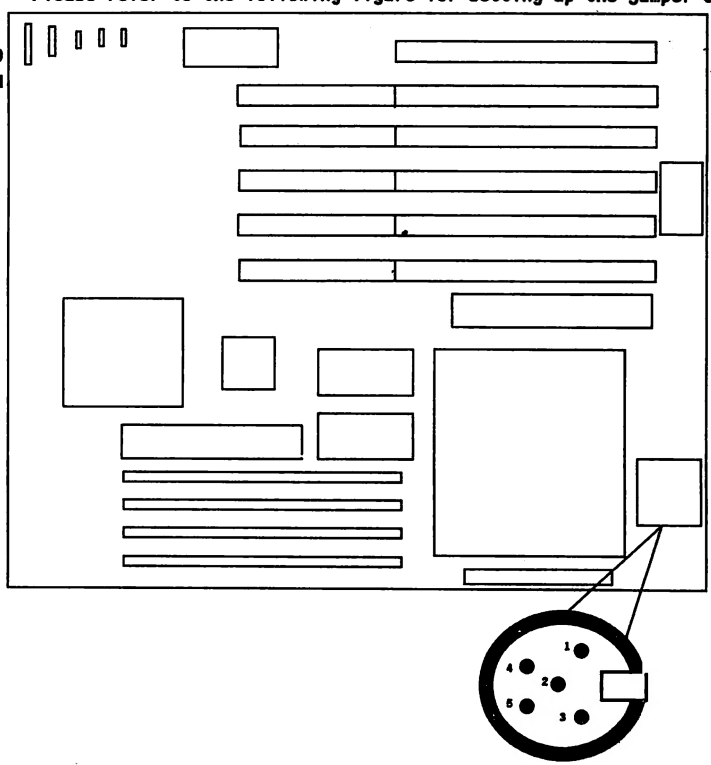
Pin assignment states are as follows:

● TABLE 3.12
CN1
ASSIGNMENTS

PIN	DISCRIPTION
1	keyboard clock
2	keyboard data
3	space
4	GROUND
5	+5V DC

Please refer to the following figure for setting up the jumper CN1

● FIGURE 3.12
THE ON BOARD
CN1 POSITION



3-12 POWER SUPPLY CONNECTOR (PS1/PS2)

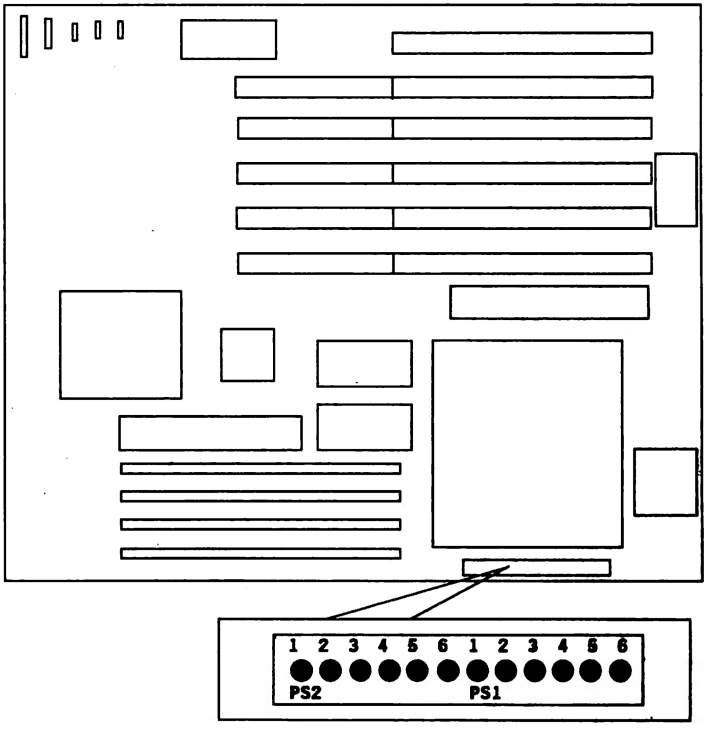
●TABLE 3.12 PS1/PS2 ASSIGNMENTS

CONNECTOR	PIN	DESCRIPTION
PS2	1	+ 5V DC
PS2	2	+ 5V DC
PS2	3	+ 5V DC
PS2	4	- 5V DC
PS2	5	GROUND
PS2	6	GROUND
PS1	1	GROUND
PS1	2	GROUND
PS1	3	- 12V DC
PS1	4	+ 12V DC
PS1	5	+ 5V DC
PS1	6	POWER GOOD

Both PS1/PS2 are used to connect the power supply.It is very important to select a power supply which provides a power on signal.Otherwise,the CMOS Ram data will be lost or the system board will not work.

Please refer to the following figure for setting up the jumper PS1/PS2

●FIGURE 3.12 THE ON BOARD PS1/PS2 POSITION



4-3 G2-286 JUMPER SETTING

JP1 : DISPLAY ADAPTER SET UP

J2 : SPEAKER CONNECTOR

J3 : TURBO LED CONNECTOR

J4 : TURBO SWITCH CONNECTOR

J1 : KEYLOCK & POWER LED CONNECTOR

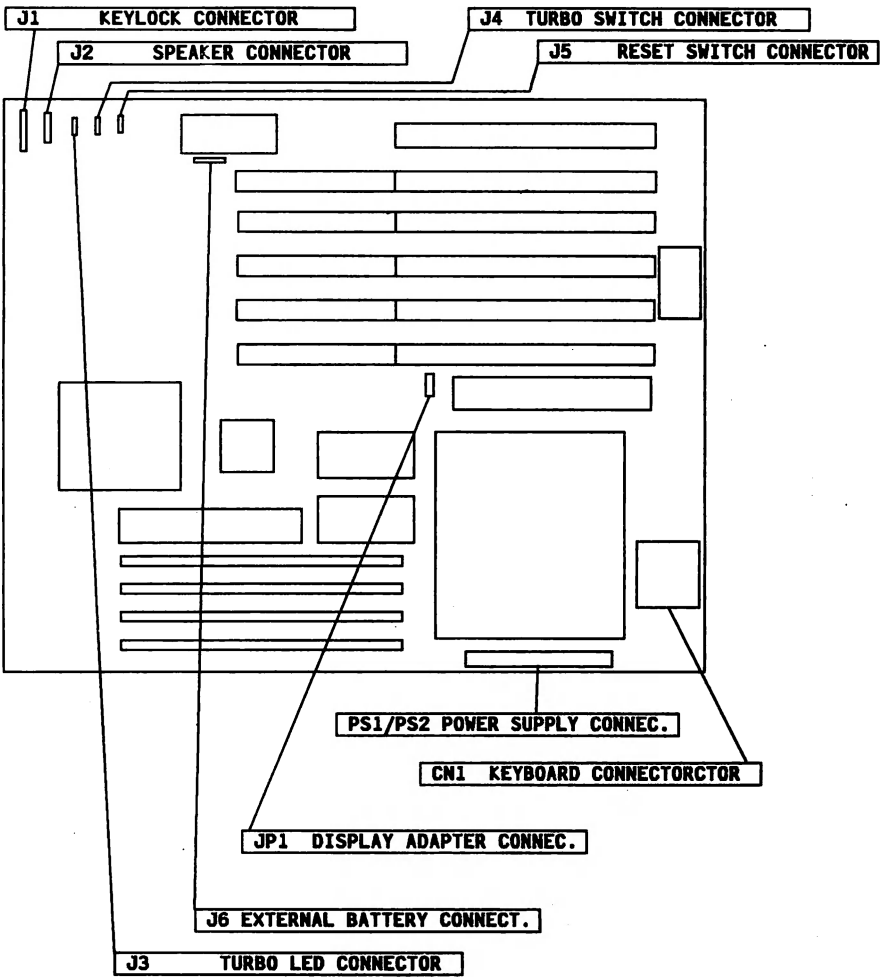
J5 : RESET SWITCH CONNECTOR

J6 : EXTERNAL BATTERY CONNECTOR

CN1 : KEYBOARD CONNECTOR

PS1/PS2 : POWER SUPPLY CONNECTOR

4-4 JUMPER / CONNECTOR POSITION



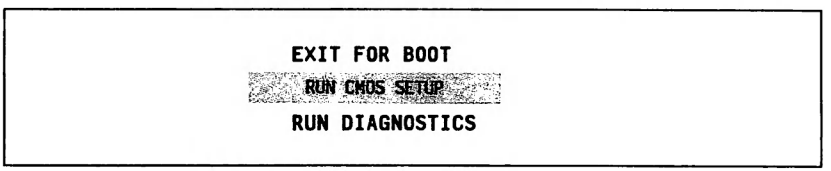
CHAPTER 4 SYSTEM SETUP

4-1 AMI BIOS System Configuration Setup

4-1 AMI BIOS System Configuration Setup the system configuration (CMOS) under the AMI BIOS.After booting the system and testing the memory,Please press "DEL" key to go to next screen.

The SETUP program is contained in the system's Read-Only-Memory. Rather than on a diskette.

To enter SETUP,press the "DEL"key.The following menu appears:



Please enter "RUN CMOS SETUP" to enter the CMOS setup program.

The following pages show simple charts and instructions for the CMOS setup.

```
CMOS SETUP (C) COPYRIGHT 1985-1999,AMERICAN MEGATRENDS INC.

  1. Date(mo/date/year) : Mon, May 05 1980
  2. Time(hour/min/sec) : 09:39:06
  3. Floppy drive A:    : 1.2MB, 5 1/4"
  4. Floppy drive B:    : Not Installed


  5. Hard disk C: type  : 2
  6. Hard disk D: type  : Not Installed
  7. Primary display    : Monochrome
  8. Keyboard           : Installed
  9. Video BIOS shadow  : Enableed
 10.Scratch RAM option  : 1
 11.EMS size option     : OKB
 12.O Wait state option: Enabled
 13.Memory relocation   : Enabled

        ESC = Exit, → ← ↑ ↓ = Select,Pgup/PgDn = Modify
```

1.

```
Month: Jan, Feb,.....Dec
Date : 01, 02, 03,.....31
Year : 1901, 1902.....2099
```

2.

```
Time is 24 hour format :
Hour: (00-23), Minute: (00-59), Second: (00-59)
(1:30 AM = 01:30:00), (1:30 PM = 13:30:00)
```

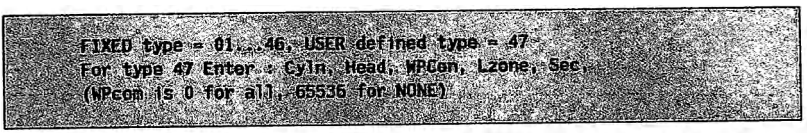
3.

```
Options are -
360KB 5 1/4", 1.2MB 5 1/4"
720KB 3 1/2", 1.44MB 3 1/2", Not Installed
```

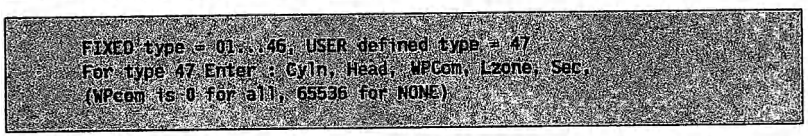
4.

```
Options are -
360KB 5 1/4", 1.2MB 5 1/4"
720KB 3 1/2", 1.44MB 3 1/2", Not Installed
```

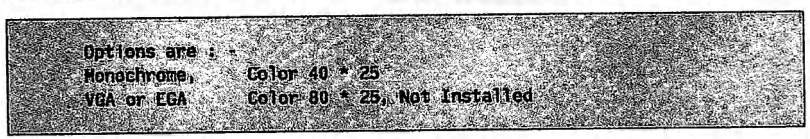
5.



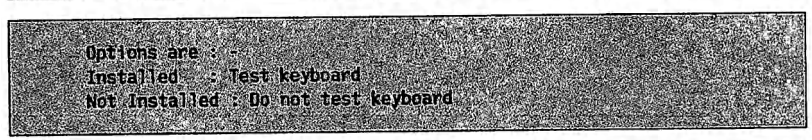
6.



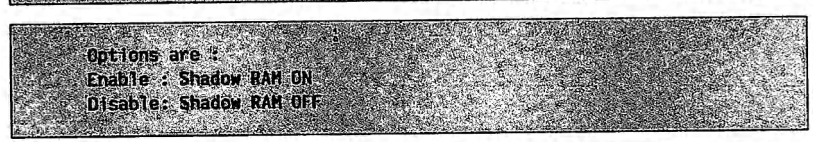
7.



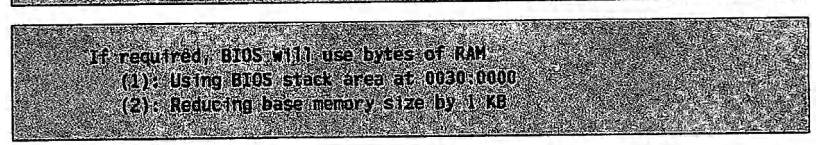
8.



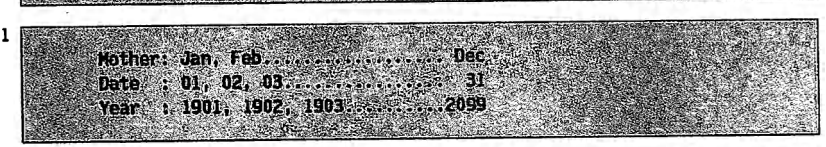
9.



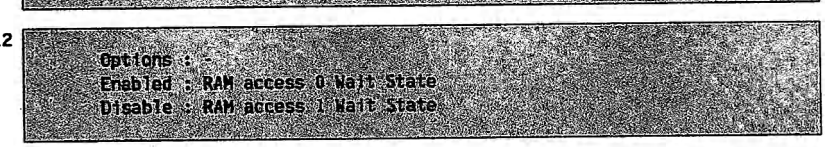
10



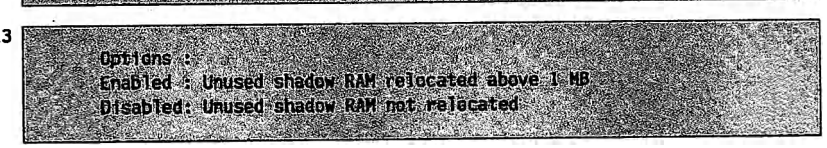
11



12



13



CMOS SETUP (C) COPYRIGHT 1985-1990,AMERICAN MEGATRENDS INC.

1. Date(mo/date/year) : Mon, May 05 1980
2. Time(hour/min/sec) : 09:39:06
3. Floppy drive A: : 1.2MB, 5 1/4"
4. Floppy drive B: : Not Installed

5. Hard disk C: type : 2
6. Hard disk D: type : Not Installed
7. Primary display : Monochrome
8. Keyboard : Installed
9. Bios shadow option : Disabled
10. Scratch RAM option : 1
11. EMS size option : OKB
12. 0 Wait state option: Enabled
13. Memory relocation : Enabled

Base memory size : 640K
Ext. memory size : OK
Numeric processor: Not Installed

Cyln	Head	WPCom	LZone	Sec	Size
977	5	300	977	17	41MB

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Write data into CMOS and exit (Y/N) ? Y

ESC = Exit, → ← ↑ ↓ = Select,Pgup/PgDn = Modify

After carefully reviewing tne changes you have made previously.please press the "ESC" key and enter "Y" if the corrections are correct save them. If they are not correct,please enter "N" and correct the incorrect items as instructed in this manual.
When updating CMOS to include new peripferal equipment such as another hard disk,it is not necessary to change any other item in the CMOS program except the relevant item.

4-2 SHADOW RAM

For efficient execution of BIOS,it is prefer able to execute BIOS code through RAM rather than through slower EPROMs.The HT11 provides the shadow RAM feature which if enabled allows the BIOS code to be executed from address like BIOS EPROM.The software should transfer code stored in the BIOS EPROMs to the system RAM ,before enabling the shadow RAM feature.This feature significantly improves the performance of BIOS-call intensive applica tions.Performance improvements as high as 300%to 400%havebeen observed in benchmark tests on the shadow RAM.feature is invoked by enabling the corre sponding bits in the ROM enable register and the RAM mapping register.

When the shadow RAM feature is being utilizes,then the RAM feature is mapped as shown in Figure 4.2,overlapping or shadowing the EPROM area.In both cases,for accesses beyond the 1 Mbyte address range,the processor is switched from real to protected mode from BIOS.

FIGURE 4.2
RAM MAPPING
WITH SHADOW RAM(MORE
THAN 1MB OF RAM)