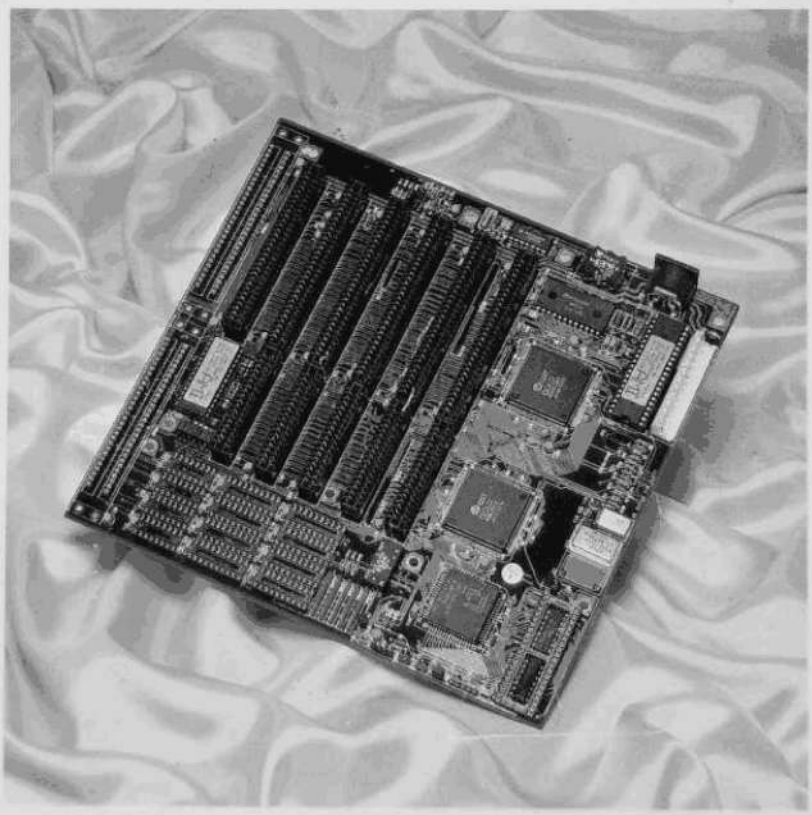
SNB-M008
MINI 286 MAIN BOARD
USER'S MANUAL



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CHAPTER 1 INTRODUCTION

The SNB-M008 MINI 286 main board is a high performance AT compatible main board that provides high speed processing while maintaining full compatibility with the IBM PC/AT main board.

The SNB-M008 MINI 286 main board are low power consumption, low board space requirements, high reliability, high integration AT chip set system board.

Simply stated, you can design a new system or upgrade your existing system with no modifications to existing or available components. In fact, your SNB-M008 MINI 286 main board may already have been installed into a complete system by your dealer.

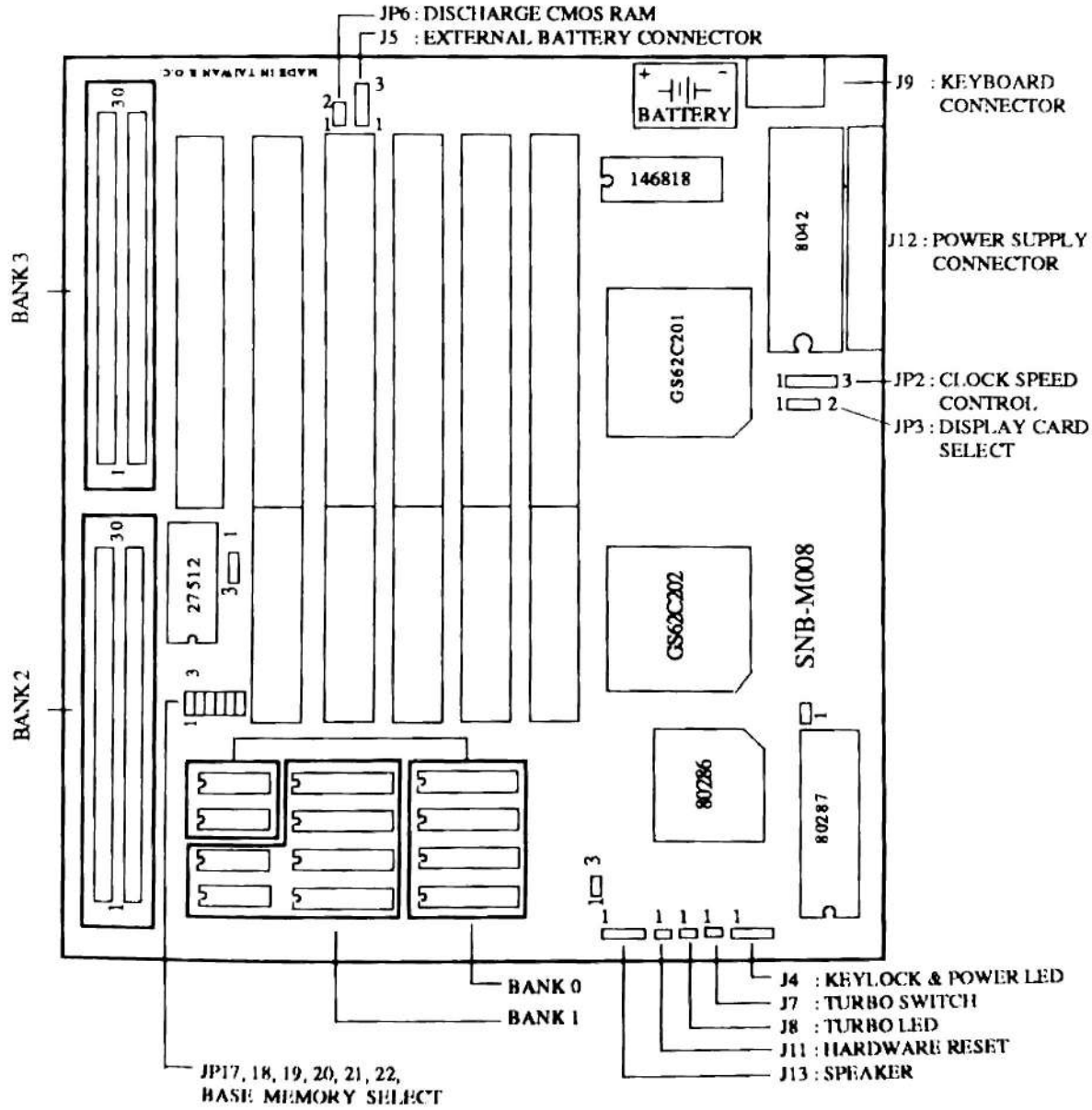
CHAPTER 2 MAIN FEATURES

The main feature of the SNB-M008 MINI 286 main board as detailed below :

- Full IBM PC/AT compatible.
- Used GOLD 286 high-integration ASIC two chip sets.
- Support 80286 16 or 20 Mhz CPU.
- Turbo speed selectable by keyboard or by hardware switch.
- Socket for INTEL 80287 math coprocessor.
- Support 16/20 Mhz, zero wait state up to 20/26 Mhz by chips and CPU.
- Memory socket up to 5MB on board.
- Base memory can use DIP DRAM or RAM MODULE.
- PAGE INTERLEAVED memory controller.
- On board BIOS, capable of adjusting RAM size, shadow ROM BIOS and VIDEO BIOS.
- Support EMS 4.0 driver.
- Real-time clock with rechargable battery back up CMOS memory for system configuration data.
- Five 16-bit bus and one 8-bit bus expansion slots.
- 4 layer PCB. A small dimensions (PCB size:22 cm x 21 cm).

CHAPTER 3 BOARD LAYOUT

The following shows SNB-M008 MINI 286 main board layout with the positions of the jumper and connectors.



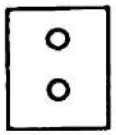
CHAPTER 4 HARDWARE SET UP

The following pages describe the locations and setting of the jumpers.

4.1 JUMPER SETTING & DESCRIPTION

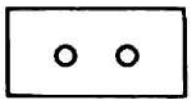
1. JP3 : DISPLAY ADAPTER SELECT

Setting	Description
Short	CGA/EGA/VGA
Open	Monochrome



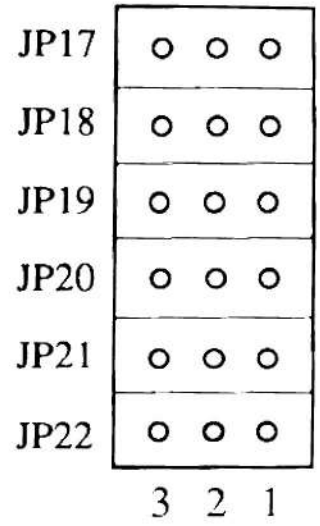
2. JP6 : DISCHARGE CMOS RAM

Setting	Description
Short	Normal setting
Open	Clear CMOS RAM



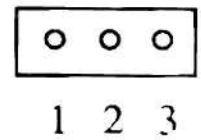
3. JP17, JP18, JP19, JP20, JP21, JP22
   : BASE MEMORY SELECT

Setting	Description
1-2	Base memory: BANK 2 , BANK 3
2-3	Base memory: BANK 0 , BANK 1 Expansion memory: BANK 2 , BANK 3



4. JP2 : CLOCK SPEED CONTROL

Setting	Description
1-2	Hardware control by JP7
2-3	Software control by keyboard (JP7 must open)

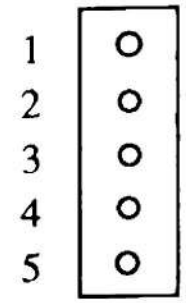


NOTES: JP1, JP14, JP16 are default factory.

4.2 CONNECTORS PINOUT & DESCRIPTION

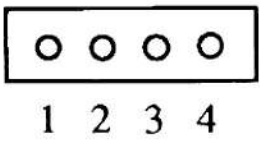
1. J4 : KEYLOCK & POWER LED CONNECTOR

Pin	Description
1	LED power
2	Key
3	Ground
4	Keyboard inhibitor
5	Ground



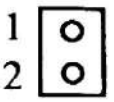
2. J5 : EXTERNAL BATTERY CONNECTOR

Pin	Description
1	+ 6V Battery input
2	Not used
3	Ground
4	Ground



3. J8 : TURBO LED CONNECTOR

Pin	Description
1	– Cathod
2	+ Anode

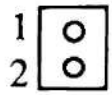


4. J9 : KEYBOARD CONNECTOR

Pin	Description
1	Keyboard clock
2	Keyboard data
3	Spare
4	Ground
5	+ 5V DC

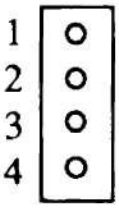
5. J11 : HARDWARE RESET CONNECTOR

Pin	Description
1	Reset in
2	Ground



6. J13 : SPEAKER CONNECTOR

Pin	Description
1	Speaker data out
2	+ 5V DC
3	Speaker data out
4	+ 5V DC



7. J12 : POWER SUPPLY CONNECTOR

Pin	Description
1	Power good
2	+ 5V DC
3	+ 12V DC
4	- 12V DC
5	Ground
6	Ground
7	Ground
8	Ground
9	- 5V DC
10	+ 5V DC
11	+ 5V DC
12	+ 5V DC

8. J7 : TURBO SWITCH

Setting	Description
Short	Turbo
Open	Normal

CHAPTER 5 MEMORY CONFIGURATION

The table below illustrates all the possible memory configurations available using on-board memory. Base memory can use DIP DRAM or RAM MODULE.

(1) BASE MEMORY: BANK 0, BANK 1
EXPANSION MEMORY: BANK 2, BANK 3

MODE	TOTAL MEMORY SIZE	DIP DRAM		RAM MODULE	
		BANK 0	BANK 1	BANK 2	BANK 3
1	512KB	44256 x 4	not used	not used	not used
2	1MB	44256 x 4	44256 x 4	not used	not used
3	2MB	44256 x 4	44256 x 4	256KB x 2	256KB x 2
4	3MB	44256 x 4	44256 x 4	1MB x 2	not used
5	5MB	44256 x 4	44256 x 4	1MB x 2	1MB x 2

(2) BASE MEMORY: BANK 2 , BANK 3

MODE	TOTAL MEMORY SIZE	DIP DRAM		RAM MODULE	
		BANK 0	BANK 1	BANK 2	BANK 3
6	512KB	not used	not used	256KB x 2	not used
7	1MB	not used	not used	256KB x 2	256KB x 2
8	2MB	not used	not used	1MB x 2	not used
9	2.5MB	not used	not used	256KB x 2	1MB x 2
10	4MB	not used	not used	1MB x 2	1MB x 2

CHAPTER 6 BIOS SET UP

This chapter will tell you how to set up the system configuration (CMOS) under the AMI BIOS. If your system has had different BIOS installed,these procedures will not work. The set up program is contained in the system's Read Only Memory (ROM), not on a disk like the operating system.

6.1 AMI BIOS SYSTEM CONFIGURATION SET UP

The SET UP program lets you specify your system's configuration of floppy diskette drives, hard disk drives, video display, memory size, BIOS shadow, co-processor wait, fast page mode, EMS function, date and time. The SET UP program is bulit-in BIOS. Diskette is not necessary for the SET UP.

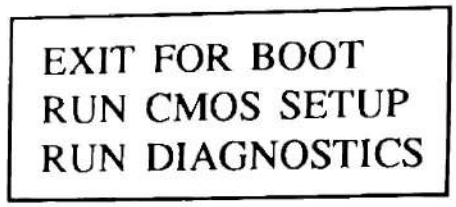
6.2 RUNNING THE BIOS SET UP PROGRAM

To run CMOS SET UP, follow these procedures:

1. Simultaneouly press the <CTRL>,<ALT>, and <DEL> keys to reboot the system (or turn the power on if the system is off). After booting the system and testing the memory, in a moment, the following message will appear on the screen:

   Press <DEL> if you want to run SETUP or DIAGS

2. Please Press the <DEL> key (the one that shares the decimal point at the bottom of the numeric keypad).
   The following menu appears:



Using the < ↑ > and < ↓ > keys, highlight RUN CMOS SET UP and press < ENTER >

3. Follow the instructions to continue until the set up is finished.

6.3 AMI BIOS HARD DISK DRIVES TABLE

Type	Cyln	Head	WPcom	LZone	Sect	Size
1	360	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	1 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	256	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
15	000	0	0	0	0	0 MB
16	612	4	0	663	17	20 MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB

Type	Cyln	Head	WPcom	LZone	Sect	Size
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77 MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	820	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	918	17	114 MB
46	1224	15	65535	1223	17	152 MB
47<User type>	< >		< >	< >	< >	< >

CHAPTER 7 EMS DRIVER SET UP

The SNB-M008 MINI 286 main board comes with a EMS driver diskette that contains the file: GS04EMM.SYS. This file must be installed in the CONFIG.SYS file to initialize EMS memory and shadow RAM.

7.1 INSTALLING EMS PROCEDURE

To use SNB-M008 MINI 286 EMS DRIVER SET UP follow this procedure:

STEP 1. Boot PC system by using DOS and the system will prompt you with A>

STEP 2. Copy GS04EMM.sys file on your DOS diskette.

STEP 3. Type:

```
COPY CON CONFIG.SYS  <ENTER>
DEVICE=GS04EMM.SYS /E:? /R:? /U:? /X:? <ENTER>
^Z          <ENTER>
```

The screen will display as follows:

```
        1 File(s) copied

        A>
```

Where E : EMS page mode.
R : Shadow RAM set.
U : User memory area set.
X : Driver HMA set.
? : GS04EMM.SYS parameters

STEP 4. Reboot your system.

7.2 THE GS04EMM.SYS PARAMETERS

There are described as following:

/E:	EMS page mode		
	0	==> C000-DEFF	max 8 physical pages
	1	==> C000-EFFF	max 12 physical pages
	2	==> 4000-7FFF	max 32 physical pages
/R:	shadow RAM set		
	0	==> C000-C3FF	ON
	1	==> C400-C7FF	ON
	2	==> C800-CBFF	ON
	3	==> CC00-CFFF	ON
	4	==> F000-F7FF	ON
	5	==> F800-FFFF	ON
/U:	User memory area set		
	0	==> C000-C3FF	ON
	1	==> C400-C7FF	ON
	2	==> C800-CBFF	ON
	3	==> CC00-CFFF	ON
	4	==> D000-D3FF	ON
	5	==> D400-D7FF	ON
	6	==> D800-DBFF	ON
	7	==> DC00-DFFF	ON

/X: Driver HMA set

0 ==> This option will copy the EMS driver to segment location F400 - F7FF. This option will save 16K in the base memory.

1 ==> This option will install the EMS driver in the conventional manner. The EMS driver will occupy the system memory.

2 ==> This option will install the EMS in the segment EC00 - EFFF. This option will save about 16K in the base memory. This is the default.

EXAMPLE:

* DEVICE=GS04EMM.SYS
  default:no shadow RAM is set, and the driver is copied to segment F400 - F7FF.
* DEVICE=GS04EMM.SYS /R:0 /R:5
  This line will set the shadow RAM at location C000 - C3FF (video BIOS) and F800 - FFFF (system BIOS). The snke.sys is savedin F400 - F7FF.
* DEVICE=GS04EMM.SYS /R:0 /R:5 /X:1
  Same is the second entry except the driver is loaded in the system memory.
*. DEVICE=GS04EMM.SYS /R:0 /R:5 /R:4
  This entry will make the atperf benchmark's ROM access time to appear with less time. This is entry is purely used for this particular benchmark.