TURBO
MAIN BOARD
USER'S MANUAL

MB 101

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1.) INTRODUCTION

The computer mainboard you have purchased is fully compatible with the IBM PC/XT. Mainboard can use all softwares and add-on cards designed for the XT. Besides, its **"Flexible RAM Combination"** allows the users to select different combinations of RAM chips (4164, 4464, 41256, 44256) for a given memory size.

2.) SPECIFICATION

-- 4.77 or 10 Mhz Selectable by keyboard or hardware switch;

-- 12 Mhz optional (120ns RAM);

-- Ultra-High speed V20 microprocessor;

-- 640KB memory capacity;

-- Socket for Math Co-processor 8087;

-- 8 I/O expansion slots;

-- 8 interrupt levels;

-- Parity check enable/disable;

-- Speaker and Keyboard connector;

-- High temperature burned-in;

-- 4 DMA channels for disk and special I/O;

-- 3 timer channels for sound and time;

-- Efficient space allocation;

-- Accurate operation.

3.) QUICK INSTALLATION GUIDE

3.1 Peripherals Required :

1.) system mainboard;
2.) IBM XT power supply or compatible equivalent;
3.) IBM monochrome/graphic display card or color card or VGA card or EGA card or compatible equivalent;
4.) IBM keyboard or compatible equivalent;
5.) Monochrome or color monitor or EGA or VGA monitor;
6.) IBM XT casing or compatible equivalent;
7.) Floppy disk/Hard disk driver(s);
8.) Floppy/Hard disk controller.

3.2 Procedures :

1.) Connect power supply connectors to CN4.
2.) Plug in keyboard connector to the keyboard receptacle CN2.
3.) Install monochrome or color graphic display card in expansion slot 1.
4.) Connect power and signal cables to the floppy/hard disk drivers from the controller.
5.) Select the display mode in Dip Switch SW5 and 6.
6.) Select the memory size in Dip Switch SW3 and 4.
7.) Select the number of disk driver in Dip Switch SW7 and 8.
8.) Plug the "TURBO LED" header into JP1.
9.) Plug the "TURBO SWITCH" header into JP3.
10.) Plug the "RESET SWITCH" header into JP4.
11.) Insert the keyboard plug into the socket at the back of the unit.
12.) Insert the signal cable from the display monitor into the appropriate receptacle at the back of the unit.
13.) Connect power to display monitor.
14.) Select high or low clock speed (10/12Mhz or 4.77Mhz)
15.) Connect the power cord of the unit to a proper wall socket.
16.) Insert the **SYSTEM** disk into drive A.
17.) Turn on the computer and the monitor (if any).
18.) The computer unit is ready as the DOS prompt appears.

3.3 Jumper Table

JUMPER NO.	FUNCTION DESCRIPTION
JP1	TURBO LED
JP2	PARITY
JP3	TURBO SWITCH
JP4	RESET SWITCH
CN1	KEYLOCK AND POWER INDICATOR
CN2	KEYBOARD CONNECTOR
CN3	SPEAKER
CN4	POWER SUPPLY CONNECTOR

4.) MAINBOARD SET UP

4.1 Clock Speed Selection

1.) Hardware switch :

Set the jumper switch JP3 to "ON" for Turbo mode and "OFF for Normal speed.

Note : To select turbo mode, set JP3 to " ON " before turn on power.

2.) Keyboard :

Press and hold keys [CNTL ALT, and -] simultaneously to turn to High speed.

Press the three keys again to return back to the Low Speed.

(REMARK : The Normal speed is 4.77Mhz while the Turbo mode is at a speed of 10Mhz.

For a further upgrade to 12Mhz, 120ns RAM should be used)

4.2 Memory Size

The mainboard can be installed with RAM ranging from 256K to 640K.

1.) For 256K, both SW#3 and SW#4 should be set to "OFF".

2.) For 512K, SW#3 should be at "ON" and SW#4 is at "OFF".

3.) For 640K, SW#4 should be set to the "ON" position.

4.3 Display Adapter Type

Either Monochrome Graphic Adapter, Color Graphic Adapter and the Enhanced Graphic Adapter can be inserted in the expansion slot.

1.) For Monochrome Graphic Adapter (MGA), both the switch settings SW#5 and SW#6 should be at the "OFF" position.

2.) For Color Graphic Adapter (CGA), SW#5 should be set to "OFF" and SW#6 should be at "ON".

3.) For Enhanced Graphic Adapter (EGA) or Video graphic Adapter (VGA), both SW#5 and SW#6 should be set to the "ON" position.

4.4 Drive Device

The number of the disk drives used with the mainboard should be notified to the system.

1.) Both SW#7 and SW#8 are at the "ON" position for using 1 disk drive.

2.) For 2 disks, SW#7 should be "OFF" and SW#8 should be "ON".

3.) For 3 disks, SW#7 is at "ON" and SW#8 is at the "OFF" position.

4.) For using 4 disks, both SW#7 and SW#8 should be set to "OFF".

4.5 Reset Switch

A jumper switch (JP4) is provided for resetting the board from normal operation.

To reset the system, turn JP4 to "ON".

JP4 is at "OFF" for normal operation.

5.) CONNECTOR SETTING

There are 4 connectors relating to the keyboard, speaker and power supply.

5.1 Keyboard Lock and Power Indicator

PIN	DESCRIPTION
1	LED POWER
2	GROUND
3	GROUND
4	KEYBOARD LOCK
5	GROUND

5.2 Keyboard Connector (CN2)

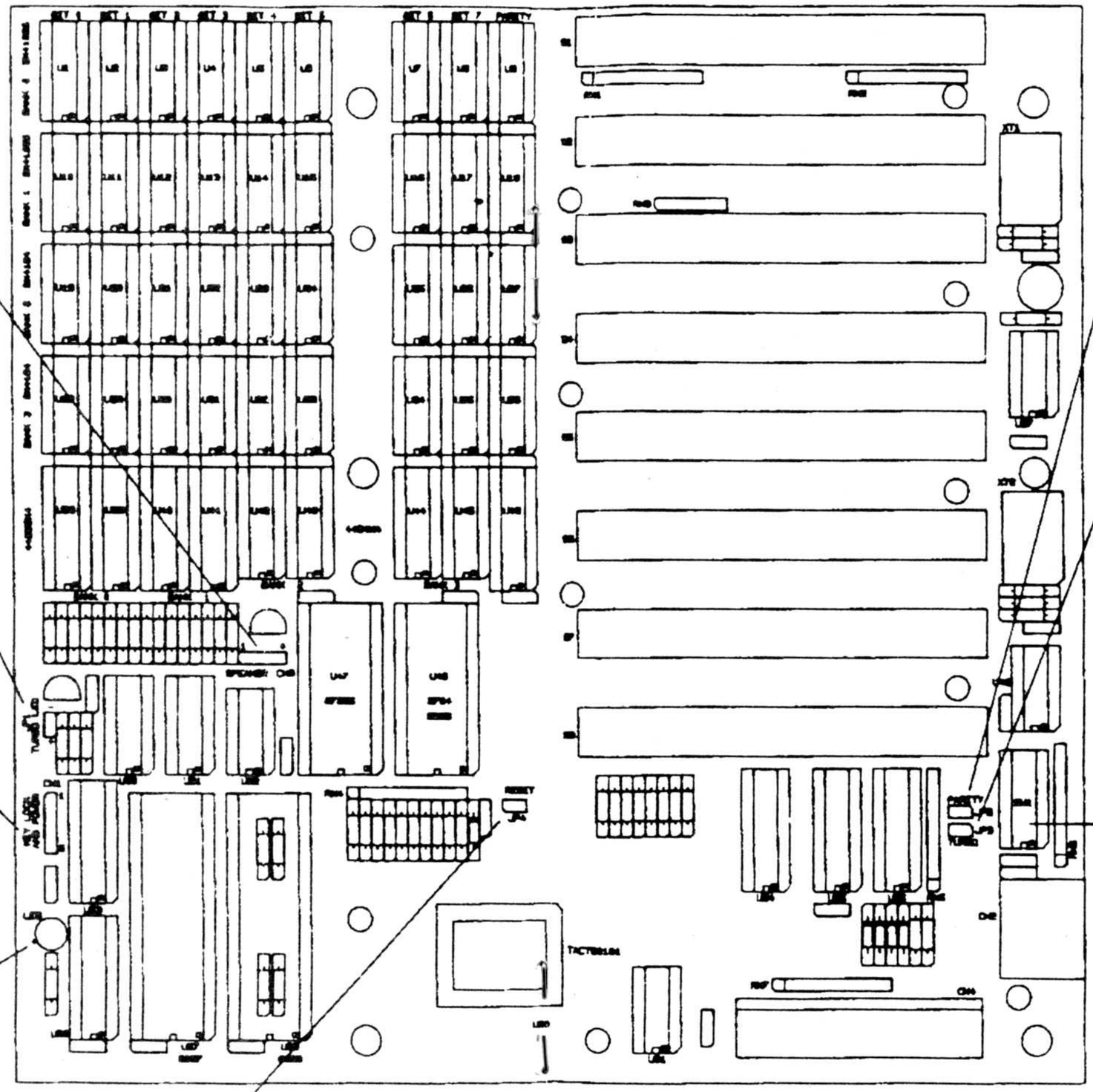
PIN	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	SPARE
4	KEYBOARD GROUND
5	+ 5V DC

MEMORY CONFIGURATION

256KB	BANK 0
512KB	BANK 0 - BANK 1
640KB	BANK 0 - BANK 3

MEMORY BANK DEFINITION

BANK 0	(U1 - U9) OR (U38,U39,U9)
BANK 1	(U10 - U18) OR (U40,U41,U18)
BANK 2	(U19 - U27) OR (U42,U43,U27)
BANK 3	(U28 - U36) OR (U44,U45,U36)



CN3 : SPEAKER CONNECTOR

PIN	DESCRIPTION
1	+ 5V DC
2	SPEAKER DATA OUT
3	+ 5V DC
4	SPEAKER DATA OUT

JP1 : TURBO LED

+VE	ANODE
-VE	CATHODE

CN1 : KEY LOCK AND POWER CONNECTOR

PIN	DESCRIPTION
1	LED POWER
2	GROUND
3	GROUND
4	KEYBOARD LOCK
5	GROUND

POWER ON INDICATOR

JP4 : RESET SWITCH

ON	RESET
OFF	NORMAL OPERATION

JP2 : PARITY CHECK

ON	DISABLE
OFF	ENABLE

REMARK : IF PARITY IS DISABLED, REMOVE U9,U18,U27,U36.

JP3 : TURBO SWITCH

ON	TURBO
OFF	NORMAL

SW1 : #1

RESERVED	NORMAL OFF

SW1 : #2

ON	WITHOUT 8087
OFF	WITH 8087

DIP SWITCH SW1

SW1 : #3 - #4 (MEMORY SIZE)

#4 \ #3	ON	OFF
ON	640K	640K
OFF	512K	256K

SW1 : #7 - #8 (DISK CONFIG)

#8 \ #7	ON	OFF
ON	1 DISK	2 DISKS
OFF	3 DISKS	4 DISKS

SW1 : #5 - #6 (DISPLAY TYPE)

#6 \ #5	ON	OFF
ON	EGA	RESERVED
OFF	CGA	MGA

5.3 Speaker Connector (CN3)

PIN	DESCRIPTION
1	+ 5V DC
2	SPEAKER DATA OUT
3	+ 5V DC
4	SPEAKER DATA OUT

5.4 Power Connector (CN4)

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

6.) JUMPER SETTING

		+VE	-VE
JP1	TURBO LED	ANODE	CATHODE

JP2	PARITY CHECK	ON	OFF
		DISABLE	ENABLE

JP3	TURBO SWITCH	ON	OFF
		TURBO	NORMAL

(REMARK : The switch must be set before the power is on)

JP4	RESET SWITCH	ON	OFF
		RESET	NORMAL OPERATION

7.) DIP SWITCH TABLE

DIP SWITCH	FUNCTION
SW1	RESERVE : NORMAL OFF
SW2	SWITCH FOR 8087
SW3, SW4	MEMORY SIZE OF MAINBOARD
SW5, SW6	DISPLAY ADAPTER
SW7, SW8	NUMBER OF DISK DRIVES

7.1 SW1

SW1	RESERVE	NORMAL OFF

7.2 SW2 -- 8087

SW2	8087	ON	OFF
		W/O 8087	W/ 8087

7.3 SW3 & SW4 --- MAINBOARD MEMORY SIZE

SW4 \ SW3	ON	OFF
ON	640K	640K
OFF	512K	256K

7.4 SW5 & SW6 --- DISPLAY ADAPTER

SW6 \ SW5	ON	OFF
ON	EGA	RESERVED
OFF	CGA	MGA

7.5 SW7 & SW8 --- NUMBER OF DISK DRIVE

		SW7 ON	SW7 OFF
SW8	ON	1 DISK	2 DISKS
	OFF	3 DISKS	4 DISKS

8.) FLEXIBLE RAM COMBINATION

Mainboard includes a Flexible RAM Combination (**FRC**) which provides the users flexibility in installing the RAM Chips for a specific memory size. The users can choose the combination which suits them most. For 640K example :

44256 X 4 + 41256 X 2 (PARITY)
4464 X 4 + 4164 X 2 (PARITY)

OR

41256 X 16 + 41256 X 2 (PARITY)
4164 X 16 + 4146 X 2 (PARITY)

OR

44256 X 4 + 41256 X 2 (PARITY)
4164 X 16 + 4146 X 2 (PARITY)

OR

41256 X 16 + 41256 X 2 (PARITY)
4464 X 4 + 4164 X 2 (PARITY)

etc.

9.) TECHNICAL INFORMATION

INTERNAL I/O ADDRESS MAP

ADDRESS	
000H - 00FH	DMA CONTROLLER (8237)
010H - 01FH	RESERVED
020H - 021H	INTERRUPT CONTROLLER
022H - 03FH	RESERVED
040H - 043H	SYSTEM TIMER (8255)
044H - 05FH	RESERVED
060H - 063H	PARALLEL PORT (8255)
064H - 07FH	RESERVED
080H - 083H	DMA PAGE REGISTER (74670)
084H - 09FH	RESERVED
0A0H	NMI ENABLE REGISTER
0A1H - 0BFH	RESERVED
0C0H	CHANGE SPEED
0C1H - 0C3H	RESERVED
0E0H	STATUS
0E1H - 0E3H	RESERVED

REMARKS :

1. PORT ADDRESS 0C0H : WRITE ONLY.

   A write command to this port will toggle CPU speed. That is from high to low speed or from low to high. Thus, some of the programs can toggle the CPU speed when they are executed.

10.) CARING FOR YOUR BOARD

Your mainboard has been engineered and designed to provide a long period of reliable service. High-standard quality checking has been completed on the boards so as to enhance its reliability and durability.

However, it is still a delicate instrument and so care must be taken to prevent unnecessary damage. It is suggested that you should pay attention on the following notices.

Electronic components are most easily damaged by unstable condition such as the circuits that occur during power-up and power-down cycles. These can be minimized by turning the board off as infrequently as possible. It is suggested that you should turn it on again not less than ten seconds after the mainboard is turned off.

NOTE : (A COMPONENT LAYOUT OF THE MOTHERBOARD IS ATTACHED)

-- END --