



# C - 8 2 5 1

All-in-one Mainboard User's Reference

This product and its manual may contain technical flaws or typesetting errors. Information contained herein is frequently updated. Changes will be incorporated into subsequent editions.

All specifications are subject to change without notice.

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### Federal Communication Commission ( F.C.C ) Statement

This device complies with Part 15 of the FCC Rules. Operation is subject 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 undersired operation.

Accessory : This device has been tested and found to comply with the limits of a Class B digital device, the accessories associated with this equipment are following :

1. Shielded A.C. power cord.
2. Shielded interface cables.

These accessories are required to be used to ensure compliance with FCC Rules. It is the responsibility of the user to provide and use these accessories.

This equipment has tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC urses. These limits are designed to provide reasonable protection against harmful interference in a 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 not cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to protect the interference by one or more of the following measures :

1. Reorient/Relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

**NOTE:** User must use shielded interface cables in order to maintain product within FCC compliance.

**CAUTION:** Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

### Canadian DOC Notice

This apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le Présent appareils numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numérique de la class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

## **Overview of the Manual**

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### **\* Chapter 1 System Description**

Briefly introduces the functions of the major components and the specifications.

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### **\* Chapter 2 Jumper Setting**

Introduction of the jumpers' function and their location, especially the I/O jumpers and internal connectors.

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### **\* Chapter 3 System Memory**

In this chapter we talk about the C8251 available system memory.

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### **\* Chapter 4 Setup Program**

A review of AMI BIOS setup program, its most important options, standard CMOS setup and advanced CMOS setup.

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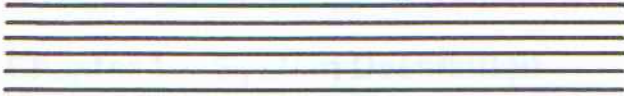
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# CHAPTER 1

## System Description



The main director in the PC 486DX(SX)U/PC 486DX(SX)M is the all-in-one mainboard, C8251, they includes system, floppy disk controller, Local Bus VGA, two serial ports, one parallel port and IDE port, which accommodates all the processings and accessings of the whole system to execute the programs or commands given by users.

**The most important development of C8251 is the High Speed Local Bus. The local signals of the C8251 provide for an accelerated system to video memory transfers. To take advantage of the high transfer rates, the C8251 implements the most features of any frame-buffer controller for assisting CPU-baesd graphics operations.**

To understand more about the C8251 all-in-one mainboard's specialities, you should first start from the initial knowledge about the major components of the mainboard.

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## **1.1 Major Function Blocks on the Mainboard**

### **CPU**

- \* Intel 80486DX(SX)-25, 80486SX(PQFP)-25 microprocessor running at 25 MHz, 32-bit address and data buses
- \* Intel 80486DX(SX)-33, 80486SX(PQFP)-33 microprocessor runniug at 33MHz, or overdrive CPU, 32-bit address and data buses
- \* Intel 80486DX2-50, 80486DX2-66 microprocessor, internal chip operation-ally performing at 50MHz and 66MHz, external machine running at 25 and 33 MHz, 32-bit address and data buses

### **Math Coprocessor**

- \* Socket for an optional 80487SX math coprocessor or updatable socket Over-drive latter products
- \* With a processing speed of 25/33 MHz

### **Memory/RAM**

- \* Standard configuration including 2, 3, 4, 6, or 10 MB on-board memory ( See Chapter 3 for all memory configuration options )

# CHAPTER 1

- \* Using 80ns page mode DRAMs on 32 bit two 72-pin SIMM RAM modules
- \* Page/Interleave Memory Access Management
- \* Supporting 128KB EPROM ( 8-bit access ) for System and Video BIOS

## **VGA Display**

- \* Supports 16/8-bit I/O operation
- \* 100% hardware compatible with all IBM VGA modes
- \* Supports EGA, CGA, MDA and Hercules Graphics emulation display modes
- \* Provides 800 x 600 with 256 colors resolution for popular software package; and resolutions up to 1024 x768 x256 non-interlaced and 1280 x1024 x16 interlaced supported with one megabyte
- \* With Local Bus, input directly from CPU, unlimited to slot speed

## **I/O**

- \* Providing two serial ports (COM 1, COM 2 )and one parallel port, one IDE & FDC I/O port are supported

## **BIOS**

- \* 128 KB EPROM running at 150ns for AMI 486 BIOS with built-in setup program

## **Support Built-in Diskette Drive Controller**

- \* A 34-pin floppy disk connector is located on it. It supports two 3-1/2" or 5-1/4" floppy disk drives.

## **I/O Slot Board**

- \* The PC486DX(SX)M has three slots which are available on the I/O slot board
- \* The PC486DX(SX)U has two slots which are available on the I/O slot board

## **Built-in AT-Bus Hard Disk Interface**

- \* Supporting two embedded controller HDDs ( 3-1/2" or 5-1/4" )



# CHAPTER 2

## Jumper Setting

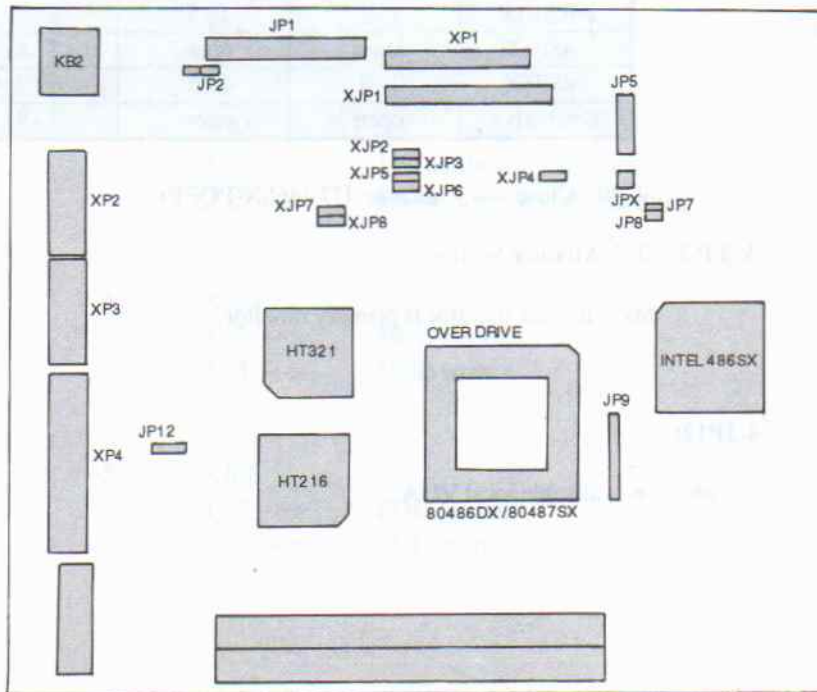


On the system's mainboard, there are several jumpers designed for users to adjust the system configuration. You don't have to change the settings frequently unless you change any system configuration, like changing the peripherals or memory configuration.

Following the description of jumper settings, there is an introduction to the inner connectors of this mainboard.

## 2.1 Location of Jumpers and Connectors

The following illustration shows the location of the jumpers and connectors on the mainboard :



## 2.2 Jumper Setting

### 1. System Clock :

	JP 7	JP 8
32 MHz	open	close
40 MHz	open	open
50 MHz	close	close
66 MHz	close	open

### 2. Chip CPU Option : JP9 ( 10 pins )

	JP 9	JP 9	JP 9
486DX	1 - 2	4 - 5	6 - 7
486SX	open	open	7 - 8
487SX	2 - 3	4 - 5	6 - 7
Overdrive	open	open	7 - 8

9 -10 : Close ----> disable U7 486SX(PQFP)

### 3. JP 3 : If 2-Monitor System :

Short if color monitor is primary monitor.

### 4. JP12:

on = > disable local VGA

## 2.3 I/O Jumpers

1.
 

XJP5	XJP6		
2-3	1-2 --->	LPT 1	
2-3	2-3 --->	LPT 2	
1-2	2-3 --->	LPT 3	
1-2	1-2 --->	Disable	
  
2.
 

XJP3	XJP7	COM1	COM2
2-3	2-3 --->	Enable	Enable
2-3	1-2 --->	Enable	Disable
1-2	2-3 --->	Disable	Enable
1-2	1-2 --->	Disable	Disable
  
3.
 

XJP2	
1-2 --->	I/O hardware configuration
2-3 --->	I/O software configuration
  
4.
 

XJP4	
1-2 --->	HDD disable
2-3 --->	HDD enable
  
5.
 

XJP8	
1-2 --->	FDD disable
2-3 --->	FDD enable

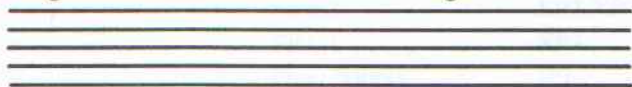
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## 2.4 Connectors :

FDC	XP1	(34 pin)
SIOx2	XP2,XP3	(9 pin D-Type male)
PIOx1	XP4	(25 pin D-Type female)
Powr Supply	JP1	(12pin)
Reset, Turbo LED	JP5	(7x1 pin)
Key -lock	JPX	(2x1 pin)
Keyboard	KB2	(5 pin Din)
VGA	P1	(15 pin D-Type female)
IDE	XJP1	(40 pin)
SIMM module	U34, U44	(72 pin x2)

# CHAPTER 3

## System Memory



This chapter introduces the C8251 system memory.

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## System Memory

The bank 0 of C8251 Mainboard will stay at 1M all the time, and so will bank 1. The total system memory depends on the RAM modules you install.

The memory subsystem requires one or two banks (each with one slots) of SIMM RAM modules. The following table on next page lists all the available memory configuration.

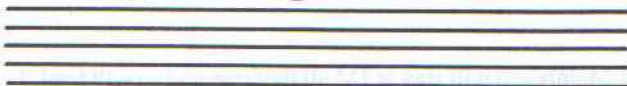
**Note :BIOS will automatically detect the total memory you have installed.**

The system memory of C8251 :

Bank 0	Bank 1	Bank 2	Bank 3	Total Memory
1 M	1 M			2 M
		1 M		3 M
		1 M	1 M	4 M
		4 M		6 M
		4 M	4 M	10 M

# CHAPTER 4

## Setup Program



System Memory

The program will prompt you for the following information:

1. The name of the system.

System Name	System Memory	System Type	System Version	System Date
IBM PC	1024	PC	1.0	1/1/80
IBM PC	2048	PC	1.0	1/1/80
IBM PC	4096	PC	1.0	1/1/80
IBM PC	8192	PC	1.0	1/1/80



A computer needs to know certain things about itself so it can operate correctly when powered on. A special type of software called BIOS (Basic Input Output System) is located in a read-only memory chip on the mainboard. The BIOS reads information in the non-volatile memory everytime you power on or reset the computer. It then instructs the CPU and their devices to operate according to this information. If the information it receives is incorrect or insufficient, the system will not operate until accurate information is supplied. You do this by means of the Setup program.

Let's take a look at Setup program in this chapter.

## 4.1 Getting Started

A message will show on the screen asking you to run the setup program whenever you turn on the computer, press the < Del > key to run it. If you want to run the setup program while using the computer, you may press the < Ctrl > < Alt > and < Del > keys simultaneously, a main menu screen of the setup program like the following figure will appear :

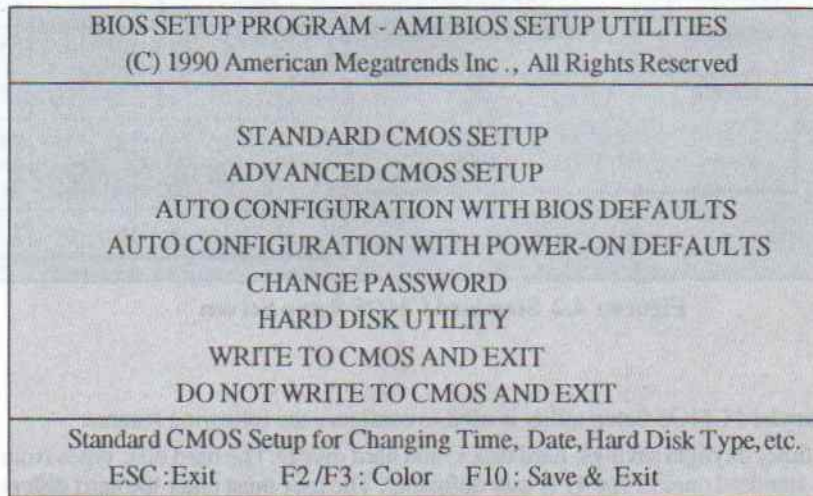


Figure 4.1 BIOS Setup Menu

## 4.2 Standard CMOS Setup

Standard CMOS Setup is the first option on the main setup menu. Press < Enter > at the highlighted selection to access this option. The screen will display:

BIOS SETUP PROGRAM - STANDARD CMOS SETUP	
(C)1990 American Megatrends Inc., All Rights Reserved	
Date(mn/date/year) : Wed, Aug 21 1991	Base memory : 640KB
Time(hour/min/sec) : 17: 29:28	Ext. memory : 3328KB
	Cyln Head Wpcom Lzone Sect Size
Hard disk C : type : 21	733 7 300 732 17 43 MB
Hard disk D : type : Not installed	
Floppy drive A : 1.2 MB, 5 1/4"	
Floppy drive B : Not Installed	
Primary display : VGA/PGA/EGA	
Keyboard : Installed	
Month : Jan, Feb, ..... Dec	
Date : 01, 02, 03, ..... 31	
Year : 1901, 1902, ..... 2099	
ESC : Exit F2/F3 : Color PU/PD : Modify	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	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

Figure 4.2 Standard CMOS Setup Screen

The Standard CMOS Setup utility is used to configure the following features:

Date, time, daylight savings, hard disk C and hard disk D. The hard disk types from 1 to 46 are standard ones; Type 47 is user definable. The user must enter the hard disk parameters for each drive.

**Note :** The USER definition entry allows you to perform a test on a hard disk not defined in ROM. The USER definition entry is valid only during the period that the test is performed.

### 4.3 Advanced CMOS Setup

The Advanced CMOS Setup program is equipped with a series of help screens, accessed by the < F1> key, which will display the options available for a particular configuration feature and special help for some of the options.

The options for the following features of the Advanced CMOS setup are either "Disabled" or "Enabled":

- \* Typematic Rate Programming
- \* Above 1MB Memory Test
- \* Memory Test Tick Sound
- \* Memory Parity Error Check
- \* Hit < Del> Message Display
- \* Wait for < F1> If Any Error
- \* Floppy Drive Seek At Boot
- \* Internal Cache Memory (486)
- \* Password Checking Option
- \* Fast Gate A20 Option
- \* Turbo Switch Function

The option "Weitek Processor" of the Advanced CMOS setup are either "Present" or "Absent":

The options for "System Boot Up Num Lock" are "on" or "Off".

The options for "System Boot Up CPU Speed" are "High" or "Low".

The figure 4.3 is the advanced setup screen :

BIOS SETUP PROGRAM- ADVANCED CMOS SETUP			
(C)1991 American Megatrends Inc., All Rights Reserved			
Typematic Rate Programming:	Disabled	Video ROM Shadow C000, 16K:	Disabled
Typematic Rate Delay (msec):	500	Video ROM Shadow C400, 16K:	Disabled
Typematic Rate (Chars/ sec) :	15	Adaptor ROM Shadow C800, 16K:	Disabled
Above 1MB Memory Test :	Disabled	Adaptor ROM Shadow CC00, 16K:	Disabled
Memory Test Tick Sound :	Enabled	Adaptor ROM Shadow C000, 16K:	Disabled
Memory Parity Error Check :	Enabled	Adaptor ROM Shadow C400, 16K:	Disabled
Hit < Del> Message Display:	Enabled	Adaptor ROM Shadow C800, 16K:	Disabled
Hard DiskType 47 RAM Area	0:300	Adaptor ROM Shadow CC00, 16K:	Disabled
Wait for < F1> if any error :	Enabled	Adaptor ROM Shadow E000, 16K:	Disabled
System Boot up Num Lock :	On	Adaptor ROM Shadow E400, 16K:	Disabled
Weitek Processor :	Absent	Adaptor ROM Shadow E800, 16K:	Disabled
Floppy Drive Seek At Boot :	Enabled	Adaptor ROM Shadow EC00, 16K:	Disabled
System Boot Up Sequence :	A.,C:	Adaptor ROM Shadow F000, 16K:	Disabled
System Boot Up CPU Speed :	High	Memory Paging :	Disabled
Internal Cache Memory :	Enabled	Remap Memory :	Disabled
Fast Gate A20 option :	Enabled	Middle BIOS ( Below 16 MB ) :	Disabled
Turbo Switch Function :	Enabled	Cache Shadow ROM :	Disabled
Password Checking Option :	Setup	Load Turbo Memory Settings :	Manual
ESC :Exit (Ctrl)PU/PD :Modify F1: Help F2/F3 :Color F5 :Old Values			
F6 : BIOS Setup Defaults F7 : Power - On Defaults			

Figure 4.3 Advanced CMOS Setup



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