

# 80486 MAINBOARD

CAM/33-SG0

M458SG1

CAM/40-SG0

M459SG1

CAM/50-SG0

M45ASG1

CPM/25-SG0

M557SG2

CPM/33-SG0

M558SG2

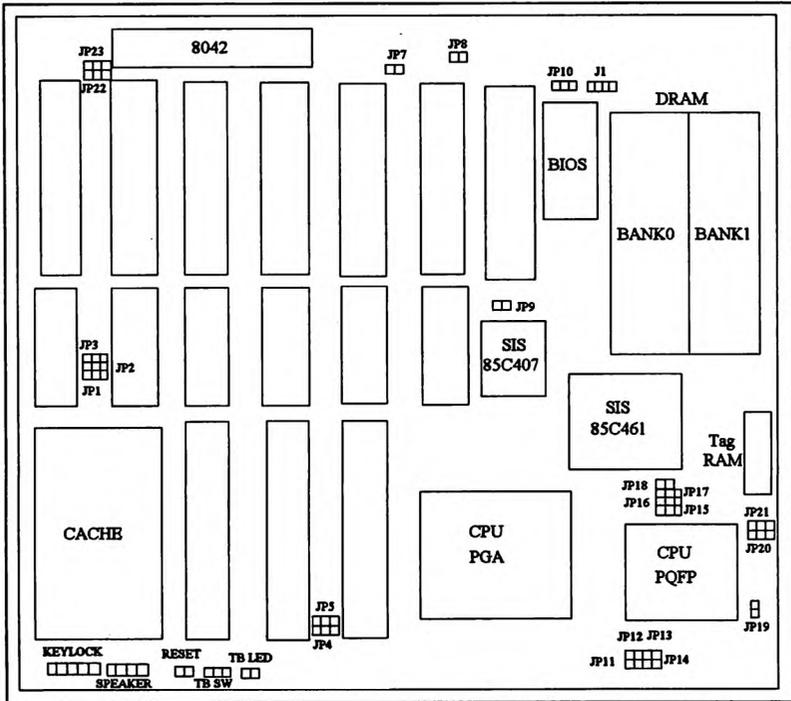
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PARTS NO. 61-MM45A-SG-10 Rev. 1.0 OCT. 1993

# **SPECIFICATIONS**

<b>CPU</b>	<b>: 80486DX/33/40/50 for CAM/33/40/50-SG0 80486SX/25/33 for CPM/25/33-SG0</b>
<b>BIOS</b>	<b>: PHOENIX 64KB BIOS ( 27512x1 )</b>
<b>Chipset</b>	<b>: SIS 85C461, SIS85C407</b>
<b>Expansion slots</b>	<b>: 16bit ISA x 6, 8bit ISA x 1, Local BUS x 3</b>
<b>PCB size</b>	<b>: 220mm x 260mm form, layer = 4</b>



# JUMPERS & CONNECTORS



# JUMPER SETTING

## CACHE MEMORY OPTION :

Size	JP1	JP2	JP3	JP20	JP21	Tag RAM
64KB		2-3	1-2	1-2	1-2	8K8
128KB	1-2	1-2	2-3	1-2	2-3	32K8
256KB	2-3	2-3	2-3	2-3	2-3	32K8

## CPUCLK SPEED :

CLK	20MHz	25MHz	33MHz	40MHz	50MHz
JP11	OPEN	SHORT	SHORT	OPEN	OPEN
JP12	OPEN	SHORT	OPEN	SHORT	OPEN
JP14	SHORT	OPEN	OPEN	OPEN	OPEN

## CPU TYPE :

	JP15	JP16	JP18
486SX	2-3	OPEN	OPEN
486DX	1-2	1-2	SHORT
487SX	1-2	2-3	SHORT

## VL-BUS IDENTIFIER PINS:

HIGH SPEED WRITE	JP4	CPU SPEED	JP5
0 WAIT WRITE MIN	1-2	<= 33 MHz	1-2
1 WAIT WRITE MIN	2-3	> 33 MHz	2-3

JP7 : MONITOR TYPE  
ON : COLOR  
OFF : MONO

JP8 : GREEN POWER SUPPLY CONTROL PIN

JP9 : PIN 27 OF 85C407  
ON : GROUNDED (DEFAULT)  
OFF : FLOATING

JP10 : 1-2 NORMAL  
2-3 DISCHARGE CMOS

JP13 : GREEN PC CLK CONTROL  
ON : ENABLE  
OFF : DISABLE

JP17 : 1-2 FAST A20  
2-3 KEYBOARD A20

JP19 : QFP486SX SELECT  
ON : DISABLE  
OFF : ENABLE

JP22,23 : 1-2 FOR AMI BIOS & 8042 KEYBOARD CONTROLLER  
2-3 FOR PHOENIX BIOS & 8042 KEYBOARD  
CONTROLLER

# **MEMORY CONFIGURATION**

Add memory to the system by installing CMOS Single-In-Line Memory Modules (SIMMs) into sockets on the maniboard. The memory configurations are supported as shown in the following table:

DRAM Configuration:

BANK0	BANK1	MEMORY SIZE
256K	empty	1 MB
256K	256K	2 MB
1M	empty	4 MB
1M	256K	5 MB
1M	1M	8 MB
4M	empty	16 MB
4M	1MB	20MB
4M	4M	32 MB

SRAM Configuration:

Name	Unit\Size	64K	128K	256K
S	U1	8K*8		32K*8
	U2	8K*8	32K*8	32K*8
	U3	8K*8		32K*8
R	U4	8K*8	32K*8	32K*8
	U5	8K*8		32K*8
A	U6	8K*8	32K*8	32K*8
	U7	8K*8		32K*8
M	U8	8K*8	32K*8	32K*8
Tag RAM	U36	8K*8	32K*8	32K*8

**Technical Bulletin Publishing**

**1. Summary of BIOS setup at various system clock for 486 mainboard**

**CACHE :**

CPU Speed	TAG Speed	Cache Speed	Cache Size	Cache Read	Cache Write
20 MHz	25 ns	25 ns	32K/128K	1T	2T
20 MHz	25 ns	35 ns	64K/256K	1T	2T
25 MHz	25 ns	25 ns	32K/128K	2T	2T
25 MHz	25 ns	35 ns	64K/256K	1T	2T
33 MHz	20 ns	20 ns	64K/256K	1T	2T
33 MHz	25 ns	25 ns	64K/256K	1T	3T
33 MHz	20 ns	20 ns	32K/128K	2T	2T
33 MHz	25 ns	25 ns	32K/128K	2T	3T
50 MHz	20 ns	20 ns	64K/256K	2T	3T
50 MHz	20 ns	20 ns	32K/128K	2T	3T
50 MHz	20 ns	25 ns	64K/256K	2T	3T
50 MHz	20 ns	25 ns	32K/128K	2T	3T

**Figure 1**

**DRAM :**

CPU Speed	DRAM Option	DRAM Speed	Cache Read	Cache Write
20 MHz	Festest	80 ns	1T	2T
25 MHz	Festest	80 ns	1T	2T
33 MHz	Fester	80 ns	1T	2T
50 MHz	Slowest	80 ns	2T	3T

**Figure 2**

**Note :**

1. If CPU=80486DX-40 then setup as CPU Speed=50 MHz
2. If CPU=80486DX2-50 then setup as CPU Speed=25 MHz
3. If CPU=80486DX2-66 then setup as CPU Speed=33 MHz

# Phoenix DragonBIOS Setup Guide

With the DragonBIOS Setup program, the end user can modify BIOS settings and control the special features of the system. The Setup program uses a number of menus for making changes and turning the special features on or off.

With the defaults setting shown following Figure, the computer performs the best running speed tested by LANDMARK PROGRAM. Unless you completely understand the meaning of the entry, we recommend you don't change the default value anyway.

To display the Main Menu of the DragonBIOS Setup program, take the following steps;

1. Turn on or reboot your system. During the bootup, DragonBIOS displays this message:  
Press <F2> to enter SETUP
2. Press the <F2> key to display the Main Menu:

Main Menu	
■	System Setup
■	Fixed Disk Setup
■	Advanced System Setup
■	Boot Options
■	Security and Anti-Virus
■	Green PC Feature
■	System Summary
	Load ROM Default Values
	Load Values from CMOS
	Save Values to CMOS
	↑ ↓ Move      Enter Select
	F1 Help      ESC Exit

3. Select an option by moving the highlight with your up-and-down arrow keys and pressing <Enter>.
4. After making your changes, select Save Values to CMOS to make them operative. Press the <Esc> key to return to exit the setup program. The following pages describe each one of these selections.

## Memory Cache

Selecting "Memory Cache" from the Advanced Setup menu displays a menu like the one shown here.

Memory Cache			
External cache	:	[Enabled]	
Cache Write Back	:	[Enabled]	
Cache Read Cycles	:	[2T]	
Cache Write Cycles	:	[3T]	
Cache System BIOS	:	[Enabled]	
Cache Video BIOS	:	[Enabled]	
Non-cacheable Region			
Region 0 , start	:	[ 0KB]	
Region 0 , size	:	[Disable]	
Region 0 , allocation	:	[Local DRAM]	
Region 1 , start	:	[ 0KB]	
Region 1 , size	:	[Disable]	
Region 1 , allocation	:	[Local DRAM]	
↑ ↓ : Move	ESC : Exit	F5 : Previous Value	F9 : Default Configuration
	F1 : Help	F6 : Next Value	F10 : Previous Configuration

<b>Feature</b>	<b>Options</b>	<b>Description</b>
<b>External cache</b>	<b>Disable</b> <b>Enable</b>	<b>Cache memory on the main board.</b>
<b>Cache Write Back</b>	<b>Disable</b> <b>Enable</b>	<b>Set cache write back function.</b>
<b>Cache Read Cycles</b>	<b>1T</b> <b>2T</b>	<b>Please reference figure 1.</b>
<b>Cache Write Cycles</b>	<b>2T</b> <b>3T</b>	<b>Please reference figure 2.</b>
<b>Cache System BIOS</b>		<b>Cache the BIOS area.</b>
<b>Cache Video BIOS</b>		<b>Cache the Video BIOS area.</b>
<b>Non-cacheable Regions</b>	<b>Disabled</b> <b>Enabled</b>	<b>Define the Non-cacheable memory region.</b>

## Memory Shadow

Selecting "Memory Shadow" from the Advanced Setup menu displays a menu like the one shown here.

Memory shadow is a procedure in which BIOS code is copied from slower ROM to faster RAM. the BIOS is then executed from the RAM. These options are chip set specific and are dependent on the system hardware. They may or may not appear on the BIOS screen. Each option, when it does appear, allows for a segment of 16 KB to be shadowed from ROM to RAM. If one of these options is enabled, and there is BIOS present in that particular 16 KB segment, the BIOS will be shadowed.

Shadow option ROM located in the specified blocks of memory and can improve performance.

Memory Shadow			
System shadow	:	Enable	
Video shadow	:	[Enabled]	
Shadow Option ROM's -			
C800 - CFFF	:	Disabled	
D000 - D7FF	:	Disabled	
D800 - DFFF	:	Disabled	
E000 - E7FF	:	Disabled	
E800 - EFFF	:	Disabled	
↑ ↓ : Move	ESC : Exit	F5 : Previous Value	F9 : Default Configuration
	F1 : Help	F6 : Next Value	F10 : Previous Configuration

<b>Feature</b>	<b>Options</b>	<b>Description</b>
<b>System Shadow</b>	<b>Enable</b>	<b>Default always Enable.</b>
<b>Video shadow</b>	<b>Disable</b> <b>Enable</b>	<b>Disable : Non-shadow</b> <b>Enable : Shadow</b>
<b>Shadow Memory Regions</b>	<b>Disable</b> <b>Enable</b>	<b>Disable : Non-Shadow</b> <b>Enable : Shadow</b>

## Advanced Chipset Control

Selecting "Advanced Chipset Control" from the Advanced Setup menu displays a menu like the one shown here.

Technicians use this menu to change the values in the chipset registers and optimize your system's performance.

Advanced Chipset Control			
DRAM Speed	:	[Faster]	
DRAM Write cycle	:	[1 wait state]	
Data Parity Check	:	[Disabled]	
De-turbo Switch	:	[Enabled]	
BUS Clock Frequency	:	[1/4 CLKIN]	
Local bus device sample position	:	[At end of T3]	
CPURDY# generation mode	:	[Sync. with clock]	
↑ ↓ : Move	ESC : Exit	F5 : Previous Value	F9 : Default Configuration
	F1 : Help	F6 : Next Value	F10 : Previous Configuration

Feature	Option	Description
DRAM Speed	Festest Fester Slowest	Please reference figure 2
DRAM Write Cycle	0 wait state 1 wait state	The number of wait states added on writes to memory
Data Parity Check	Disabled Enabled	Set the parity check disable or enable.
De-turbo Switch	Disabled Enabled	Disable : the system always in high speed mode Enable : lot you change system speed in high or low mode
BUS Clock Frequency	7.159 MHz 1/2 CLKIN 1/3 CLKIN 1/4 CLKIN 1/5 CLKIN 1/6 CLKIN 1/8 CLKIN 1/10 CLKIN	BUS clock define 33 MHz : 1/4 CLKIN 40 MHz : 1/5 CLKIN 50 MHz : 1/6 CLKIN

## Green PC Features

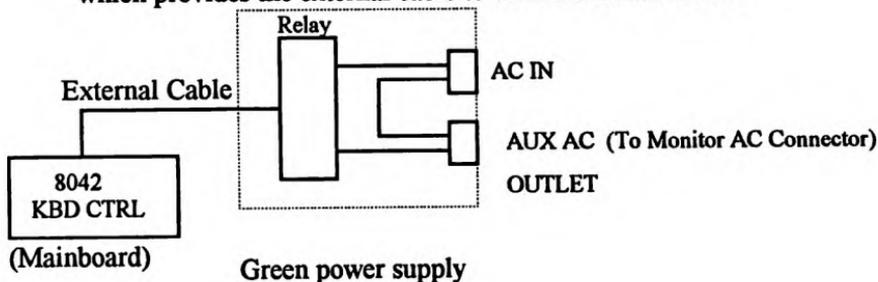
Selecting "Green PC Features" from the main menu displays this menu :

Green PC Features				
Inactivity Timer1				: [1 min]
Inactivity Timer2				: [1 min]
Lockout Timer				: [5 sec]
Fixed Disk Timeout				: [1 min]
↑ ↓ Move	ESC Exit	F5 Previous Value	F9 Default Configuration	
	F1 Help	F6 Next Value	F10 Previous Configuration	

Feature	Options	Description
Inactivity Timer1	Time	Control monitor to power-off Please reference the note.
Inactivity Timer2	Time	Control CPU speed to low speed mode.
Lockout Timer	Time	The system wake up time.
Fixed disk Timeout	Time	Control fixed disk to sleep mode.

Note :

The feature of Inactivity Timer1 is only for triggering Green power supply to disconnect the Monitor's AC power in (AUX AC) However, Using This timer should cooperate with green power supply which provides the external cable to connect to mainboard



## System Security and Anti-Virus

Selecting "System Security and Anti-Virus" from the Main Menu displays this menu :

Security and Anti-Virus											
Supervisor Password is	Disabled										
User Password is	Disabled										
Set Supervisor Password	[Press Enter]										
Set User Password	Press Enter										
Password on boot :	[Disabled]										
Diskette Access :	[Supervisor]										
Fixed disk boot sector :	[Normal]										
<table style="width: 100%; border: none;"> <tr> <td style="border: none; width: 10%;">↑ ↓ Move</td> <td style="border: none; width: 15%;">ESC Exit</td> <td style="border: none; width: 15%;">F5 Previous Value</td> <td style="border: none; width: 15%;">F9 Default Configuration</td> <td style="border: none; width: 15%;"></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">F1 Help</td> <td style="border: none;">F6 Next Value</td> <td style="border: none;">F10 Previous Configuration</td> <td style="border: none;"></td> </tr> </table>		↑ ↓ Move	ESC Exit	F5 Previous Value	F9 Default Configuration			F1 Help	F6 Next Value	F10 Previous Configuration	
↑ ↓ Move	ESC Exit	F5 Previous Value	F9 Default Configuration								
	F1 Help	F6 Next Value	F10 Previous Configuration								

Feature	Options	Description
Set Supervisor Password	Up to eight characters	Pressing <Enter> displays dialog box for setting supervisor password. This password gives full access to SETUP menus.
Set User Password	Up to eight characters	Pressing <Enter> displays dialog box for setting user password. This password gives restricted access to SETUP menus. Cannot be set unless supervisor password is set first.
Password on boot	Enabled Disabled	Enabled requires a password to boot. Supervisor password must be set to enable this option. If supervisor password is set and this option disabled, BIOS assumes user is booting.
Diskette Access	Supervisor User	Supervisor restricts use of diskette to supervisor. Supervisor password must be set first.
Fixed disk boot sector	Normal Write Protected	Write protected helps prevent viruses.

## *Boot Options*

Selecting "Boot Options" from the Main Menu displays this menu :

Boot Options			
Disk drive boot sequence		: [A: then C:]	
Display SETUP prompt during POST		: [Enabled]	
Pause on POST errors		: [Enabled]	
Floppy seek		: [Enabled]	
System summary screen at boot		: [Enabled]	
↑ ↓ Move	ESC Exit F1 Help	F5 Previous Value F6 Next Value	F9 Default Configuration F10 Previous Configuration

Feature	Options	Description
Disk drive boot sequence	A: then C: C: then B: C: only	The BIOS attempts to load the operating system from the disk drives in the sequence selected here.
Display Setup prompt during POST	Enabled Disabled	Display "Press <F2> for Setup" during bootup.
Pause on POST errors	Enabled Disabled	At boot error, pauses and displays "Press <F1> to resume, <F2> to Setup".
Floppy seek	Enabled Disabled	Seeks diskette drives during bootup. Disabling speeds boot time.
System summary screen at boot	Enabled Disabled	Displays system summary screen during bootup.

## **BIOS Messages**

The following is an alphabetic list of error-and status messages which DragonBIOS can generate and an explanation of each message. Many of the messages below refer to the built-in Setup program.

nnnn Cache SRAM Passed Where nnnn is the amount of system cache in kiloytes successfully tested.

Diskette drive A error or  
Diskette drive B error Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

Entering SETUP...Starting Setup program

Extended RAM Failed at offset: nnnn Extended memory not working of not configured properly.

nnnn Extended RAM Passed Where nnnn is the amount of RAM in kilobytes successfully tested.

Failing Bits : nnnn The hex number nnnn is a map of the bits at the RAM address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit.

Fixed Disk 0 Failure of  
Fixed disk 1 Failure or

**Fixed Disk Controller Failure** Hard disk is not working or not configured properly. Check to see if hard disk is attached properly. Run Setup be sure the fixed-disk type is correctly identified.

**Incorrect Drive A type** - run SETUP. Type of floppy drive A: not correctly identified in Setup.

**Incorrect Drive B type** - run SETUP Type of floppy drive B: not correctly identified in Setup.

**Invalid NVRAM media type** Problem with NVRAM access.

**Keyboard controller error** The keyboard controller failed test. You may have to replace keyboard or controller.

**Keyboard error** Keyboard not working.

**Keyboard error nn** BIOS discovered a stuck key and displays the scan code for the stuck key.

**Keyboard locked** - Unlock key switch Unlock the system to proceed.

**Monitor type does not match CMOS** - Run SETUP Monitor type not correctly identified in Setup.

**Operating system not found** Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1** Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????.

Parity Check 2 Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????.

Press <F1> to resume, <F2> to Setup Displayed after any recoverable error message. Press <F1> to start the boot process of <F2> to enter Setup and change any settings.

Press <F2> to enter SETUP Optional message displayed during POST. Can be turned off in Setup.

Previous boot incomplete - Default configuration used  
Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait-state configuration is correct. This error is cleared the next time the system is booted.

Real time clock error Real-time clock fails BIOS test. May require board repair.

Shadow Ram Failed at offset : nnnn Shadow RAM failed at the offset of in the 64k block at which the error was detected. The K address of the failure is displayed above this message.

nnnn Shadow RAM Passed Where nnnn is the amount of shadow RAM in kilobytes successfully tested.

System battery is dead - Replace and run SETUP The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

**System BIOS shadowed System BIOS copied to shadow RAM.**

**System cache error - Cache disabled RAM cache failed the BIOS test. BIOS disabled the cache.**

**System CMOS checksum bad - run SETUP System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system.**

**System RAM Failed at offset : nnnn System RAM failed at the offset of in the 64k block at which the error was detected. The K address of the failure is displayed above this message.**

**nnnn System RAM Passed Where nnnn is the amount of system RAM in kilobytes successfully tested.**

**System timer error The timer test failed. Requires repair of system board.**

**UMB upper limit segment address : nnnn Displays the address of the upper limit of Upper Memory Blocks, which may be reclaimed by a virtual memory manager.**

**Video BIOS shadowed Video BIOS successfully copied to shadow RAM.**

