

# **386 -VC-H**

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## **Mainboard User's Manual**

DOC. NO. : 11529  
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# INTRODUCTION

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## SYSTEM GUIDE

### **The 386-W-H Cache System Motherboard**

The 386-W-H Cache System board is a high performance system board, utilizing the VIA Technology Inc.'s **VT82C480** 80386 PC/AT **chipset**, that offers outstanding features and performance for building advanced personal computers or workstations.

### **High-speed Memory**

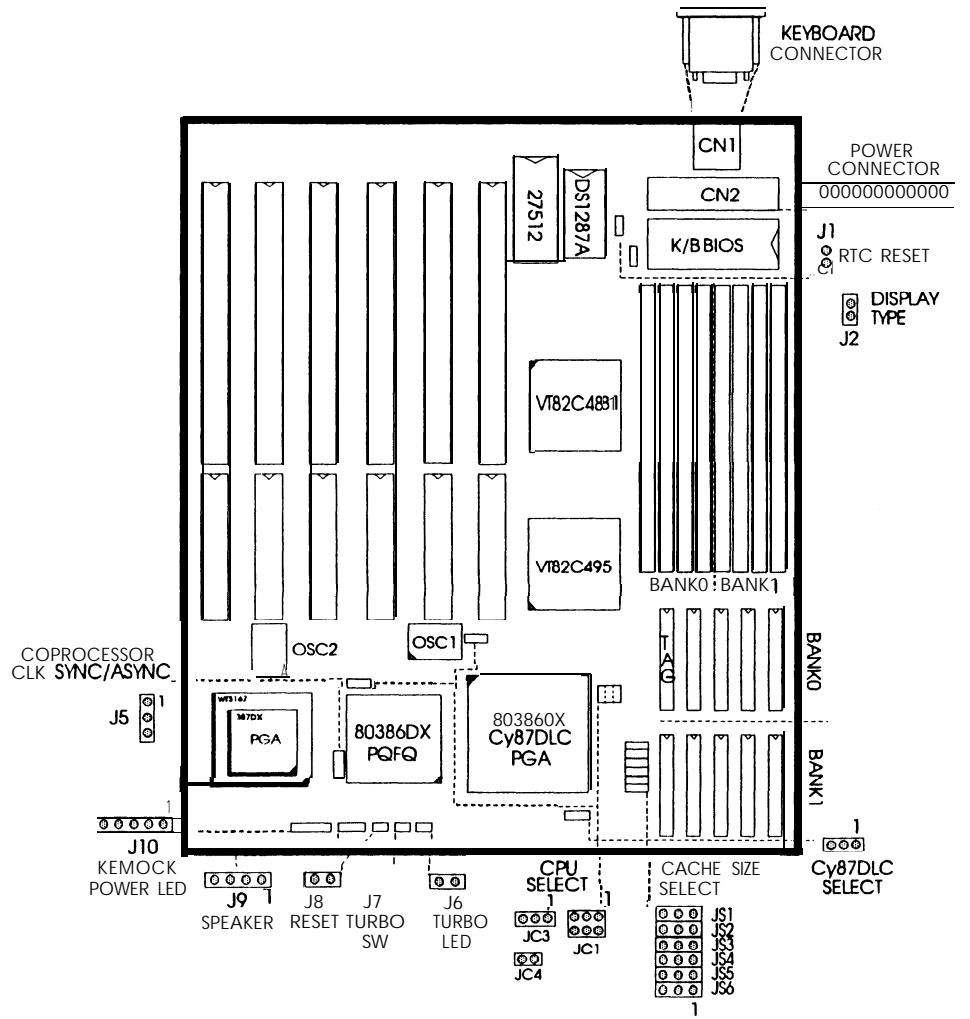
The 386-W-H Cache System board is capable of accommodating 1 to 32 megabytes of on board memory, using **256KB, 1MB, 4MB SIMMs**.

## SPECIFICATIONS

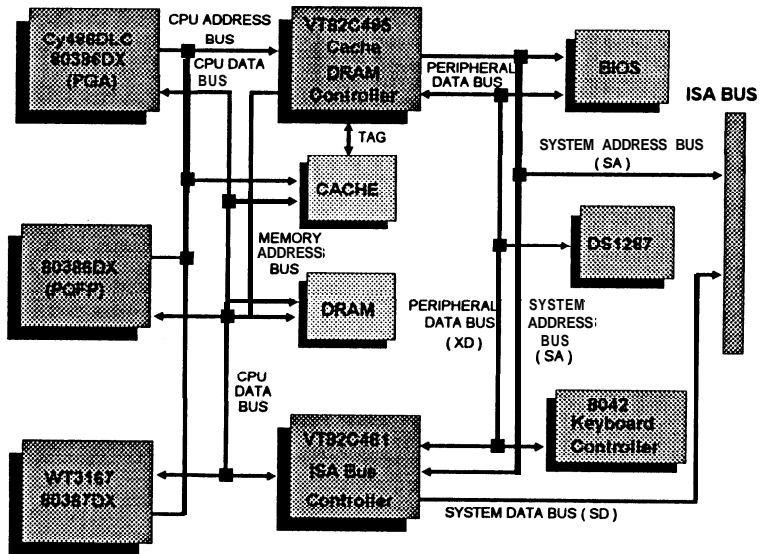
The **386-VC-H** Cache System board comes with the following features:

- **AMD386DX/Intel386DX/Cyrix486DLC** microprocessor. Dual CPU of PQFP and PGA packages.
- VIA **VT82C480** 80386 PC/AT **Chipset** for high performance.
- Supports **0KB/32KB/64KB/128KB/256KB** of direct mapped write-back cache memory.
- Supports **1MB** up to 32MB of DRAM memory; provides page mode DRAM operation.
- Shadow RAM for fast BIOS access.
- 64KB User-friendly BIOS.
- Six **16-bit** expansion slots.
- Real time clock/calendar.

**MOTHERBOARD LAYOUT**



**SYSTEM BLOCK DIAGRAM**



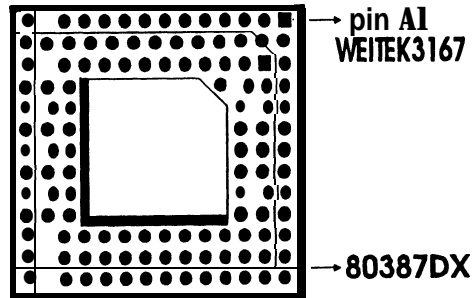
INTRODUCTION

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**WEITEK3167 & INTEL80387 COPROCESSOR**

The 386-VC-H Cache System board provides a socket for Weitek 3 167 or Intel 80387 numeric coprocessor. Intel 80387 may run in both synchronous mode and asynchronous mode; Weitek 3 167 runs in synchronous mode only.

To plug the coprocessor into the 121-pin PGA socket, please note that the alignment and position are as follows:



# INSTALLATION

## CONNECTOR DESCRIPTION

<b>Jumper</b>	<b>Function</b>	<b>Pin outs</b>	<b>Signal name</b>
<b>J6</b>	Turbo LED	1. 2.	v c c Turbo signal
<b>J8</b>	Hardware reset	1. 2.	Ground Reset signal
<b>J9</b>	Speaker connector	1. 2. 3. 4.	Speaker signal NC Ground + 5V
<b>J10</b>	Key lock & power LED	1. 2. 3. 4. 5.	Power signal Spare Ground <b>Keylock</b> Ground
<b>CN2</b>	Power connector	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.	Power good + 5V + 12V -12v Ground -5V + 5V
<b>CN1</b>	Keyboard connector	1. 2. 3. 4. 5.	Keyboard clock Keyboard data No connection Ground + 5V

INSTALLATION

**JUMPER DESCRIPTION**

<b>Jumper</b>	<b>Function</b>	<b>Open</b>	<b>Close</b>
J1	<b>RTC</b> reset (if using DS1287A)	Normal (default)	Reset
J2	Display type	Mono/EGA/ VGA (default)	Color
J7	CPU speed (Turbo switch)	Turbo	, Normal
J8	Hardware reset (Reset)	Normal	Reset

**CPU SELECTION**

<b>CPU Type / Jumper</b>	<b>PGA</b>		<b>PQFP 80386DX</b>
	<b>Cy486DLC</b>	<b>80386DX</b>	
JC1	shorted	open	open
JC3	1-2 shorted	1-2 shorted	2-3 shorted
JC4	shorted	shorted	open

<b>CYRIX 87DLC</b>		
JN1	1-2 shorted	Enable
	2-3 shorted	Disable

**COPROCESSOR CLOCK SELECTION**

<b>Jumper</b>	<b>Sync. mode</b>	<b>Async. mode</b>
J5	1-2 shorted (default)	2-3 shorted



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## MEMORY SYSTEM

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### MEMORY CONFIGURATION

<b>Memory</b>	<b>Bank 0</b>	<b>Bank 1</b>
1MB 2MB SMB 17MB	256Kx4 256Kx4 256Kx4 256Kx4	256Kx4 1Mx4 4Mx4
4MB SMB 8MB 20MB	1Mx4 1Mx4 1Mx4 1Mx4	256Kx4 1Mx4 4Mx4
16MB 17MB 20MB 32MB	4Mx4 4Mx4 4Mx4 4Mx4	256Kx4 1Mx4 4Mx4

### CACHE RAM & CONFIGURING CACHE SIZE

The 386-VC-H Cache System board uses six jumpers to configure the cache size.

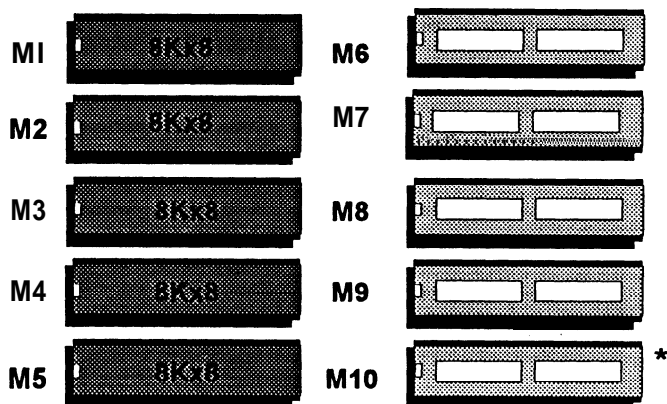
	32K	64K	128K	256K
ALTER RAM	<b>8Kx8</b>	<b>8Kx8</b>	<b>8Kx8</b>	<b>32Kx8</b>
TAG RAM	<b>8Kx8</b>	<b>8Kx8</b>	<b>8Kx8</b>	<b>32Kx8</b>
DATA RAM	<b>8Kx8</b>	<b>8Kx8</b>	<b>32Kx8</b>	<b>32Kx8</b>
<b>JS1</b>	<b>2-3*</b>	2-3	1-2	<b>2-3</b>
JS2	2-3	2-3	1-2	1-2
JS3	2-3	2-3	2-3	1-2
JS4	<b>1-2<sup>+</sup></b>	2-3	2-3	2-3
<b>JS5</b>	1-2	2-3	2-3	2-3
JS6	1-2	2-3	1-2	2-3

\*"2-3" represents 2-3 pin shorted

+ "1-2" represents 1-2 pin shorted

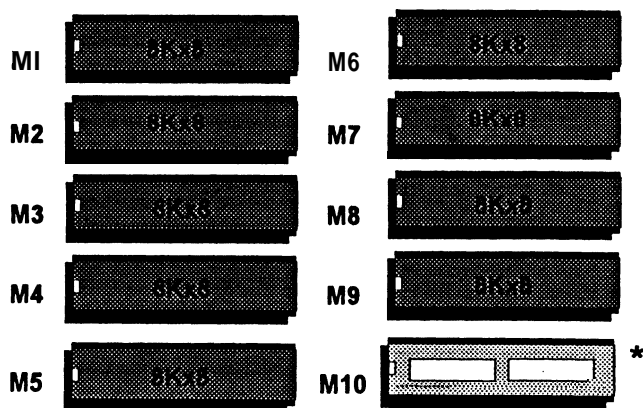
**32Kbytes Direct Mapped Cache**

The 32Kbytes Direct Mapped Cache option is achieved by installing four 8Kx8 SRAM (DATA RAM) in M1, M2, M3, M4. Install one 8Kx8 SRAM (TAG RAM 28 pin) in M5.



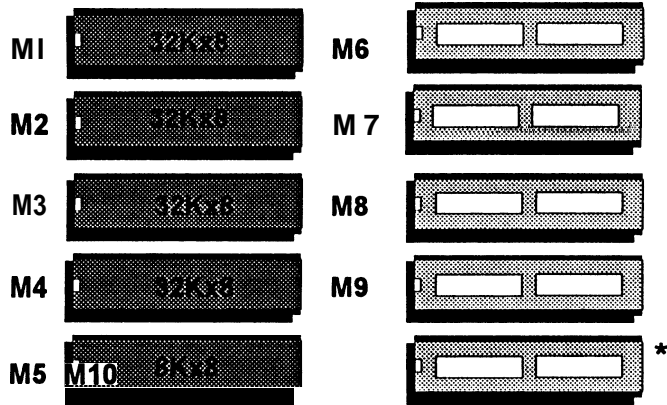
**64Kbytes Direct Mapped Cache**

The 64Kbytes Direct Mapped Cache option is achieved by installing eight 8Kx8 SRAM (DATA RAM) in M1, M2, M3, M4, M6, M7, M8, M9. Install one 8Kx8 SRAM (TAG RAM 28 pin) in M5.



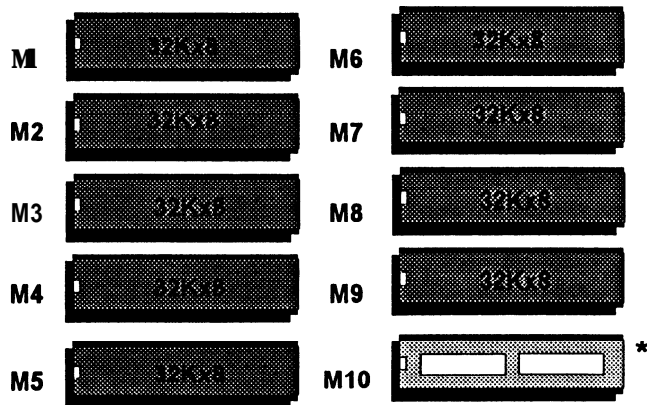
**128Kbytes Direct Mapped Cache**

The **128Kbytes** Direct Mapped Cache option is achieved by installing four **32Kx8** SRAM (DATA RAM) in M1, M2, M3, M4. Install one **8Kx8** SRAM (TAG RAM 28 pin) in M5.



**256Kbytes Direct Mapped Cache**

The **256Kbytes** Direct Mapped Cache option is achieved by installing eight **32Kx8** SRAM (DATA RAM) in M1, M2, M3, M4, M6, M7, M8, M9. Install one **32Kx8** SRAM (TAG RAM 28 pin) in M5.



\* M10 is A *Iter* RAM, it is optional.

# AWARD BIOS SETUP

## SETUP SYSTEM CONFIGURATION

A setup program has been built into the system BIOS so the configurations stored in the CMOSRAM can be changed. This program should be executed only after:

- (1) User has changed system configuration.
- (2) User has changed system backup battery.
- (3) System has detected a configuration error and has asked the user to run the setup program.

After power-on RAM testing, the message: "TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC" is displayed on the screen. Press "CTRL+ ALT+ ESC" to run setup or do nothing to bypass. If the "CTRL+ ALT+ ESC" is pressed, the following message will be displayed:

<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">Date</td><td>: 13 Jan 1992</td></tr> <tr><td>Time</td><td>: 10:49:26</td></tr> <tr><td>Drive A</td><td>: 1.2M, 5in.</td></tr> <tr><td>Drive B</td><td>: 1.44M, 3in.</td></tr> <tr><td>Video</td><td>: EGA/VGA</td></tr> <tr><td>Halt On</td><td>: All Errors</td></tr> </table>	Date	: 13 Jan 1992	Time	: 10:49:26	Drive A	: 1.2M, 5in.	Drive B	: 1.44M, 3in.	Video	: EGA/VGA	Halt On	: All Errors	<table style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">ROM ISA (486)</td></tr> <tr><td colspan="2" style="text-align: center;">Award Software, Inc.</td></tr> <tr><td>Base Memory</td><td>: 64K</td></tr> <tr><td>Extended Memory</td><td>: 3072K</td></tr> <tr><td>Expanded Memory</td><td>: 0K</td></tr> <tr><td>Other Memory</td><td>: 384K</td></tr> <tr><td>Total Memory</td><td>: 4096</td></tr> </table>	ROM ISA (486)		Award Software, Inc.		Base Memory	: 64K	Extended Memory	: 3072K	Expanded Memory	: 0K	Other Memory	: 384K	Total Memory	: 4096
Date	: 13 Jan 1992																										
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<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>CYL</th> <th>Head</th> <th>Sector</th> <th>Precomp</th> <th>Landzone</th> </tr> </thead> <tbody> <tr> <td>Drive C</td> <td>: 9 (112Mb)</td> <td>900</td> <td>1s</td> <td>17</td> <td>None 901</td> </tr> <tr> <td>Drive D</td> <td>: None (****Mb)</td> <td>0</td> <td>0</td> <td>0</td> <td>0 0</td> </tr> </tbody> </table>			CYL	Head	Sector	Precomp	Landzone	Drive C	: 9 (112Mb)	900	1s	17	None 901	Drive D	: None (****Mb)	0	0	0	0 0								
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Alt-F1 for Menu Help</td> <td style="width: 50%;">F10 exits</td> </tr> <tr> <td>Page 01 : Status Page</td> <td>PgDn = Options Page      F2 change colors</td> </tr> </table>		Alt-F1 for Menu Help	F10 exits	Page 01 : Status Page	PgDn = Options Page      F2 change colors																						
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*\*Before* disable the system & video shadow, **you have first** to disable the video cacheable and system **cacheable function** in the options page setup.

### STATUS PAGE SETUP

The setup program is completely menu-driven. Use the arrow keys to select an entry; "+" / "-" keys to change an entry; and "F10" key to exit. Help messages are displayed in the window on the screen.

If this option is chosen then the screen above is displayed. System BIOS automatically detects memory size, thus no changes are necessary. After the changes are made, press "F10" to exit.

### OPTIONS PAGE SETUP

The Options Page Setup program functions the same way as the status page Setup, as shown below.

Users are not encouraged to run the status page Setup program, as your system should have been fine tuned before shipping. Improper setup may cause the system to fail, so consult your dealer before making any changes.

<b>Bus Control</b>		
ISA Command Delay	:	Normal
ISA Wait state	:	Normal
I/O Recovery Time	:	Disable
Extended ALE	:	Disable
Decouple Refresh	:	Disable
<b>Cache/DRAM Control</b>		
256K/384K Relocation	:	Disable
Cache Timing	:	Fast
Video Cacheable	:	Enable
System Cacheable	:	Enable
Alt-F1 for Menu Help	PgUp = Status Page	F10 exits
Page 02 : Options Page		F2 change colors 1

### SAVE AND EXIT

Once you have completed Setup , then press F 10 to exit. If you did not make any changes, press F 1 to exit; otherwise, press F5 to save and exit.

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## HARD DISK SPECIFICATIONS

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### CONNER

Model	Capacity	Cylinder	Head	Sector
<b>CP-3000</b>	40MB	977	<b>5</b>	17
<b>CP-30064</b>	60MB	762	4	39
CP-30064H	60MB	762	4	39
CP-30084	<b>85MB</b>	526	8	39
CP-30084E	<b>85MB</b>	526	8	39
CP-30104	<b>120MB</b>	762	8	39
CP-30104H	120MB	762	8	39
CP-30174	170MB	903	8	46
CP-30174E	170MB	903	8	46
CP-30204	200MB	683	16	38
CP-30204F	<b>200MB</b>	683	16	<b>38</b>

**MAXTOR**

<b>Model</b>	<b>Capacity</b>	<b>Cylinder</b>	<b>Head</b>	<b>Sector</b>
7120AT	120MB	1024	14	17
7213AT	203MB	683	16	38

**QUANTUM**

<b>Model</b>	<b>Capacity</b>	<b>Cylinder</b>	<b>Head</b>	<b>Sector</b>
PRO52AT	52MB	751	8	17
PRO80AT	80MB	611	16	17
PRO105AT	105MB	755	16	17
PRO120AT	120MB	901	S	53
PRO240AT	240MB	723	13	51

**SEAGATE**

<b>Model</b>	<b>Capacity</b>	<b>Cylinder</b>	<b>Head</b>	<b>Sector</b>
ST351A/X	40MB	977	S	17
ST3096A	85MB	1024	10	17
ST3120A	102MB	1024	12	17
ST3144A	125MB	1001	1s	17
ST3283A	24SMB	978	14	35



## STANDARD CMOS SETUP

AMIBIOS SETUP PROGRAM - STANDARD CMOS SETUP			
(C) 1992 American Megatrends Inc., All Rights Reserved			
Date (mn/date/year) :	Fri, Dec 11 1992	Base memory :	640 KB
Time (hour/min/sec) :	11:32:03	Ext. memory :	3072 KB
Hard disk C: Type :	17	Cyln Head WPcom LZone Sect Size	977 5 300 977 17 41 MB
Hard disk D: Type :	Not Installed		
Floppy drive A: :	1.2MB, 5 1/4"		
Floppy drive B: :	Not Installed		
Primary display :	VGA/PGA/EGA		
Keyboard :	Installed		

Sun	Mon	Tue	Wed	Thu	Fri	Sat
2	9	3	0	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
8	9					

Esc : Exit ↓ → ↑ Select F2/F3 : Color PU/PD : Modify

## ADVANCED CMOS SETUP

AMIBIOS SETUP PROGRAM -ADVANCED CMOS SETUP			
(C) 1992 American Mtgatrcnds Inc., All Rights Reserved			
Typematic Rate Programming	Disabled	Adrptor ROM Shadow C800, 32K	Disabled
Typematic Rate Delay (msec)	500	Adrptor ROM Shadow D000, 32K	Disabled
Typematic Rate (Chars/Sec)	15	Adrptor ROM Shadow D800, 32K	Disabled
Above 1 MB Memory Test	Disabled	Adrptor ROM Shadow E000, 64K	Disabled
Memory Test Tick Sound	Enabled	BootSector Virus Protection	Enabled
Hit <DEL> Message Display	Enabled	BIOS Cacheable Option	Enabled
Hud Disk Type 47 RAM Area	0:300	Vidro Cacheable Option	Enabled
Wut For <F1> If Any Error	Enabled	256K Relocate Option	Disabled
System Boot Up Num Lock	On	ISA Bus Command Delay	Disabled
Numeric Processor Test	Enabled	ISA Slave Wait States	4 W/S
W80386 Processor	A been t	I/O Recovery Time	Disabled
Floppy Drive Seek At Boot	Enabled	Extended ALE	Disabled
System Boot Up Sequence	A, C:	Decouple Refresh	Disabled
System Boot Up CPU Speed	High	AUTO Config Option	Enabled
External Cache Memory	Enabled	D R A M Speed Select	0 W/S
Internal Cache Memory	Enabled	Bus Clock Rate Select	CLK2/1.5
Password Checking Option	Setup	Cache Read Cycle Select	0 W/S
Video ROM Shadow C000, 32K	Enabled	Cache Write Cycle Select	0 W/S

ESC: Exit ↓ → ↑ Sel (Ctrl) Pu/Pd:Modify F1: Help F2/F3: Color  
F5: Old Values F6: BIOS Setup Defaults F7: Power-on Defaults

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**"AMI BIOS SETUP PROGRAM"**  
 addendum for VENUS mainboard