

# **SJ-DG486 / 3VLS** **MAIN BOARD** **USER'S MANUAL**

- INTEL 80486 SX/DX/DX2
- INTEL 80486 DX4 (FACTORY OPTION)
- Cyrix 486 DX/DX2
- AMD 486 DX/DX2
- P24T CPU

CONTENTS

I. GENERAL INFORMATION

II. FEATURES

III. SYSTEM REQUIREMENTS

1. POWER SUPPLY
2. CPU
3. MEMORY
4. DISPLAY
5. KEYBOARD
6. MOUSE
7. PRINTER
8. SCANNER
9. NETWORK
10. SOUND
11. STORAGE
12. SECURITY

IV. HARDWARE

1. CPU
2. MEMORY
3. DISPLAY
4. KEYBOARD
5. MOUSE
6. PRINTER

V. SOFTWARE

1. OPERATING SYSTEM
2. APPLICATION SOFTWARE

VI. INSTALLATION

1. UNPACKING
2. HARDWARE CONNECTION
3. SOFTWARE INSTALLATION
4. SYSTEM CONFIGURATION
5. TESTING
6. TROUBLESHOOTING

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**MAIN BOARD**  
**USER'S MANUAL**

## CONTENTS

I. GENERAL DESCRIPTION. -----	3
II. FEATURES. -----	3
III. EXTERNAL CONNECTION. -----	5
1. POWER SUPPLY CONNECTION -----	5
2. KEY BOARD CONNECTION -----	5
3. EXTERNAL BATTERY CONNECTION -----	6
4. SPEAKER CONNECTION -----	6
5. KEY LOCK AND POWER ON INDICATING LED CONNECTION	7
6. HARDWARE RESET SWITCH CONNECTION -----	7
7. TURBO / NORMAL MODE SELECT SWITCH CONNECTION ---	7
8. TURBO LED CONNECTOR -----	8
9. BACKUP BATTERY TYPE SETING & CMOS CLEAR SETTING-	8
10. GREEN MODE SWITCH CONNECTOR -----	9
11. GREEN MODE LED CONNECTOR -----	9
12. DEVICE CONTROL CONNECTOR -----	9
IV. HARDWARE JUMPER SETTING. -----	10
1. CPU Type JUMPER SETTING -----	10
2. CPU POWER SETTING -----	11
3. CPU CLOCK SETTING -----	11
4. VL-BUS CONFIGULATION JUMPER -----	11
5. VL- BUS WAIT STATE SELECTER -----	12
6. FLASH ROM VPP SUPPLY SETTING -----	12
V. CACHE MEMORY INSTALLATION. -----	13
1. CACHE RAM CONFIGURATION -----	13
2. CACHE RAM SIZE SETTING -----	13
VI. DRAM CONFIGURATION. -----	14
1. FAST OR STANDARD PAGE MODE DRAM -----	14
2. PROGRAMABLE WAIT STATE 0,1,2 -----	14
3. 256KB OR 384KB(A TO F SEGMENT OF THE FIRST IMB) RELOCATION TO THE TOP OF DRAM MEMORY -----	14
4. 2 BANKS OF DRAM WITH MEMORY SIZE UP TO 32 MB ---	14
5. MIXABLE 256K - 1M, 1M - 4M SIMM MODULE -----	14
(256K - 4M SIMM MODULE CAN NOT MIXING)	
6. DRAM BANK CONFIGURATION -----	14

VII. SPEED SELECTION. -----	15
1. HARDWARE SPEED SELECTION -----	15
2. SOFTWARE SPEED SELECTION -----	15
VIII. SOFTWARE CONFIGURARION SETUP FOR AMI BIOS SETUP --	16
1. RUNNING AMI BIOS -----	16
2. STANDARD CMOS SETUP -----	17
3. ADVANCED CMOS SETUP -----	18
4. ADVANCED CHIPSET SETUP -----	22
5. POWER MANAGEMENT SETUP -----	26
6. AUTO CONFIGURATION WITH BIOS DEFAULTS -----	29
7. CHANGE PASSWORD -----	29
8. AUTO DETECT HARD DISK -----	30
9. HARD DISK UTILITY -----	30
10. WRITE TO CMOS AND EXIT -----	31
X. IMOPRTANT SETUP FOR KING OF CPU -----	31
XI. APPENDIX -----	32
1. BOARD LAYOUT -----	32
2. I/O ADDRESS MAP -----	33
3. SYSTEM INTERRUPTS -----	34
4. DMA CHANNEL -----	34
5. I/O CHANNEL -----	35

## I. General Description

The 486DX board is highly integrated, IBM PC/AT compatible for high performance 80486 based personal computer systems. Built with exquisite cache controller in advance 0.8 um CMOS technology, UM8498F (Integrated Memory Controller, IMC Integrated System controller, ISC), with UM8496 and limited counts of commercial parts constitute a low cost, highly reliable, full advanced feature personal computer system.

## II. Features

### 1. BOARD SPECIFICATION

- 1) DIMENSION : 220 mm x 250 mm
- 2) RAM SOCKET: 4 BANK 72 PIN SIMM SOCKET
- 3) SLOT : ISA(16 BIT) ----- 4  
ISA + VESA ----- 3
- 4) CHIP SET : UMC UM8498F, UM8496F
- 5) CACHE RAM : 64 - 256KB
- 6) CPU TYPE : PGA TYPE

### 2. FEATURES

- \* 100% IBM PC/AT compatible single chip.
- \* Support 80486DX CPU running at 25/33/40/50MHz.
- \* Support 80486DX2 CPU running at 50/66MHz.
- \* Support processor systems of:
  - P24T, P24C, SLe CPU.
  - Cyrix M6, M7
  - AMD 486 CPU
  - IBM Blue Lightning
  - 80486SX CPU.
- \* Support 3(tree) Vesa Local bus.
  - Support Master mode and Slave mode
  - Support 486DX2 50MHz, 486DX2 66MHz.

- \* Built-in cache controller:
  - support L1 write back or write through cache
  - direct map placement strategy.
  - write back write policy for high performance.
  - programmable 0/1/2 wait states for cache write hit.
  - supports 80486 burst mode line fill with 2-1-1-1, 3-1-1-1, 3-2-2-2 cycles.
- \* Hidden refresh to reduce refresh overhead
- \* Programmable DRAM access wait state, 0/1/2.
- \* Support two programmable DRAM hole
- \* Built in integrated peripheral controller, with RTC outside option.
- \* Programmable keyboard clock.
- \* Provides Green PC power management(UPM:UMC Power Management)
- \* Automatic H.W. power management if APM driver is not linked.
- \* Fully support Microsoft APM
- \* Support SMM for INTEL S-series, Cyrix CPU and AMD CPU.
- \* Programmable CPU clock
- \* Support Shadow RAM for video and system BIOS (C,D,E,F, segments)
- \* The CPU will be changed by jumper setting only.
- \* Support for all current 486 CPUs as well as future CPU up grades using a 238-Pin ZIF(Zero Insertion Force) socket.

### III. EXTERNAL CONNECTION.

#### 1. POWER SUPPLY CONNECTION.

##### 1) POWER CONNECTOR

P 1	0	1 : POWER GOOD SIGNAL
	0	2 : + 5 VOLTS DC
	0	3 : +12 VOLTS DC
	0	4 : -12 VOLTS DC
	0	5 : GROUND
	0	6 : GROUND
	0	7 : GROUND
	0	8 : GROUND
	0	9 : - 5 VOLTS DC
	0	10 : + 5 VOLTS DC
	0	11 : + 5 VOLTS DC
	0	12 : + 5 VOLTS DC

- 2) POWER SUPPLY CAPACITY : MORE THEN 150 WATTS.
- 3) POWER SUPPLY TYPE : STEP DOWN POWER SUPPLY OR SWITCHING POWER SUPPLY (± 5% )

#### 2. KEY BOARD CONNECTION.

##### 1) KEY BOARD CONNECTOR.

KB1	1	: KEY BOARD CLOCK
	2	: KEY BOARD DATA
	3	: SPARE
	4	: GROUND
	5	: + 5 VOLTS DC

- 2) You have to use AT-mode.



### 3. EXTERNAL BATTERY CONNECTION.

#### 1) EXTERNAL BATTERY CONNECTOR

JP1	1	o +	1 : EXT. BATTERY POSITIVE POLE( + )
	2	o	2 : INT. BATTERY LINE
	3	o -	3 : CMOS POWER LINE
	4	o -	4 : GROUND

#### 2) EXTERNAL BATTERY RATING :

\* BATTERY VOLTAGE ----- 3.6 VOLTS  
( 1.2 V 3 CELLS ~ 6VOLTS 1.5V X 4CELLS)

\* BATTERY CAPACITY ----- MORE THEN

3) INTERNAL BATTERY CAPACITY : 3.6V , 60mAH RECHARGEABLE  
BATTERY. ( SELF RECHARGE )

### 4. SPEAKER CONNECTION.

#### 1) SPEAKER CONNECTOR

JP28	SPEAKER	o 1	1 : AUDIO OUTPUT
		o 2	2 : NC
		o 3	3 : GND
		o 4	4 : VCC

### 5. KEY LOCK AND POWER ON INDICATING LED CONNECTION.

#### 1) CONNECTION OF KEY LOCK AND POWER ON INDICATING LED.

JP29	KEYLOCK	o 1	1 : POWER ON LED SIGNAL	] POWER LED
		o 2	2 : GROUND	
		o 3	3 : GROUND	
		o 4	4 : KEY INHIBIT	] KEY LOCK
		o 5	5 : GROUND	

2) PIN No.1 CONNECT TO LED ANODE.  
PIN No.3 CONNECT TO LED CATHODE.

### 6. HARDWARE RESET SWITCH CONNECTION.

#### 1) RESET SWITCH CONNECTOR

JP26	RESET	o 1	1 : GROUND
		o 2	2 : RESET HIGH SIGNAL

2) PIN No.2 CONNECT TO GROUND BE SYSTEM RESET.

### 7. TURBO / NORMAL MODE SELECT SWITCH CONNECTION.

#### —1) TURBO SWITCH CONNECTOR

JP27	TBSW	o 1	1 : GROUND
		o 2	2 : TURBO SIGNAL INPUT

2) OFF (OPEN) - TURBO MODE

8. TURBO LED CONNECTION.

1) TURBO LED CONNECTOR.

D1	TBLED	<table border="0"> <tr> <td>o</td> <td>1</td> <td>1 : TURBO MODE SIGNAL</td> </tr> <tr> <td>o</td> <td>2</td> <td>2 : + 5V SIGNAL</td> </tr> </table>	o	1	1 : TURBO MODE SIGNAL	o	2	2 : + 5V SIGNAL
o	1	1 : TURBO MODE SIGNAL						
o	2	2 : + 5V SIGNAL						

- 2) PIN No.1 CONNECT TO LED CATHODE.  
PIN No.2 CONNECT TO LED ANODE.
- 3) TURBO MODE: PIN No.1 HIGH LEVEL CHANGED TO LOW LEVEL.  
USING PIN NO.1, FOR NUMERIC LED ( 7 SIGMENT ) DISPLAY.

9. BACKUP BATTERY SETTING & CMOS CLEAR SETTING

1) CMOS CLEAR CONNECTOR

JP1	CMOS CLEAR (BATTERY)	<table border="0"> <tr> <td>o</td> <td>1</td> <td>EXTERNAL POWER</td> <td>2 - 3 : NORMAL</td> </tr> <tr> <td>o</td> <td>2</td> <td>INT. BATTERY LINE</td> <td></td> </tr> <tr> <td>o</td> <td>3</td> <td>CMOS POWER LINE</td> <td>3 - 4: CMOS</td> </tr> <tr> <td>o</td> <td>4</td> <td>GROUND</td> <td>CLEAR</td> </tr> </table>	o	1	EXTERNAL POWER	2 - 3 : NORMAL	o	2	INT. BATTERY LINE		o	3	CMOS POWER LINE	3 - 4: CMOS	o	4	GROUND	CLEAR
o	1	EXTERNAL POWER	2 - 3 : NORMAL															
o	2	INT. BATTERY LINE																
o	3	CMOS POWER LINE	3 - 4: CMOS															
o	4	GROUND	CLEAR															

NOTE: If you want to change the CMOS list, you must clear it using JP1(3-4) in JP1(2-3) off

2) INTERNAL / EXTERNAL BATTERY SETTING

JP1	2 - 3 : INTERNAL BATTERY (DEFAULT) OFF : EXTERNAL BATTERY
-----	--

10. GREEN MODE SWITCH CONNECTOR

1) GREEN MODE SWITCH CONNECTOR (JP25)

JP25	GREEN SW	<table border="0"> <tr> <td>o</td> <td>1</td> <td>1 : GROUND</td> </tr> <tr> <td>o</td> <td>2</td> <td>2 : GREEN MODE SIGNAL</td> </tr> </table>	o	1	1 : GROUND	o	2	2 : GREEN MODE SIGNAL
o	1	1 : GROUND						
o	2	2 : GREEN MODE SIGNAL						

\* As soon as Pin1,2 is short, all device are entered green mode independent of green mode start time setted at CMOS SETUP.

11. GREEN MODE LED CONNECTOR. (Not use)

1) GEEN MODE LED CONNECTOR. (JP24)

JP24	GREEN LED	<table border="0"> <tr> <td>o</td> <td>1</td> <td>1 : GREEN MODE SIGNAL</td> </tr> <tr> <td>o</td> <td>2</td> <td>2 : (+)</td> </tr> </table>	o	1	1 : GREEN MODE SIGNAL	o	2	2 : (+)
o	1	1 : GREEN MODE SIGNAL						
o	2	2 : (+)						

12. DEVICE CONTROL CONNECTOR. (Not use)

1) EXT. DEVICE CONTROL CONNECTOR (JP34)

JP34	DEVICE CONTROL	<table border="0"> <tr> <td>o</td> <td>1</td> <td>1 : DEVICE CONTROL SIGNAL</td> </tr> <tr> <td>o</td> <td>2</td> <td>2 : GROUND</td> </tr> </table>	o	1	1 : DEVICE CONTROL SIGNAL	o	2	2 : GROUND
o	1	1 : DEVICE CONTROL SIGNAL						
o	2	2 : GROUND						

- 2) Monitor POWER-OFF function  
Connect Pin1 to power supply control connector for monitor power-off.

#### IV. HARDWARE JUMPER SETTING

##### 1. CPU Type JUMPER SETTING

CPU TYPE	JP11	JP12	JP13	JP17	JP18	JP19
486SX	OPEN	2-3	2-3	OPEN	OPEN	OPEN
* 486DX	OPEN	2-3	1-2 3-4	1-2	OPEN	OPEN
486DX-SL	1-2	1-2	1-2 3-4	1-2	5-6	1-2 3-4
P24D	1-2 4-5	1-2 4-5	1-2 3-4	1-2	3-4 5-6	1-2 3-4
P24T	1-2	1-2	1-2 3-4	2-3	5-6	1-2 3-4
M6	1-2 3-4 5-6*	1-2 3-4 5-6	2-3	OPEN	2-3 4-5	2-3 4-5
M7	1-2 3-4 5-6*	1-2 3-4 5-6	1-2 3-4	1-2	2-3 4-5	2-3
AMD486DXL	2-3	2-3	1-2 3-4	1-2 3-4	1-2	OPEN
UMC486	2-3	2-3	2-3	3-4	1-2	OPEN
P24C	JUMPER SETTING IS SAME AS 486DX-SL JP20 : OPEN --> INT. CLK 3X 1-2 -->          2.5X 2-3 -->          2X OTHERS TYPE CPU JP20 OPEN					

##### 2. CPU POWER SETTING.

CPU POWER	JP14	JP15	JP16	JP23
3.3V	1 - 2	1 - 2	1 - 2	CLOSE
* 3.45V(DX4-100)	1 - 2	1 - 2	1 - 2	OPEN
5V(NORMAL CPU)	2 - 3*	2 - 3*	2 - 3*	OPEN *

\* DEFAULT SETTING

##### 3. CPU CLOCK SETTING ( JP4, JP5, JP6 )

CPU COLOCK	JP4	JP5	JP6
25 MHz	OFF	OFF	ON
* 33 MHz	ON *	ON *	ON *
40 MHz	OFF	ON	ON
50 MHz	OFF	OFF	ON

\* DEFAULT SETTING

EX) INTEL DX2-50 --- 25 MHz  
 AMD486DX-40 --- 40 MHz

##### 4. VL-BUS CONFIGURATION JUMPERS (JP21)

CPU Speed	JP21 Position
* <= 33 MHz	OPEN (DEFAULT)
> 33 MHz	CLOSE



5. VL-BUS WAIT STATE SELECTER (JP22)

	JP22
0 WS	OPEN (DEFAULT)
1 WS	CLOSE

6. FLASH ROM VPP SUPPLY SETTING ( JP2 )

	JP2
5V	1 - 2 (DEFAULT)
12V	2 - 3

*OPEN*

V. CACHE MEMORY INSTALLATION.

1. CACHE RAM CONFIGURATION.

CACHE RAM SIZE	BANK 0	BANK 1	TAG RAM
64 KByte	8K * 8 - 4EA	8K * 8 - 4EA	8K * 8 - 1EA
128 KByte	32K * 8 - 4EA	-----	32K * 8 - 1EA
256 KByte	32K * 8 - 4EA	32K * 8 - 4EA	32K * 8 - 1EA

- \* BANK 0 : U10, U11, U12, U13
- \* BANK 1 : U17, U18, U19, U20
- \* TAG RMA: U14

2. CACHE RAM SIZE SETTING.

CACHE RAM SIZE	JP7	JP8	JP9	JP10
64 KByte	OFF	OFF	OFF	2 - 3
128 KByte	OFF	ON	1 - 2	1 - 2
256 KByte	ON	ON	2 - 3	2 - 3

## VI. DRAM Configuration

1. Programable wait state 0,1,2.
2. 256Kb or 384KB(A to F segment of the first 1MB) relocation to the top of DRAM memory.
3. Four banks of DRAM with memory size up to 64MB.
4. Mixable 256K - 1M, 1M - 4M SIMM module (256k - 4M SIMM module can not mixing)
5. DRAM size and install items are automatically detect and write to CMOS RAM by BIOS.
6. DRAM Bank configuration

DRAM BANK				Total RAM Size
SIMM0/2	SIMM 2	SIMM1/3	SIMM 3	
1M	-	-	-	1M
2M	-	-	-	2M
1M	-	2M	-	3M
2M	-	2M	-	4M
4M	-	-	-	4M
1M	-	4M	-	5M
2M	-	4M	-	6M
4M	4M	-	-	8M
4M	-	4M	-	8M
4M	-	8M	-	12M
4M	4M	8M	-	16M
8M	-	8M	-	16M
16M	-	-	-	16M
8M	-	16M	-	24M
16M	16M	-	-	32M
16M	16M	16M	-	48M
16M	16M	16M	16M	64M

SIMM0/2, SIMM1/3 : SINGLE OR DOUBLE DENSITY DRAM  
 SIMM 2, SIMM 3 : SINGLE DENSITY DRAM

## VII. SPEED SELECTION

### 1. HARDWARE SPEED SELECTION (TURBO SWITCH )

TURBO MODE	CPU CLOCK = CLOCKIN
NON TURBO MODE	CPU CLOCK = CLOCKIN/3

### 2. SOFTWARE SPEED SELECTION

- 1) PRESS  Ctrl +  Alt +  + : TURBO SPEED MODE.
- 2) PRESS  Ctrl +  Alt +  - : NORMAL SPEED MODE

**VIII. SOFTWARE CONFIGURATION SETUP FOR AMI BIOS SETUP.**

**1. Running AMI BIOS.**

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. After POST routines are completed, the following message appears

" Hit <DEL> if you want to run SETUP "

To access the AMI BIOS SETUP program, press the < F1 > key. The screen in following will be displayed at this time.

**AMIBIOS SETUP PROGRAM - BIOS SETUP UTILITIES**  
(C) 1993 American Megatrends Inc., All Rights Resered

**STANDARD CMOS SETUP**

ADVANCED CMOS SETUP  
 ADVANCED CHIPSET SETUP  
 POWER MANAGEMENT SETUP  
 AUTO CONFIGURATION WITH BIOS DEFAULTS  
 CHANGE PASSWORD  
 AUTO DETECT HARD DISK  
 HARD DISK UTILITY  
 WRITE TO CMOS AND EXIT  
 DO NOT WRITE TO CMOS AND EXIT

Standard CMOS Setup for Changeing Time, Date, Hard Disk Type, etc.

ESC:Exit ↓→↑←:Sel F2/F3:Color F10:Save & Exit

**2. STANDARD CMOS SETUP.**

Standard CMOS Setup is the first option on the main setup menu. Press <ENTER> at the hilighted selection to access this option. The screen in following will appear.

**AMIBIOS SETUP PROGRAM - STANDARD CMOS SETUP**  
(C) 1993 American Megatrends Inc., All Rights Resered

Date (mn/date/year) : **Tue** Sep: 21 1993      Base memory : 640 KB  
 Time (hour/min/sec) : 00 : 00 : 00      Ext. memory : 3328 KB  
Cyln Head WPcom LZone Sect Size

Hard disk c: type : Not Installed  
 Hard disk d: type : Not Installed  
 Floppy drive A: : Not Installed  
 Floppy drive B: : Not Installed  
 Primary display : Not Installed  
 Keyboard : Not Installed

Month : Jan, Feb,.....Dec  
 Date : 01,02,03,.....31  
 Year : 1901,1902,.....2099

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	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

\* The standard CMOS setup utility is used to configure the following features: Date, Time, Daylight Savings, Hard disk type, FDD type, Primary display type, Keyboard.

### 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 option available for a particular configuration feature and special help for some of the options.

\* Press the <F10>Key then display all setup item.

AMIBIOS SETUP PROGRAM - ADVANCED CMOS SETUP	
(C) 1993 American Megatrends Inc., ALL Rights Reserved	
Typematic Rate Programming : Enabled	Fast Gate A20 Option : Enabled
Typematic Rate Delay (msec): 500	Turbo Switch Function : Enabled
Typematic Rate (Chars/Sec) : 24	Password Checking Option : Setup
Above 1 MB Memory Test : Disabled	Video ROM Shadow C000,16K: Enabled
Memory Test Tick Sound : Enabled	Video ROM Shadow C400,16K: Enabled
Memory Parity Error Check : Enabled	Adaptor ROM Shadow C800,16K: Disabled
Hit <DEL> Message Display : Enabled	Adaptor ROM Shadow CC00,16K: Disabled
Hard Disk Type 47 RAM Area : 0:300	Adaptor ROM Shadow D000,16K: Disabled
Wait for <F1> If Any Error : Enabled	Adaptor ROM Shadow D400,16K: Disabled
System Boot Up Num Lock : On	Adaptor ROM Shadow D800,16K: Disabled
Numeric Processor : Absent	Adaptor ROM Shadow DC00,16K: Disabled
Floppy Drive Seek At Boot : Disabled	Adaptor ROM Shadow E000,16K: Disabled
System Boot Up Sequence : C:, A:	Adaptor ROM Shadow E800,16k: Disabled
System Boot Up CPU Speed : High	System ROM Shadow F000,64K: Enabled
External Cache Memory : Enabled	BootSector Virus Protection: Disabled
Internal Cache Memory : Enabled	

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

\* Typematic Rate Programming : By enabling this option, the user can adjust the rate at with a keystroke is repeated. The options " Typematic rate delay" and " Typematic Rate" affect this rate.

- Typematic Rate Delay ( mSec ) :  
250, 500, 750, 1000.
- Typematic Rate ( Chars/Sec0 ) :  
6, 8, 10, 12, 15, 20, 24, 30.

\* Mouse Support Option: Not used.

\* Above 1 MB Memory Test : This feature, when enabled, will invoke the POST memory routines on the RAM above 1 MB. if disabled, the BIOS will only check the first 1 MB of RAM.  
The default option is "Disabled".

\* Memory Test Tick Sound: These option will "Enabled" "Disabled".  
The default option is "Enabled".

\* Memory Parity Error Check: These option will "Enabled" "Disabled".  
The default option is "Enabled".

\* Hit For <DEL> Mesage Display : These option will "Enabled" "Disabled".  
The default option is "Enabled".

\* Hard Disk Type 47 Data Area : The BIOS SETUP features two user-definable HDD types. Normally, the data for these disk types are stored at 0:300 in lower system RAM. if a problem occurs with other software, this data can be locateted at the upper limit of the DOS Shell (640KB). If the option is set to "DOS 1KB" the DOS Shell is shortened to 639 KB, and the top 1KB is used for the hard disk data storage.

\* Wait For <F1> If Any Error : These option will "Enabled" "Disabled".  
The default option is "Enabled".

\* System Boot Up Num Lock : The user may turn on or turn off the " Num Lock" option on his Enhanced Keyboard when the system is powered on.

\* Numeric Processor Test : These option is fixed with "Enabled" by manufacture.

\* Floppy Drive Seek at Boot : The default for this option is "Disabled" to allow a fast boot and to decrease the possibility of damage to the heads.

- \* System Boot UP Sequence : This sequence can be switched using this option.  
If the option is set to "C:, A:" the system will attempt to boot from the HDD C:, and then A:. If the option is set "A:,C:" the sequence is reversed.
- \* System Boot Up CPU Speed : These option will "High", "Low".  
The default option is "High".
- \* External Cache Memory: These option will "Enabled" "Disabled".  
The default option is "Enabled".
- \* Intenal Cache Memory: These option will "Enabled" "Disabled".  
The default option is "Enabled".
- \* Fast Gate A20 Option: These option will "Disabled", "Enabled".  
The default option is Enabled.
- \* Turbo Switch Function : These option will "Disabled", "Enabled".  
The default option is "Enabled".
- \* Password Checking Option: These option will "Setup", "Always".  
The default option is "Setup".
- \* Video ROM Shadow C000,16K : These option will "Disabled", "Enabled".  
The default option is "Enabled".
- \* Video ROM Shadow C400,16K : These option will "Disabled", "Enabled".  
The default option is "Enabled".
- \* Adaptor ROM Shadow C800,16K : These option will "Disabled", "Enabled".  
The default option is "Disabled".

- \* Adaptor ROM Shadow CC00,16K : These option will "Disabled", "Enabled".  
The default option is "Disabled".
- \* Adaptor ROM Shadow D000,16K : These option will "Disabled", "Enabled".  
The default option is "Disabled".
- \* Adaptor ROM Shadow D400,16K : These option will "Disabled", "Enabled".  
The default option is "Disabled".
- \* Adaptor ROM Shadow D800,16K : These option will "Disabled", "Enabled".  
The default option is "Enabled".
- \* Adaptor ROM Shadow DC00,16K : These option will "Disabled", "Enabled".  
The default option is "Disabled".
- \* Adaptor ROM Shadow E000,32K : These option will "Disabled", "Enabled".  
The default option is "Disabled".
- \* Adaptor ROM Shadow E800,32K : These option will "Disabled", "Enabled".  
The default option is "Disabeld".
- \* System ROM Shadow F000,64K : These option will "Disabled", "Enabled".  
The default option is "Enabled".
- \* BootSector Virus Protection : These option will "Enabled", "Disabled".  
The default option is "Disabled".



#### 4. ADVANCED CHIPSET SETUP

AMIBIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP	
(C) 1993 American Megatrends Inc., All Rights Reserved	
Weitek Ready Out Delay : 2 W.S.	Adaptor ROM Cache D000,16K: Disabled
Local Ready Delay Setting : Delay 1T	Adaptor ROM Cache D400,16K: Disabled
Signal LDEV# Sample Time : in T2	Adaptor ROM Cache D800,16K: Disabled
CPU ADS# Delay 1T or Not : No Delay	Adaptor ROM Cache DC00,16K: Disabled
Cache Read Hit Wait State : 3-2-2-2	Adaptor ROM Cache E000,32K: Disabled
Cache Write Hit Wait State : 1 W.S.	Adaptor ROM Cache E800,32K: Disabled
Alt Bit in Tag SRAM : 7+1 Bits	System ROM Cache F000,64K: Disabled
DRAM Wait State Select : 1 W.S.	LOWA20# Select : Chipset
DRAM Page Mode : Fast	RC Reset Select : Chipset
Divider for Refresh : 1/1	Keyboard Clock Select : 9.5 MHz
System Memory Remap or Not : Enabled	AT Clock Select : PCLK/4
Video ROM Cache C000,16K: Enabled	IO Recovery Time Select : 5 BCLK
Video ROM Cache C400,16K: Enabled	Hold CPU Percentage : Disabled
Adaptor ROM Cache C800,16K: Disabled	Software Flush 80486 : Enabled
Adaptor ROM Cache CC00,16K: Disabled	Enabled Force Read Miss : Disabled

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

- \* Weitek Ready Out Delay : These option will "0", "1", "2" "3".  
The default option is "2 W.S."
- \* Local Ready Delay Setting : These option will "No Delay", "Delay 1T", "Delay 2T", "Delay 3T".  
The default option is "Delay 1T".
- \* Signal LDEV# Sample Time : These option will "in T2", "in T3", "in T4", "in T5".  
The default option is "in T2".

- \* CPU ADS# Delay 1T or Not : These option will "No Delay", "Delay 1T".  
The default option is "No Delay".
- \* Cache Read Hit Wait State : Available Options are "3-1-1-1", "3-2-2-2", "2-1-1-1".  
The default option is "3-2-2-2".
- \* Cache Write Hit Wait State : This is valid only for 486 processor. In case of 386 Processor cache write hit is always performed in 0 wait state.  
The default option is "1 WS".
- \* Alt Bit in Tag SRAM : These option will "8+1 Bits", "7+1 Bits".  
The default option is "7+1 Bits".
- \* DRAM Wait State Select : Available Options are : "2WS", "1WS", "0WS".  
The default option is "1 W.S."
- \* DRAM Page Mode : These option will "Fast", "Normal".  
The default option is "Fast".
- \* Hardware DRAM Parity Check : These option will "Enabled", "Disabled".  
The default option is "Disabled".
- \* ISA Bus Refresh Disable Bit : These option will "Fast", "Slow".  
The default option is "Fast".
- \* DRAM Refresh Method : These option will "CAS/RAS", "RAS Only".  
The default option is "RAS Only".
- \* Divider for Refresh : These option will "1/1", "1/2", "1/4", "1/8", "1/16", "1/32", "1/64".  
The default option is "1/1".



- \* System Memory Remap or Not :These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Video ROM Cache C000,16K: These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Video ROM Cache C400,16K: These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Adaptor ROM Cache C800,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache CC00,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache D000,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache D400,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache D800,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache DC00,16K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Adaptor ROM Cache E000,32K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".

- \* Adaptor ROM Cache E800,32K: These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* System ROM Cache F000,64K : These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* LOWA20# Select : These option will "KBC", "Chipset".  
The default option is "Chipset".
- \* RC Reset Select : These option will "KBC", "Chipset".  
The default option is "Chipset".
- \* Keyboard Clock Select : These option will "9.5 MHz",  
"7.2 MHz", "PCLK/2", "PCLK/3", "PCLK/4", "PCLK/5", "PCLK/6".  
The default option is "9.5 MHz".
- \* AT Clock Select : These option will "PCLK/2", "PCLK/3",  
"PCLK/4", "PCLK/5", "PCLK/6", "PCLK/8".  
The default option is "PCLK/4".  
-Standard Bus Clock : 8 MHz , 33 MHz CPU ... "PCLK/4",  
50 MHz CPU ... "PCLK/6".
- \* IO Recovery Time Select : These option will "0 BCLK",  
"1 BCLK", "2 BCLK", "3 BCLK", "4 BCLK", "5 BCLK", "7 BCLK",  
"9 BCLK".  
The default option is "5 BCLK".
- \* Hold CPU Percentage : These option will "Enabled",  
"Disabled".  
The default option is "Disabled".
- \* Software Flush 80486 : These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Enable Force Read Miss : These option will "Enabled",  
"Disabled".  
The default option is "Disabled".

5. POWER MANAGEMENT SETUP

AMIBIOS SETUP PROGRAM - POWER MANAGEMENT SETUP			
(C) 1993 American Megatrends Inc., All Rights Reserved			
Standby Timer Value	: 0.5 Min	VGA Power Control	: Enabled
Inactive Timer Value	: 2 Min	IDE Power Control	: Enabled
Sampling Activity Delay	: No Delay	Non_SMI CPU Support	: IRQ15
Monitor LPT Port Activity	: Enabled		
Monitor COM Port Activity	: Enabled		
Monitor ISA Master Activity	: Enabled		
Monitor IDE Activity	: Enabled		
Monitor FDC Activity	: Enabled		
Monitor VGA Activity	: Disabled		
Monitor KBC Activity	: Enabled		
Monitor VESA Slave Activity	: Disabled		
Lever 2 Cache Power Saving	: Enabled		
SMI# Pulse Width	: 2 PCLK		
Hardware Power Management	: Enabled		
KBC Hot Key	: Enabled		
Suspend/Resume Switch	: Enabled		
Low Battery Indicator	: Enabled		
Clock Out on StandBy Mode	: PCLK/4		

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

- \* Standby Timer Value : These option will "0.5 Min", "1 Min", "2 Min", "4 Min", "8 Min", "16 Min", "32 Min", "64 Min", "128 Min", "256 Min", "512 Min".  
The default option is "0.5 Min".
- \* Inactive Timer Value : These option will "2 Min", "4 Min", "8 Min", "16 Min", "32 Min", "64 Min", "128 Min", "256 Min", "512 Min".  
The default option is "2 Min".
- \* Sampling Activity Delay : These option will "No Delay", "Delay 1T".  
The default option is "No Delay".

- \* Monitor LPT Port Activity : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor COM Port Activity : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor ISA Master Activity: These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor IDE Activity : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor FDC Activity : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor VGA Activity : These option will "Enabled", "Disabled".  
The default option is "Disabled".
- \* Monitor KBC Activity : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Monitor VESA Slave Activity : These option will "Enabled", "Disabled".  
The default option is "Disabled".
- \* Lever 2 Cache Power Saving : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* SMI# Pulse Width : These option will "2 PCLK", "3 PCLK", "4 PCLK".  
The default option is "2 PCLK".
- \* Hardware Power Management : These option will "Enabled", "Disabled".  
The default option is "Enabled".

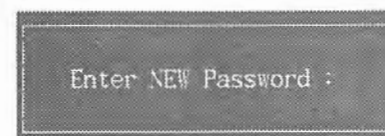
- \* KBC Hot Key : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Suspend/Resume Switch : These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Low Battery Indicator : These option will "Enabled",  
"Disabled".  
The default option is "Enabled".
- \* Clock Out on StandBy Mode : These option will "PCLK/1",  
"PCLK/2", "PCLK/3", "PCLK/4", "PCLK/5", "PCLK/6", "PCLK/8".  
The default option is "PCLK/4".
- \* VGA Power Control : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* IDE Power Control : These option will "Enabled", "Disabled".  
The default option is "Enabled".
- \* Non\_SMI CPU Support : These option will "Disabeld", "IRQ15",  
"IRQ10", "NMI".  
The default option is "IRQ15".

#### 6. AUTO CONFIGURATION WITH BIOS DEFAULTS

The Auto Configuration With BIOS feature uses the default system values before the user has changed any CMOS values. If the CMOS is corrupted, the BIOS default will automatically be loaded. If you wish to use the BIOS default, change the prompt to <Y> and press <ENTER>.

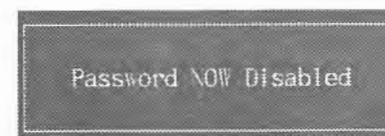
#### 7. CHANGE PASSWORD

When you select this function, the following message will appear at the center of the screen to assist you in creating password



Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.



If you select System at Password Checking Option of ADVANCED CMOS SETUP Menu, you will be prompted for the password every time the system is revooted or any time you try to enter Setup. If you select Setup at Password Checking Option of ADVANCED CMOS SETUP Menu, you will be prompted only when you try to enter Setup.

### 8. AUTO DETECT HARD DISK

You can use this utility to automatically detect the characteristics of most hard drivers.

When you enter this utility, the screen asks if you accept the parameters for a specific hard disk. If you accept the parameters detected by the BIOS, you can enter "Y" and the parameters are automatically loaded.

AMIBIOS SETUP PROGRAM - AUTO DETECT HARD DISK						
(C) 1993 American Megatrends Inc., All Rights Reserved						
	CylIn	Head	WPcom	LZone	Sect	Size (MB)
Hard Disk C: Type : User	768	14	65535	768	62	326

Accept Parameter for C: (Y/N) ? N

| ESC:Exit |

### 9. HARD DISK UTILITY

The Hard Disk Format option performs a "low level" format of the hard drive(s). The user should check with the system or hard drive manufacturer to determine if this option should be taken.

The Auto Interleave option determines the optimum interleave factor prior to the hard drive(s).

The Media Analysis option performs an analysis of each track of the hard drive to determine whether it is usable. If it is not usable, the track is marked as "bad" so that data cannot be stored there in the future.

NOTE : These routines are not valid for a SCSI Disk Drive. These routines should be taken "bootsector virus protection" option to Disabled.

### 10. WRITE TO CMOS AND EXIT

The features selected and configured in the Standard Setup, Advanced CMOS Setup, Advanced Chip Set Setup, and the New Password Setup will be stored in the CMOS when this option is taken.

Pressing <N> and <ENTER> will return you to Main Menu. Pressing <Y> and <ENTER> will save the system parameters and continue with the booting process.

### 11. DO NOT WRITE TO CMOS AND EXIT

This option passes control back to BIOS without writing any changes to the CMOS.

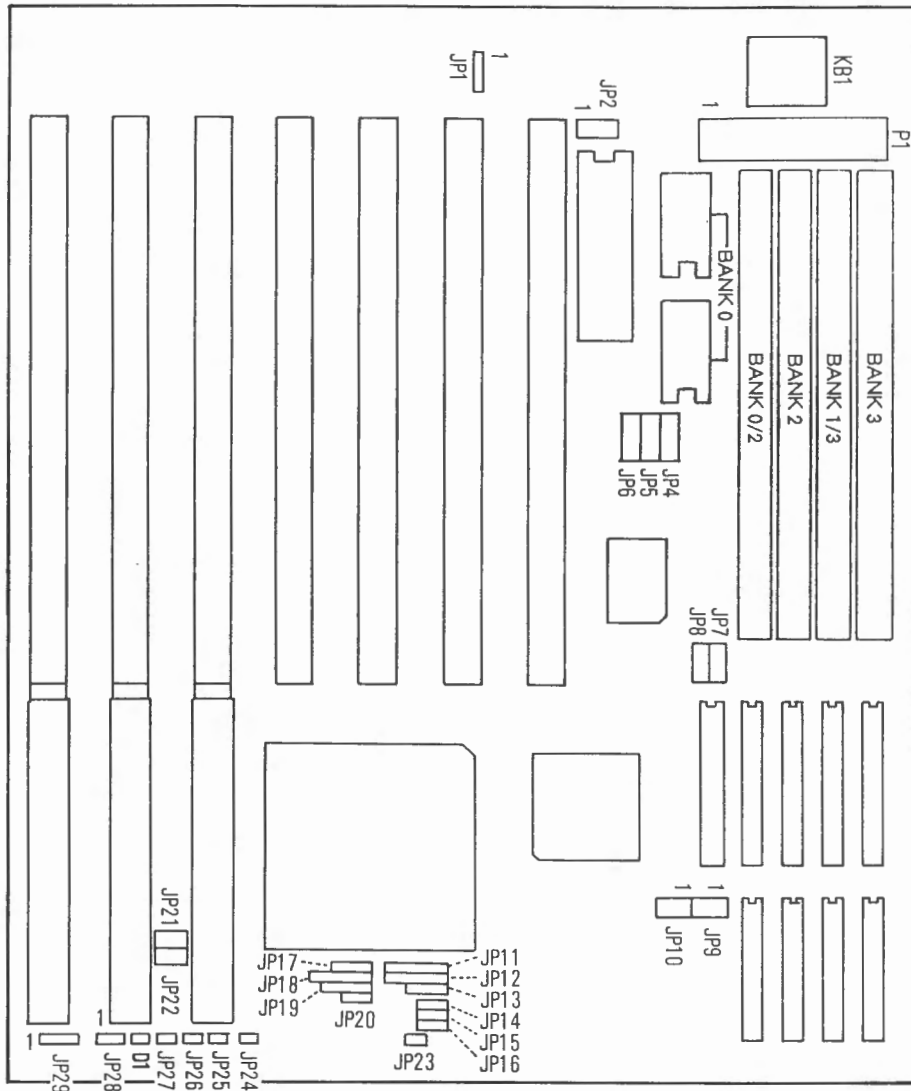
## IX. IMPORTANT SETUP FOR KIND OF CPU.

	Cache Read Hit Burst	Cache Write Hit Wait	DRAM WAIT		BUS CLOCK
			READ	WRITE	
486DX-33	3-2-2-2	1	2	2	CLK/4
486DX-50	3-2-2-2	2	3	2	CLK/6
486DX2-50	2-1-1-1	0	2	1	CLK/3
486DX2-66	3-2-2-2	0(1)	2	2	CLK/4
Cx486S-40	3-2-2-2	1	2	2	CLK/5
Am486DX-40	3-2-2-2	1	2	2	CLK/5



## X. APPENDIX

### 1. BOARD LAYOUT



### 2. I/O ADDRESS MAP

I/O ADDRESS(HEX)	FUNCTIONS
000-01F	DMA Controller 1
020-03F	Interrupt Controller 8259A
040-05F	Timer
060-06F	Keyboard Controller
070-07F	Real-Time Clock
080-09F	DMA Page Registers
0A0-0BF	Interrupt Controller 2
0C0-0DF	DMA Controller 2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2
2F8-2FF	Serial Port 2
300-31F	ProtoType Card
360-36F	PC Network
378-37F	Parallel Printer Port 1
380-38F	SDLC Bisynchronous 2
3A0-3AF	SDLC Bisynchronous 1
3B0-3BF	Monochrome Display and Printer Adapter
3C0-3CF	Reserved
3D0-3DF	Color Graphics Display Adapter
3F0-3F7	Disk Drive Controller
3F8-3FF	Serial Port 1

### 3. SYSTEM INTERRUPTS

LEVLE	FUNCTION
NMI	Parity or I/O channel check
IRQ0	System Timer
IRQ1	Keyboard
IRQ2	Reserved[Casecade]
IRQ3	Serial Port 2
IRQ4	Serial Port 1
IRQ5	Parallel Port 2
IRQ6	Diskette controller
IRQ7	Parallel Port 1
IRQ8	Clock/Calendar
IRQ9	VGA, Active
IRQ10	Available
IRQ11	Available
IRQ12	Available
IRQ13	80486 FPU
IRQ14	Hard Disk
IRQ15	Available

### 4. DMA(Direct Memory Access) Channel

DMA Channel	FUNCTION
DMA 0	Memory Refresh
DMA 1	Unused
DMA 2	FDD
DMA 3	Unused
DMA 4	Unused [Casecade]
DMA 5	Unused
DMA 6	Unused
DMA 7	Unused

### 5. I/O CHANNEL

#### I/O Channel A-Side

I/O Pin	Signal Name	I/O	Description
A1	-I/O CH CK	I	Parity error
A2	SD7	I/O	Data signal
A3	SD6	I/O	Data signal
A4	SD5	I/O	Data signal
A5	SD4	I/O	Data signal
A6	SD3	I/O	Data signal
A7	SD2	I/O	Data signal
A8	SD1	I/O	Data signal
A9	SD0	I/O	Data signal (LSB)
A10	-I/O CH RDY	I	I/O Channel Ready
A11	AEN	0	Address Enable
A12	SA19	I/O	Address signal (MSB)
A13	SA18	I/O	Address signal
A14	SA17	I/O	Address signal
A15	SA16	I/O	Address signal
A16	SA15	I/O	Address signal
A17	SA14	I/O	Address signal
A18	SA13	I/O	Address signal
A19	SA12	I/O	Address signal
A20	SA11	I/O	Address signal
A21	SA10	I/O	Address signal
A22	SA9	I/O	Address signal
A23	SA8	I/O	Address signal
A24	SA7	I/O	Address signal
A25	SA6	I/O	Address signal
A26	SA5	I/O	Address signal
A27	SA4	I/O	Address signal
A28	SA3	I/O	Address signal
A29	SA2	I/O	Address signal
A30	SA1	I/O	Address signal
A31	SA0	I/O	Address signal



## I/O Channel B-Side

I/O Pin	Signal Name	I/O	Description
B1	GND	Gnd	
B2	RESET DRV	0	Reset system logic
B3	+5V DC	Power	
B4	IRQ 9	I	Interrupt Request(the highest)
B5	-5V DC	Power	
B6	DRQ2	I	DMA Request(Async)
B7	-12V DC	Power	
B8	OWS	I	Zero Wait State
B9	+12V DC	Power	
B10	GND	Gnd	
B11	-SMEMW	0	Memory Write
B12	-SMEMR	0	Memory Read
B13	-IOW	I/O	I/O Write
B14	-IOR	I/O	I/O Read
B15	-DACK3	0	DMA Acknowledge
B16	DRQ3	I	DMA Request
B17	-DACK1	0	DMA Acknowledge
B18	DRQ1	I	DMA Request
B19	-REFRESH	I/O	REFRESH cycle
B20	CLK	0	Clock signal
B21	IRQ7	I	Interrupt Request(the lowest)
B22	IRQ6	I	Interrupt Request
B23	IRQ5	I	Interrupt Request
B24	IRQ4	I	Interrupt Request
B25	IRQ3	I	Interrupt Request
B26	-DACK2	0	DMA Acknowledge
B27	T/C	0	Terminal Count
B28	BALE	0	Buffered Address Latch Enable
B29	+5V DC	Power	
B30	OSC	0	OSCillator
B31	GND	Gnd	

## I/O Channel C-Side

	Signal Name	I/O	Description
C1	SBHE	I/O	System Bus High Enable
C2	LA23	I/O	address memory & I/O devices
C3	LA22	I/O	address memory & I/O devices
C4	LA21	I/O	address memory & I/O devices
C5	LA20	I/O	address memory & I/O devices
C6	LA19	I/O	address memory & I/O devices
C7	LA18	I/O	address memory & I/O devices
C8	LA17	I/O	address memory & I/O devices
C9	-MEMR	I/O	Memory Read
C10	-MEMW	I/O	Memory Write
C11	SD08	I/O	Data signal
C12	SD09	I/O	Data signal
C13	SD10	I/O	Data signal
C14	SD11	I/O	Data signal
C15	SD12	I/O	Data signal
C16	SD13	I/O	Data signal
C17	SD14	I/O	Data signal
C18	SD15	I/O	Data signal

I/O Channel D-Side

Pin	Signal Name	I/O	Description
D1	-MEM CS16	I	Memory 16-bit Chip Select
D2	-I/O CS16	I	I/O 16-bit Chip Select
D3	IRQ10	I	Interrupt Request
D4	IRQ11	I	Interrupt Request
D5	IRQ12	I	Interrupt Request
D6	IRQ15	I	Interrupt Request
D7	IRQ14	I	Interrupt Request
D8	-DACK0	O	DMA Acknowledge
D9	DRQ0	I	DMA Request
D1	-DACK5	O	DMA Acknowledge
D11	DRQ5	I	DMA Request
D12	-DACK6	O	DMA Acknowledge
D13	DRQ6	I	DMA Request
D14	-DACK7	O	DMA Acknowledge
D15	DRQ7	I	DMA Request
D16	+5V DC	Power	
D17	-MASTER	I	Control the bus(Add, Data, Control)
D18	GND	Gnd	Data signal

\* VL-Bus Slot Pinout

B-Side	Slot No.	A-Side
DAT00	01	DAT01
DAT02	02	DAT03
DAT04	03	GND
DAT06	04	DAT05
DAT08	05	DAT07
GND	06	DAT09
DAT10	07	DAT11
DAR12	08	DAT13
Vcc	09	DAT15
DAT14	10	GND
DAT16	11	DAT17
DAT18	12	Vcc
DAT20	13	DAT19
GND	14	DAT21
DAT22	15	DAT23
DAT24	16	DAT25
DAT26	17	GND
DAT28	18	DAT27
DAT30	19	DAT29
Vcc	20	DAT31
ADT31	21	ADR30
GND	22	ADR28
ADR29	23	ADR26
ADR27	24	GND
ADR25	25	ADR24
ADR23	26	ADR22
ADR21	27	Vcc
ADR19	28	ADR20
GND	29	ADR18
ADR17	30	ADR16
ADR15	31	ADR14
Vcc	32	ADR12
ADR13	33	ADR10
ADR11	34	ADR08
ADR09	35	GND
ADR07	36	ADR06
ADR05	37	ADR04
GND	38	WBACK#
ADR03	39	BE0#
ADR02	40	Vcc
n/c	41	BE1#
RESET#	42	BE2#
D/C#	43	GND
M/IO#	44	BE3#
W/R#	45	ADS#
	46	

RDYRTN#	47	
GND	48	LRDY#
IRQ9	49	LDEV<x>#
BRDY#	50	LREQ<x>#
BLAST#	51	GND
IDO	52	LGNT<x>#
ID1	53	Vcc
GND	54	ID2
LCLK	55	ID3
Vcc	56	ID4
LBS16#	57	LKEN#
	58	LEADS#

SIGNAL DISCRIPTION

- .RESET# : System Reset
- .D/C# : Data or Code Status
- .M/IO# : Memory or I/O Status
- .W/R# : Write or Read Status
- .RDYRTN# : Ready Return
- .IRQ9 : Int Request Line 9
- .BRDY# : Burst Ready
- .BLAST# : Burst Last
- .ID[0..4] : Identifier pins
- .LCLK : Local CPU Clock
- .LBS16# : 16-Bit Mode
- .WBACK# : Write Back
- .BE[0..3] : Byte Enables
- .ADS# : Address Data Strobe
- .LRDY# : Cycle Termination
- .LDEV<x># : Local Device
- .LREQ<x># : Local Request
- .LGNT<x># : Local Bus Grant
- .LKEN# : Local Cache Enable
- .LEADS# : Local External Address Data Strobe



