

# **PCISA – 158HV**

## **Pentium™w/ VGA Half-Sized**

### **Single Board Computer**

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# 1

## Introduction

Welcome to the PCISA-158HV Pentium™w/ VGA Single Board Computer. The PCISA-158HV board is an ISA form factor board, which comes equipped with high performance Pentium CPU and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

This board has a built-in DiskOnChip™Flash Disk socket for embedded application. The DOC Flash Disk is software compatible to hard disk. User can use any DOS command without any extra software utility. The DOC currently is available from 2MB to 72MB. There also have PROMDISK-Chip™ can be used in the same DOC socket as an alternative solution.

An advanced high performance super AT I/O chip – Winbond W83877F is used in the PCISA-158HV board. Both on-chip UARTs are compatible with the NS16C550.

In addition, the PCISA-158HV provides two 72-pin SIMM sockets for its on-board DRAM. The RAM module accepts 1MB, 2MB, 4MB, 8MB, 16MB, 32MB, and 64MB. So the total on-board memory can be configured from 2MB to 128MB.

PCISA-158HV uses the advanced SIS Chipset,5598 which is 100% ISA/PCI compatible chipset with PCI 2.1 standard.

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## 1.1 Specifications :

The PCISA-158HV Pentium w/ VGA Single Board Computer provides the following specification:

- **CPU** : Pentium™MMX up to 233/266Mhz, AMD K5/K6 processor, Cyrix 6x86MX processor
- **Bus** : PCISA bus, meet PCI 2.1 standard
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : Sis 5598
- **VGA** : Built-in the SIS 5598 Chipset  
Resolution : 1280x1024,256 color,75Hz  
1024x768, 64K color,75Hz  
800x600,full color,90Hz

More information : **[www.sis.com.tw](http://www.sis.com.tw)**

- **Real-time clock / calendar** : Dallas 12887 or equivalent device. .
- **RAM memory** : 2MB to 128MB,EDO and FPM DRAM supported
- **Second Cache memory** : 512KB Pipelined Burst SRAM on board
- **Ultra DMA/33 IDE Interface** : up to two PCI Enhance IDE hard drives. The Ultra DMA/33 IDE can handle data transfer up to 33MB/s. The best of all is that is new technology is compatible with existing ATA-2 IDE specifications. So there is no need to do any change for customer' s current accessory.
- **Floppy disk drive interface** : two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives.
- **Two high speed Series ports** : NS16C550 compatible UARTs
- **Standard/EPP/ECP Parallel Port**
- **IrDA port** : Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.

- **USB port : Support USB port for future expansion.**
- **Watch-dog timer :** can be set by 1,2,10,20,110 or 220 seconds period. Reset or NMI is generated when CPU does not periodically trigger the timer. Your program uses hex 043 and 443 to control the watch-dog and generate a system reset.
- **Flash Disk - DiskOnChip™ or PROMDISK-Chip™:** The Flash Disk provide 100% compatible with hard disk. The built-in TrueFFS Transparent Flash Block Management and Space Reclamation will let customer to use the Flash Disk with DOS command, no need any extra software utility.
- **Keyboard connector**
- **Mouse :** PS/2 Mouse Port on-board.
- **Power Consumption :** +5V @ 4.6A  
( Pentium/MMX-200,16MB EDO RAM)  
+12V @ 70mA , -12V@20mA
- **Operating Temperature :** 0° ~ 55° C ( CPU needs Cooler)

---

## 1.2 What You Have

In addition to this *User's Manual*, the PCISA-158HV package includes the following items:

- PCISA-158HV Single Board Computer
- RS-232/Printer Cable
- FDD/HDD Cable
- 6-pin Mini-Din to 5-pin Din Keyboard Adapter Cable

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

# 2

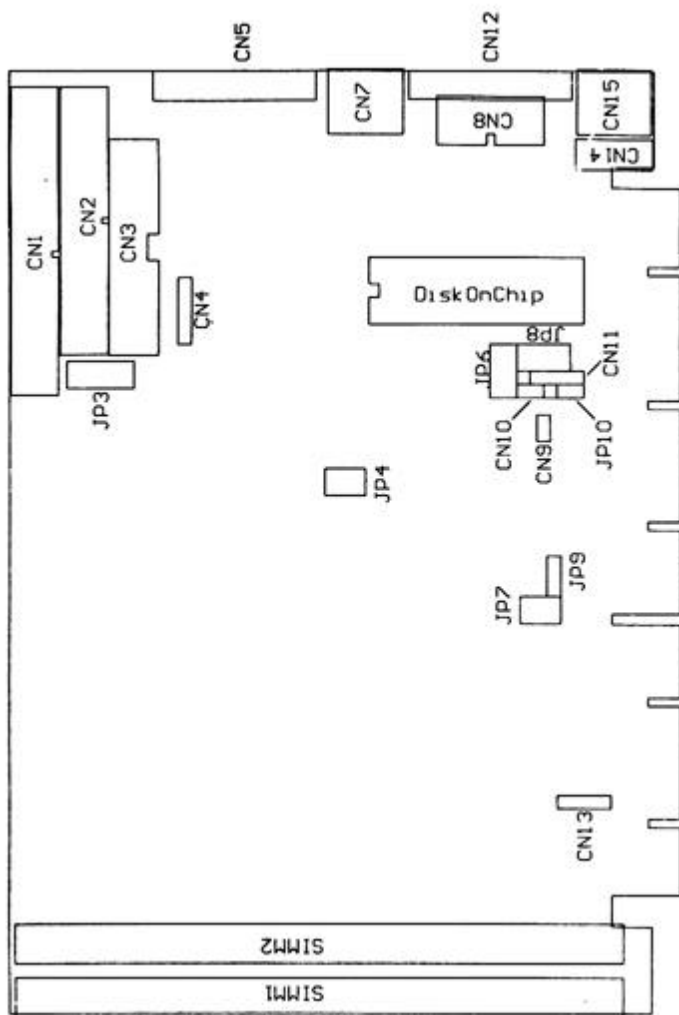
## Installation

This chapter describes how to install the PCISA-158HV. At first, the layout of PCISA-158HV is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the PCISA-158HV's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

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### 2.1 PCISA-158HV's Layout

<please, refer to the next page >





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## 2.2 Setting the CPU of PCISA-158HV

- CPU Clock Setting :

| CPU Speed/Clock | JP7<br>1-2  | JP7<br>3-4   | JP7<br>5-6  |
|-----------------|-------------|--------------|-------------|
| 50MHz           | OPEN        | CLOSE        | CLOSE       |
| 55MHz           | OPEN        | OPEN         | OPEN        |
| 60MHz           | OPEN        | OPEN         | CLOSE       |
| 66MHz           | <b>OPEN</b> | <b>CLOSE</b> | <b>OPEN</b> |
| 75MHz           | CLOSE       | OPEN         | OPEN        |
| 83MHz           | CLOSE       | CLOSE        | CLOSE       |

- CPU to Bus Multiple :

| Multiplier | JP3<br>1-2  | JP3<br>3-4   | JP3<br>5-6  |
|------------|-------------|--------------|-------------|
| 1.5 x      | OPEN        | OPEN         | OPEN        |
| 2x         | CLOSE       | OPEN         | OPEN        |
| 2.5x       | CLOSE       | CLOSE        | OPEN        |
| 3 x        | <b>OPEN</b> | <b>CLOSE</b> | <b>OPEN</b> |
| 3.5 x      | OPEN        | OPEN         | OPEN        |

**CPU Frequency = CPU Clock x Multiplier for example  
Pentium 200MHz = 66MHz CPU Clock x 3**

- CPU Internal Cache setting :

**JP3 9-10 : Close Write Through  
OPEN Write Back (default)**

- CPU Core Voltage Selection :

Please check the CPU Core Voltage before you install the CPU. Right now new Intel MMX CPU is dual voltages for core and I/O, the I/O is 3.3V but the core is 2.8V. This kind of CPU design will enhance the low power consumption capability. As for the general Pentium CPU is one voltage for I/O and Core - 3.3V, 3.4V, or 3.5V

- **JP1 CPU Core Voltage Setting :**  
(The JP1 is on the power module)

| CPU Core Voltage  | JP1 1-2     | JP1 3-4     | JP1 5-6     | JP1 7-8      |
|-------------------|-------------|-------------|-------------|--------------|
| 3.5V(P54C/CS) VRE | CLOSE       | CLOSE       | CLOSE       | CLOSE        |
| 3.4V(P54C/CS) STD | OPEN        | CLOSE       | CLOSE       | CLOSE        |
| 3.3V              | CLOSE       | OPEN        | CLOSE       | CLOSE        |
| 3.2V              | OPEN        | OPEN        | CLOSE       | CLOSE        |
| 3.1V              | CLOSE       | CLOSE       | OPEN        | CLOSE        |
| 3.0V              | OPEN        | CLOSE       | OPEN        | CLOSE        |
| 2.9V              | CLOSE       | OPEN        | OPEN        | CLOSE        |
| 2.8V (P55C)       | <b>OPEN</b> | <b>OPEN</b> | <b>OPEN</b> | <b>CLOSE</b> |
| 2.7V              | CLOSE       | CLOSE       | CLOSE       | OPEN         |
| 2.6V              | OPEN        | CLOSE       | CLOSE       | OPEN         |
| 2.5V              | CLOSE       | OPEN        | CLOSE       | OPEN         |
| 2.4V              | OPEN        | OPEN        | CLOSE       | OPEN         |
| 2.3V              | CLOSE       | CLOSE       | OPEN        | OPEN         |
| 2.2V              | OPEN        | CLOSE       | OPEN        | OPEN         |
| 2.1V              | CLOSE       | OPEN        | OPEN        | OPEN         |
| 2.0V              | OPEN        | OPEN        | OPEN        | OPEN         |

- **JP4 Dual / Single CPU Voltage setting :**

| Vcore & VIO   | 1-3   | 2-4   | 3-5   | 4-6   |
|---|-------|-------|-------|-------|
| Pentium (P54C)  | OPEN  | OPEN  | CLOSE | CLOSE |
| Pentium MMX<br>AMD K6<br>Cyrix 6x86MX<br>Dual Voltage | CLOSE | CLOSE | OPEN  | OPEN  |

• **Cyrix 6x86MX PR Rating Table**  
(Vcore : 2.9V ,dual voltage)

| PR Rating     | Bus MHz | CPU Core MHz | Clock Multiplier |
|---------------|---------|--------------|------------------|
| 6x86MX-PR133  | 50      | 100          | 2x               |
| 6x86MX-PR133* | 55      | 110          | 2x               |
| 6x86MX-PR150  | 60      | 120          | 2x               |
| 6x86MX-PR150  | 50      | 125          | 2.5x             |
| 6x86MX-PR166  | 66      | 133          | 2x               |
| 6x86MX-PR166  | 55      | 138          | 2.5x             |
| 6x86MX-PR166  | 50      | 150          | 3x               |
| 6x86MX-PR166  | 60      | 150          | 2.5x             |
| 6x86MX-PR200  | 75      | 150          | 2x               |
| 6x86MX-PR200  | 55      | 165          | 3x               |
| 6x86MX-PR200  | 66      | 166          | 2.5x             |
| 6x86MX-PR200  | 60      | 180          | 3x               |
| 6x86MX-PR233  | 75      | 188          | 2.5x             |
| 6x86MX-PR233  | 66      | 200          | 3x               |
| 6x86MX-PR233  | 83      | 166          | 2x               |
| 6x86MX-PR266  | 66      | 233          | 3.5x             |
| 6x86MX-PR266  | 75      | 225          | 3x               |
| 6x86MX-PR266  | 83      | 208          | 2.5x             |

• **AMD K6 MMX Rating Table(Dual Voltage)**

| Product Name | Core Freq | Vcore | Bus MHz | Multiplier |
|--------------|-----------|-------|---------|------------|
| AMD-K6-233   | 233MHz    | 3.2V  | 66      | 3.5x       |
| AMD-K6-200   | 200MHz    | 2.9V  | 66      | 3x         |
| AMD-K6-166   | 166MHz    | 2.9V  | 66      | 2.5x       |

---

## 2.3 System Memory DRAM

There are two 72-pin SIMM sockets to accept Fast Paged/EDO 1MB,2MB,4MB,8MB,16MB,32MB,or 64MB memory modules. The total capacity is from 2MB to 128MB. Customers can use one RAM module only, but have to install at SIMM 2 which is close to CPU.

---

## 2.4 Watch-Dog Timer

The Watch-Dog Timer is enabled by reading port 443H. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again, or activate NMI to CPU. The Watch-Dog Timer is disabled by reading port 043H.

- **JP10 : Watch-Dog Active Type Setting**

| JP10 | DESCRIPTION                           |
|------|---------------------------------------|
| 2-3  | RESET WHEN WDT TIME-OUT               |
| 1-2  | ACTIVATE NMI TO CPU WHEN WDT TIME-OUT |
| OPEN | DISABLE WDT                           |

- **JP6: WDT Time-Out Period**

| PERIOD   | 1-2   | 3-4   | 5-6   | 7-8   |
|----------|-------|-------|-------|-------|
| 1 sec.   | OPEN  | OPEN  | CLOSE | OPEN  |
| 2 sec.   | OPEN  | OPEN  | CLOSE | CLOSE |
| 10 sec.  | OPEN  | CLOSE | OPEN  | OPEN  |
| 20 sec.  | OPEN  | CLOSE | OPEN  | CLOSE |
| 110 sec. | CLOSE | OPEN  | OPEN  | OPEN  |
| 220 sec. | CLOSE | OPEN  | OPEN  | CLOSE |

---

## 2.5 DiskOnChip™Flash Disk

Because the DOC is software compatible to hard disk and DOS. Customer don't need any extra software utility. It is just "plug and play", easy and reliable. Right now the DOC is available from 2MB to 72MB. There also have PROMDISK-Chip™ can be used with the same socket. The MD-2200-xMB series DOC will share only 8KB memory address.

- **JP8 : DiskOnChip Memory Address Setting**

| Address | 1-2   | 3-4   | 5-6  | 7-8  |
|---------|-------|-------|------|------|
| D0000   | CLOSE | OPEN  | OPEN | OPEN |
| D8000   | OPEN  | CLOSE | OPEN | OPEN |

---

## 2.6 Clear CMOS Setup

If want to clear the CMOS Setup(for example forgot the password you should clear the setup and then set the password again.),you should close the JP5 about 3 seconds, then open again. Set back to normal operation mode, take it off

- **JP5: Clear CMOS Setup (Reserve Function)**

| JP5   | DESCRIPTION      |
|-------|------------------|
| OPEN  | Normal Operation |
| CLOSE | Clear CMOS Setup |

# 3

## Connection

This chapter describes how to connect peripherals, switches and indicators to the PCISA-158HV board.

### 3.1 Floppy Disk Drive Connector

PCISA-158HV board equipped with a 34-pin daisy-chain driver connector cable.

#### • CN2 : FDC CONNECTOR

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION     |
|---------|-------------|---------|-----------------|
| 1       | GROUND      | 2       | REDUCE WRITE    |
| 3       | GROUND      | 4       | N/C             |
| 5       | GROUND      | 6       | N/C             |
| 7       | GROUND      | 8       | INDEX#          |
| 9       | GROUND      | 10      | MOTOR ENABLE A# |
| 11      | GROUND      | 12      | DRIVE SELECT B# |
| 13      | GROUND      | 14      | DRIVE SELECT A# |
| 15      | GROUND      | 16      | MOTOR ENABLE B# |
| 17      | GROUND      | 18      | DIRECTION#      |
| 19      | GROUND      | 20      | STEP#           |
| 21      | GROUND      | 22      | WRITE DATA#     |
| 23      | GROUND      | 24      | WRITE GATE#     |
| 25      | GROUND      | 26      | TRACK 0#        |
| 27      | GROUND      | 28      | WRITE PROTECT#  |
| 29      | GROUND      | 30      | READ DATA#      |
| 31      | GROUND      | 32      | SIDE 1 SELECT#  |
| 33      | GROUND      | 34      | DISK CHANGE#    |

---

## 3.2 PCI E-IDE Disk Drive Connector

You can attach four IDE( Integrated Device Electronics) hard disk drives to the PCISA-158HV IDE controller.

Please note the IDE support Ultra DMA/33 high performance interface.

### • CN1 : IDE Interface Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION      |
|---------|-------------|---------|------------------|
| 1       | RESET#      | 2       | GROUND           |
| 3       | DATA 7      | 4       | DATA 8           |
| 5       | DATA 6      | 6       | DATA 9           |
| 7       | DATA 5      | 8       | DATA 10          |
| 9       | DATA 4      | 10      | DATA 11          |
| 11      | DATA 3      | 12      | DATA 12          |
| 13      | DATA 2      | 14      | DATA 13          |
| 15      | DATA 1      | 16      | DATA 14          |
| 17      | DATA 0      | 18      | DATA 15          |
| 19      | GROUND      | 20      | N/C              |
| 21      | IDE DRQ     | 22      | GROUND           |
| 23      | IOW#        | 24      | GROUND           |
| 25      | IOR#        | 26      | GROUND           |
| 27      | IDE CHRDY   | 28      | GROUND           |
| 29      | IDE DACK    | 30      | GROUND - DEFAULT |
| 31      | INTERRUPT   | 32      | NC               |
| 33      | SA1         | 34      | N/C              |
| 35      | SA0         | 36      | SA2              |
| 37      | HDC CS0#    | 38      | HDC CS1#         |
| 39      | HDD ACTIVE# | 40      | GROUND           |

---

### 3.3 Parallel Port

This port is usually connected to a printer, The PCISA-158HV includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN3.

- **CN3 : Parallel Port Connector**

| PIN NO. | DESCRIPTION        | PIN NO. | DESCRIPTION      |
|---------|--------------------|---------|------------------|
| 1       | STROBE#            | 2       | DATA 0           |
| 3       | DATA 1             | 4       | DATA 2           |
| 5       | DATA 3             | 6       | DATA 4           |
| 7       | DATA 5             | 8       | DATA 6           |
| 9       | DATA 7             | 10      | ACKNOWLEDGE      |
| 11      | BUSY               | 12      | PAPER EMPTY      |
| 13      | PRINTER SELECT     | 14      | AUTO FORM FEED # |
| 15      | ERROR#             | 16      | INITIALIZE       |
| 17      | PRINTER SELECT LN# | 18      | GROUND           |
| 19      | GROUND             | 20      | GROUND           |
| 21      | GROUND             | 22      | GROUND           |
| 23      | GROUND             | 24      | GROUND           |
| 25      | GROUND             | 26      | N/C              |

---

### 3.4 Serial Ports

The PCISA-158HV offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

- **CN12 : Serial Port DB-9 Connector( ACE0 )**

| PIN NO. | DESCRIPTION               |
|---------|---------------------------|
| 1       | DATA CARRIER DETECT (DCD) |
| 2       | RECEIVE DATA (RXD)        |
| 3       | TRANSMIT DATA (TXD)       |
| 4       | DATA TERMINAL READY (DTR) |
| 5       | GROUND (GND)              |
| 6       | DATA SET READY (DSR)      |
| 7       | REQUEST TO SEND (RTS)     |
| 8       | CLEAR TO SEND (CTS)       |
| 9       | RING INDICATOR (RI)       |



• **CN8 : Serial Port 10-pin Header( ACE1)**

| Pin No. | Description | Pin No. | Description |
|---------|-------------|---------|-------------|
| 1       | DCD         | 2.      | DSR         |
| 3       | RXD         | 4       | RTS         |
| 5       | TXD         | 6       | CTS         |
| 7       | DTR         | 8       | RI          |
| 9       | GND         | 10      | NC          |

---

### 3.5 Keyboard Connector

The PCISA-158HV provides two keyboard connectors.

• **CN14 : 5-pin Header Keyboard Connector**

| PIN NO. | DESCRIPTION    |
|---------|----------------|
| 1       | KEYBOARD CLOCK |
| 2       | KEYBOARD DATA  |
| 3       | N/C            |
| 4       | GROUND         |
| 5       | +5V            |

• **CN15 : 6-pin Mini-DIN Keyboard Connector**

| PIN NO. | DESCRIPTION    |
|---------|----------------|
| 1       | KEYBOARD DATA  |
| 2       | N/C            |
| 3       | GROUND         |
| 4       | +5V            |
| 5       | KEYBOARD CLOCK |
| 6       | N/C            |

---

### 3.6 External Switches and Indicators

There are many external switches and indicators for monitoring and controlling your CPU board.

• **CN11 : KeyLock and Power LED**

| PIN NO. | DESCRIPTION    |
|---------|----------------|
| 1       | +5V            |
| 2       | N/C            |
| 3       | Ground         |
| 4       | KeyLock Signal |
| 5       | Ground         |

• **CN9 : RESET BUTTON**

| PIN NO. | DESCRIPTION    |
|---------|----------------|
| 1       | EXTERNAL RESET |
| 2       | GROUND         |

• **CN16 : HDD LED**

| PIN NO. | DESCRIPTION  |
|---------|--------------|
| 1       | HDD ACTIVE # |
| 2       | +5V          |

---

### 3.7 External Speaker

The PCISA-158HV has its own buzzer, you also can connect to the external speaker through the connector CN10..

• **CN10 : Speaker Connector**

| PIN NO. | DESCRIPTION    |
|---------|----------------|
| 1       | +5V            |
| 2       | Speaker Signal |

---

### 3.8 PS/2 Mouse 6-pin Mini-DIN Connector

• **CN7 : PS/2 Mouse Connector**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | MS DATA     |
| 2       | NC          |
| 3       | GROUND      |
| 4       | +5V         |
| 5       | MS CLOCK    |
| 6       | NC          |

---

### 3.9 USB Port Connector

The PCISA-158HV built-in USB ports for the future new I/O bus expansion.

• **CN13 : USB Connector**

|   |        |
|---|--------|
| 1 | VCC    |
| 2 | DATA-  |
| 3 | DATA+  |
| 4 | GROUND |

---

### 3.10 IrDA Infrared Interface Port

The PCISA-158HV built-in a IrDA port which support Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. When use the IrDA port have to set SIR or ASKIR model in the BIOS' s Peripheral Setup' s COM 2. Then the normal RS-232 COM 2 will be disabled.

• **CN4 : IrDA connector**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | VCC         |
| 2       | NC          |
| 3       | IR-RX       |
| 4       | Ground      |
| 5       | IR-TX       |

---

### 3.11 VGA Connector

The PCISA-158HV built-in 15-pin VGA connector directly to your CRT monitor.

• **CN5 : 15-pin Female Connector**

|    |        |    |         |
|----|--------|----|---------|
| 1  | RED    | 2  | GREEN   |
| 3  | BLUE   | 4  | NC      |
| 5  | GROUND | 6  | GROUND  |
| 7  | GROUND | 8  | GROUND  |
| 9  | NC     | 10 | GROUND  |
| 11 | NC     | 12 | DDC DAT |
| 13 | HSYNC  | 14 | VSYNC   |
| 15 | DDCCLK |    |         |

# 4

## AWARD BIOS Setup

The PCISA-158HV uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

---

### 4.1 Getting Start

When power on the system, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for system test and initialization and system configuration verification. After the POST routines are completed, the following message appears :

**" Hit DEL if you want to run SETUP"**

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The following screen will be displayed at this time.

When choose **Load BIOS Defaults** will load the minimized settings for Troubleshooting. The performance should be very poor when use this setting.

When choose **Load Setup Defaults** will load optimized defaults for regular use. Choosing this setting, will modify all applicable settings.

ROM PCI/ISA BIOS (2A5III9B)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

|                         |                          |
|-------------------------|--------------------------|
| STANDARD CMOS SETUP     | INTEGRATED PERIPHERALS   |
| BIOS FEATURES SETUP     | SUPERVISOR PASSWORD      |
| CHIPSET FEATURES SETUP  | USER PASSWORD            |
| POWER MANAGEMENT SETUP  | IDE HDD AUTO DETECTION   |
| PNP/PCI CONFIGURATION   | HDD LOW LEVEL FORMAT     |
| LOAD BIOS DEFAULTS      | SAVE & EXIT SETUP        |
| LOAD SETUP DEFAULTS     | EXIT WITHOUT SAVING      |
| Esc : Quit              | ↑ ↓ → : Select Item      |
| F10 : Save & Exit Setup | (Shift)F2 : Change Color |

---

## 4.2 Standard CMOS Setup

The Standard CMOS Setup is used for basic hardware system configuration. The main function is for Date/Time setting and Floppy/Hard Disk Drive setting. Please refer the following screen for this setup.

For IDE hard disk drive setup, please check the following possible

setup procedure,

1. Use the Auto setting for detection during bootup.
2. Use the IDE HDD AUTO DETECTION in the main menu to automatically enter the drive specifications.
3. Manually enter the specifications by yourself from the "User" option.

**Halt On (All Errors) :** You could choose **All Errors**, **No Errors All,but Keyboard** , **All.but Diskette**, and **All,but Disk/Key**

As for some embedded system which don't need keyboard and monitor in application,then you could choose No Errors.

ROM PCI/ISA BIOS (2A5III9B)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

|                                    |   |                    |
|------------------------------------|---|--------------------|
| Date (mm:dd:yy) : Sat, Nov 29 1997 |   |                    |
| Time (hh:mm:ss) : 14 : 45 : 51     |   |                    |
| Drive C : Auto ( 0b)               | CYLS. HEADS PRECOMP LANDZONE SECTORS MODE |                    |
| Drive D : Auto ( 0b)               | 0 0 0 0 0 AUTO                            |                    |
| Drive A : 1.44M, 3.5 in.           |   |                    |
| Drive B : None                     |   |                    |
| Video : EGA/VGA                    |   |                    |
| Halt On : All Errors               |   |                    |
| Base Memory: 0K                    |   |                    |
| Extended Memory: 0K                |   |                    |
| Other Memory: 512K                 |   |                    |
| Total Memory: 512K                 |   |                    |
| ESC : Quit                         | ↑ ↓ → : Select Item                       | PU/PD/+/- : Modify |
| F1 : Help                          | (Shift)F2 : Change Color                  |                    |

---

## 4.3 BIOS Features Setup

This BIOS Features Setup is designed for customer's tuning best performance of the PCISA-158HV board. As for normal operation customers don't have to change any default setting. The default setting is pre-set for most reliable operation.

ROM PCI/ISA BIOS (2A51119B)  
 BIOS FEATURES SETUP  
 AWARD SOFTWARE, INC.

|                            |            |                          |                     |
|----------------------------|------------|--------------------------|---------------------|
| Virus Warning              | : Disabled | Video BIOS Shadow        | : Enabled           |
| CPU Internal Cache         | : Enabled  | C8000-CBFFF Shadow       | : Disabled          |
| External Cache             | : Enabled  | CC000-CFFFF Shadow       | : Disabled          |
| Quick Power On Self Test   | : Disabled | D0000-D3FFF Shadow       | : Disabled          |
| Boot Sequence              | : A,C,SCSI | D4000-D7FFF Shadow       | : Disabled          |
| Swap Floppy Drive          | : Disabled | D8000-DBFFF Shadow       | : Disabled          |
| Boot Up Floppy Seek        | : Enabled  | DC000-DFFFF Shadow       | : Disabled          |
| Boot Up NumLock Status     | : On       |                          |                     |
| Boot Up System Speed       | : High     |                          |                     |
| Gate A20 Option            | : Fast     |                          |                     |
| Memory Parity Check        | : Enabled  |                          |                     |
| Typematic Rate Setting     | : Disabled |                          |                     |
| Typematic Rate (Chars/Sec) | : 6        |                          |                     |
| Typematic Delay (Msec)     | : 250      |                          |                     |
| Security Option            | : Setup    |                          |                     |
| PCI/VGA Palette Snoop      | : Disabled | ESC : Quit               | ++ : Select Item    |
| OS Select For DRAM > 64MB  | : Non-OS2  | F1 : Help                | PU/PD/+/ - : Modify |
|                            |            | F5 : Old Values (Shift)  | F2 : Color          |
|                            |            | F6 : Load BIOS Defaults  |                     |
|                            |            | F7 : Load Setup Defaults |                     |

### BootUp Sequence :

You could set the sequence of A:,C:,and CDROM.

### Video BIOS Shadow C000,32K:

**Enable** - Will increase the video speed.

### Shadow C8000-CFFFF,D0000-D7FFF,& D8000-DFFFF :

When the installed add-on card's ROM address is as above address,you could enable the shadow to get higher operation performance.When you enable the shadow function,it will also reduce the memory available by between 640KB and 1024KB.

---

## 4.4 Chipset Features Setup

This setup functions are almost working for ChipSet(SIS 5598). These options are used to change the ChipSet' s registers. Please carefully change any default setting ,otherwise the system could be running unstable.

**Auto Configuration : Enable or Disable**

When use the 60nS general type DRAM,please enable the setting to get the optimal timings.

**VGA Shared Memory : 0.5MB to 4MB**

The SIS5598 provides UMA architect which can share the on board memory from 0.5MB to 4MB. The default setting is 2MB.

**Memory Hole at 15M-16M : Enable or Disable**

This setting reserve 15MB to 16MB memory address space for ISA expansion cards that specifically require this setting. Memory from 15MB and up will be unavailable to the system because expansion cards can only access memory up to 16MB.

ROM PCI/ISA BIOS (2A51119B)  
 CHIPSET FEATURES SETUP  
 AWARD SOFTWARE, INC.

|                                   |   |
|-----------------------------------|---|
| Auto Configuration : Enabled      | CPU to PCI Burst Mem. Wr: Disabled      |
| L2 (WB) Tag Bit Length : 8bits    | ISA Bus Clock Frequency : 7.159MHz      |
| SRAM Back-to-Back : Enabled       | System BIOS Cacheable : Enabled         |
| NA# Enable : Enabled              | Video BIOS Cacheable : Enabled          |
| Starting Point of Paging: 1T      | Memory Hole at 15M-16M : Disabled       |
| Refresh Cycle Time (us) : 15.6    | VGA Shared Memory Size : 2 MB           |
| RAS Pulse Width Refresh : 4T      | VGA Memory Clock (MHz) : 55             |
| RAS Precharge Time : 2T           |   |
| RAS to CAS Delay : 2T             |   |
| CAS# Pulse Width (FP) : 2T        |   |
| CAS# Pulse Width (EDO) : 1T       |   |
| RAMW# Assertion Timing : 3T       |   |
| CAS Precharge Time (FP) : 1T/2T   |   |
| CAS Precharge Time (EDO) : 1T/2T  |   |
| Enhanced Memory Write : Disabled  | ESC : Quit            ↑↓ : Select Item  |
| Read Prefetch Memory RD : Enabled | F1 : Help            PU/PD/+/- : Modify |
| CPU to PCI Post Write : 4T        | F5 : Old Values (Shift)F2 : Color       |
|                                   | F6 : Load BIOS Defaults                 |
|                                   | F7 : Load Setup Defaults                |

---

## 4.5 Integrated Peripherals

This setup is almost working for Multi-I/O Chip(W83877F ). These options are used to change the ChipSet' s registers.



Please carefully change any default setting to meet your application need perfectly. The only special concern is Onboard Serial Port2. If you are using the IrDA port,you have to set this port accordingly.

ROM PCI/ISA BIOS (2A51119B)  
 INTEGRATED PERIPHERALS  
 AWARD SOFTWARE, INC.

|                                   |   |
|-----------------------------------|---|
| Internal PCI/IDE : Primary        | PS/2 mouse function : Enabled           |
| IDE Primary Master PIO : Auto     | USB Controller : Disabled               |
| IDE Primary Slave PIO : Auto      |   |
| IDE Burst Mode : Enabled          |   |
| IDE Data Port Post Write: Enabled |   |
| IDE HDD Block Mode : Enabled      |   |
|                                   | Power Up by Alarm : Disabled            |
| Onboard FDD Controller : Enabled  |   |
| Onboard Serial Port 1 : 3F8/IRQ4  |   |
| Onboard Serial Port 2 : 2F8/IRQ3  |   |
| UART 2 Mode : Standard            |   |
|                                   |   |
| Onboard Parallel Port : 378/IRQ7  |   |
| Onboard Parallel Mode : SPP       |   |
|                                   | ESC : Quit            ++ : Select Item  |
|                                   | F1 : Help            PU/PD/+/- : Modify |
|                                   | F5 : Old Values (Shift)F2 : Color       |
|                                   | F6 : Load BIOS Defaults                 |
|                                   | F7 : Load Setup Defaults                |

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## 4.6 Power Management Setup

Power Management Setup help user handles the PCISA-158HV board's "green" function. The features could shut down the video display and hard disk to save energy for example. The power management setup screen is as following,

## Power Management : Disable, Max Saving, Min Saving, or User Defined

Max Saving puts the system into power saving mode after a brief inactivity period. Min Saving is almost the same as Max Saving except that the inactivity period is longer. User Defined allows you to set power saving options according to your requirement.

**Note : Advanced Power Management(APM)** have to be installed to keep the system time updated when the computer enters suspend mode activated by the Power Management. Under DOS environment, you need to add `DEVICE=C:\DOS\POWER.EXE` in your `CONFIG.SYS`. Under Windows 3.x and Windows 95, you have to install Windows with APM feature. A battery and power cord icon labeled "Power" will appear in the "Control Panel".

ROM PCI/ISA BIOS (2A5III9B)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| Power Management : Disable          | VGA Activity : Disabled           |
| PM Control by APM : Yes             | IRQ3 (COM 2) : Enabled            |
| Video Off Option : Susp,Stby -> Off | IRQ4 (COM 1) : Enabled            |
| Video Off Method : V/H SYNC+Blank   | IRQ5 (LPT 2) : Enabled            |
| Switch Function : Break/Wake        | IRQ6 (Floppy Disk) : Enabled      |
| Doze Speed (div by) : 2             | IRQ7 (LPT 1) : Enabled            |
| Stby Speed(div by) : 3              | IRQ8 (RTC Alarm) : Disabled       |
| MODEM Use IRQ : 3                   | IRQ9 (IRQ2 Redir) : Enabled       |
|                                     | IRQ10 (Reserved) : Enabled        |
| ** PM Timers **                     | IRQ11 (Reserved) : Enabled        |
| HDD Off After : Disable             | IRQ12 (PS/2 Mouse) : Enabled      |
| Doze Mode : Disable                 | IRQ13 (Coprocessor) : Enabled     |
| Standby Mode : Disable              | IRQ14 (Hard Disk) : Enabled       |
| Suspend Mode : Disable              | IRQ15 (Reserved) : Enabled        |
| ** PM Events **                     | ESC : Quit      ++ : Select Item  |
| COM Ports Activity : Enabled        | F1 : Help      PU/PD+/- : Modify  |
| LPT Ports Activity : Enabled        | F5 : Old Values (Shift)F2 : Color |
| HDD Ports Activity : Enabled        | F6 : Load BIOS Defaults           |
|                                     | F7 : Load Setup Defaults          |

---

## 4.7 PNP/PCI Configuration

The PNP/PCI Configuration help user handles the PCISA-158HV board's "PCI" function. All PCI bus slots on the system use INTA#, thus all installed PCI slots must be set to this value.

### PNP OS Installed : Yes or No

When PNP OS is installed, interrupts may be reassigned by the OS when the setting is Yes. When a non-PNP OS is installed or to prevent reassigning of interrupt settings, select setting to No.

ROM PCI/ISA BIOS (2A51119B)  
 PNP/PCI CONFIGURATION  
 AWARD SOFTWARE, INC.

|                                     |                                    |
|-------------------------------------|------------------------------------|
| PNP OS Installed : No               | PCI IRQ Activated By : Level       |
| Resources Controlled By : Manual    | PCI IDE IRQ Map To : PCI-AUTO      |
| Reset Configuration Data : Disabled | Primary IDE INT# : A               |
| IRQ-3 assigned to : Legacy ISA      |                                    |
| IRQ-4 assigned to : Legacy ISA      |                                    |
| IRQ-5 assigned to : PCI/ISA PnP     |                                    |
| IRQ-7 assigned to : Legacy ISA      |                                    |
| IRQ-9 assigned to : PCI/ISA PnP     |                                    |
| IRQ-10 assigned to : PCI/ISA PnP    |                                    |
| IRQ-11 assigned to : PCI/ISA PnP    |                                    |
| IRQ-12 assigned to : PCI/ISA PnP    |                                    |
| IRQ-14 assigned to : PCI/ISA PnP    |                                    |
| IRQ-15 assigned to : PCI/ISA PnP    |                                    |
| DMA-0 assigned to : PCI/ISA PnP     |                                    |
| DMA-1 assigned to : PCI/ISA PnP     | ESC : Quit +--+ : Select Item      |
| DMA-3 assigned to : PCI/ISA PnP     | F1 : Help PU/PD/+/- : Modify       |
| DMA-5 assigned to : PCI/ISA PnP     | F5 : Old Values (Shift) F2 : Color |
| DMA-6 assigned to : PCI/ISA PnP     | F6 : Load BIOS Defaults            |
| DMA-7 assigned to : PCI/ISA PnP     | F7 : Load Setup Defaults           |

5

# E<sup>2</sup> Key™ Function

The PCISA-158HV provides an outstanding E<sup>2</sup>KEY™ function for system integrator. Based on the E<sup>2</sup>KEY™ you could free to store the ID Code, Pass Word, or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, you don't have to worry the losing of the very important data.

Basically the E<sup>2</sup>KEY™s based on a 1Kbit EEPROM which is configured to 64 words (from 0 to 63). You could access (read or write) each word at any time.

When you start to use the E<sup>2</sup>KEY™ you should have the utility in the package. The software utility will include four files as follows,

**README.DOC**  
**E2KEY.OBJ**  
**EKEYDEMO.C**  
**EKEYDEMO.EXE.**

The E2KEY.OBJ provides two library function for user to integrate their application with E<sup>2</sup>KEY™ function. These library (**read\_e2key** and **write\_e2key**) are written and compiled in C format. Please check the following statement, then you will know how to implement it easily.

**unsigned int read\_e2key(unsigned int address)**

/\* This function will return the E<sup>2</sup>KEY™s data at address. The address range is from 0 to 63. Return data is one word, 16 bits \*/

**void write\_e2key(unsigned int address, unsigned data)**

/\* This function will write the given data to E<sup>2</sup>KEY™ at address. The address range is from 0 to 63. The data value is from 0 to 0xffff. \*/

To easy start to use the function, please refer the include EKEYDEMO.C code at first.

Please note the E<sup>2</sup>KEY™function is based on the working of parallel port. So you should enable the PCISA-158HV' s parallel port, otherwise will be not working.

## Appendix A. Watch-Dog Timer

The Watch-Dog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that caused the CPU to crash. This condition may have occurred by

external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a non-maskable interrupt (NMI) to bring the system back to a known state.

The Watch-Dog Timer is controlled by two I/O ports.

|              |      |   |
|--------------|------|---|
| 443<br>(hex) | Read | Enable the refresh the Watch-Dog Timer. |
| 043<br>(hex) | Read | Disable the Watch-Dog Timer.            |

To enable the Watch-Dog Timer, a read from I/O port 443H must be performed. This will enable and activate the countdown timer which will eventually time out and either reset the CPU or cause an NMI depending on the setting of JP10. To ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time out period that is selected by jumper group JP6.

A tolerance of at least 30% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore if the time out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

---

Note: when exiting a program it is necessary to disable the Watch-Dog Timer, otherwise the system will reset.

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# PCISA-158HV Ver. 3.0

## User Manual Update Notice

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### 2.5 DiskOnChip™Flash Disk

The DiskOnChip™Flash Disk Chip(DOC) is produced by M-Systems. The MD-2200-xMB series DOC will share only 8KB memory address.

#### JP8 : DiskOnChip Memory Address Setting

| Address      | 1-2         | 3-4          | 5-6         | 7-8         |
|--------------|-------------|--------------|-------------|-------------|
| <b>CE000</b> | CLOSE       | OPEN         | OPEN        | OPEN        |
| <b>D6000</b> | <b>OPEN</b> | <b>CLOSE</b> | <b>OPEN</b> | <b>OPEN</b> |
| <b>DE000</b> | OPEN        | OPEN         | CLOSE       | OPEN        |

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### 2.7 Power Good Signal

PCISA-158HV provides an option to get power good status from on-board circuit or backplane. Get power good status from backplane, can make PCISA-158HV synchronize with external device.

#### JP9: power good signal source (Reserve Function)

| JP9 | DESCRIPTION         |
|-----|---------------------|
| 2-3 | On Board Power good |
| 1-2 | From backplane      |

---

### 3.9 USB Port

The PCISA-158HV built-in two USB ports for the future new I/O bus expansion.

#### CN13, CN17 : USB Connector

|   |        |
|---|--------|
| 1 | VCC    |
| 2 | DATA-  |
| 3 | DATA+  |
| 4 | GROUND |

# PCISA-158HV Ver. 4.0

## User Manual Update Notice

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### 2.5 DiskOnChip™Flash Disk

The DiskOnChip™Flash Disk Chip(DOC) is produced by M-Systems. The MD-2200-xMB series DOC will share only 8KB memory address.

#### JP8 : DiskOnChip Memory Address Setting

| Address      | 1-2   | 3-4   | 5-6   | 7-8  |
|--------------|-------|-------|-------|------|
| <b>CE000</b> | CLOSE | OPEN  | OPEN  | OPEN |
| <b>D6000</b> | OPEN  | CLOSE | OPEN  | OPEN |
| <b>DE000</b> | OPEN  | OPEN  | CLOSE | OPEN |

---

### 2.7 Power Good Signal

PCISA-158HV provides an option to get power good status from on-board circuit or backplane. Get power good status from backplane, can make PCISA-158HV synchronize with external device.

#### JP9: power good signal source (Reserve Function)

| JP9 | DESCRIPTION         |
|-----|---------------------|
| 2-3 | On Board Power good |
| 1-2 | From backplane      |

---

### 3.9 USB Port and FAN Connector

The PCISA-158HV built-in two USB ports for the future new I/O bus expansion.

#### CN13, CN17 : USB Connector

|   |        |
|---|--------|
| 1 | VCC    |
| 2 | DATA-  |
| 3 | DATA+  |
| 4 | GROUND |

#### CN19 : 3-pin Fan Connector

| Pin | Description |
|-----|-------------|
| 1   | NC          |
| 2   | +12V        |
| 3   | GND         |