
PI-6488VN series
All-In-One 5x86-133
CPU card with on-board
VGA/TFTLCD interface
and
Flash/SRAM disk

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2's edition

Printed May. 2001

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Chapter 1

Hardware installation

1.1 Introductions

The PI-6488VN is a full-function CPU card which integrates the VGA LCD panel, Ethernet and other enhanced I/O interfaces on a half-size CPU card. This card uses an embedded AMD 5x86 -133 low power CPU and embedded 4MB EDO RAM and also provides one 72-pin SIMM socket that can have up to 32 MB DRAM. It also provides an optional 512 KB cache RAM.

The PI-6488VN offers power management to minimize power consumption. It complies with the "Green Function" standard and supports three power saving features: doze, sleep, and suspended mode.

Its high performance VGA display supports both CRT and panel displays with a display memory of up to 1 MB and a resolution of up to 1024x868. The VGA controller is a PCI bus C&T 655500, which comes equipped with a windows accelerator.

The PI-6488VN also offers several industrial features such as a 16-level watchdog timer with jumperless setup, supports M-systems DiskOnChip Flash Disk PC/104 connection for additional functions with PC/104 modules.

1.2 Specifications

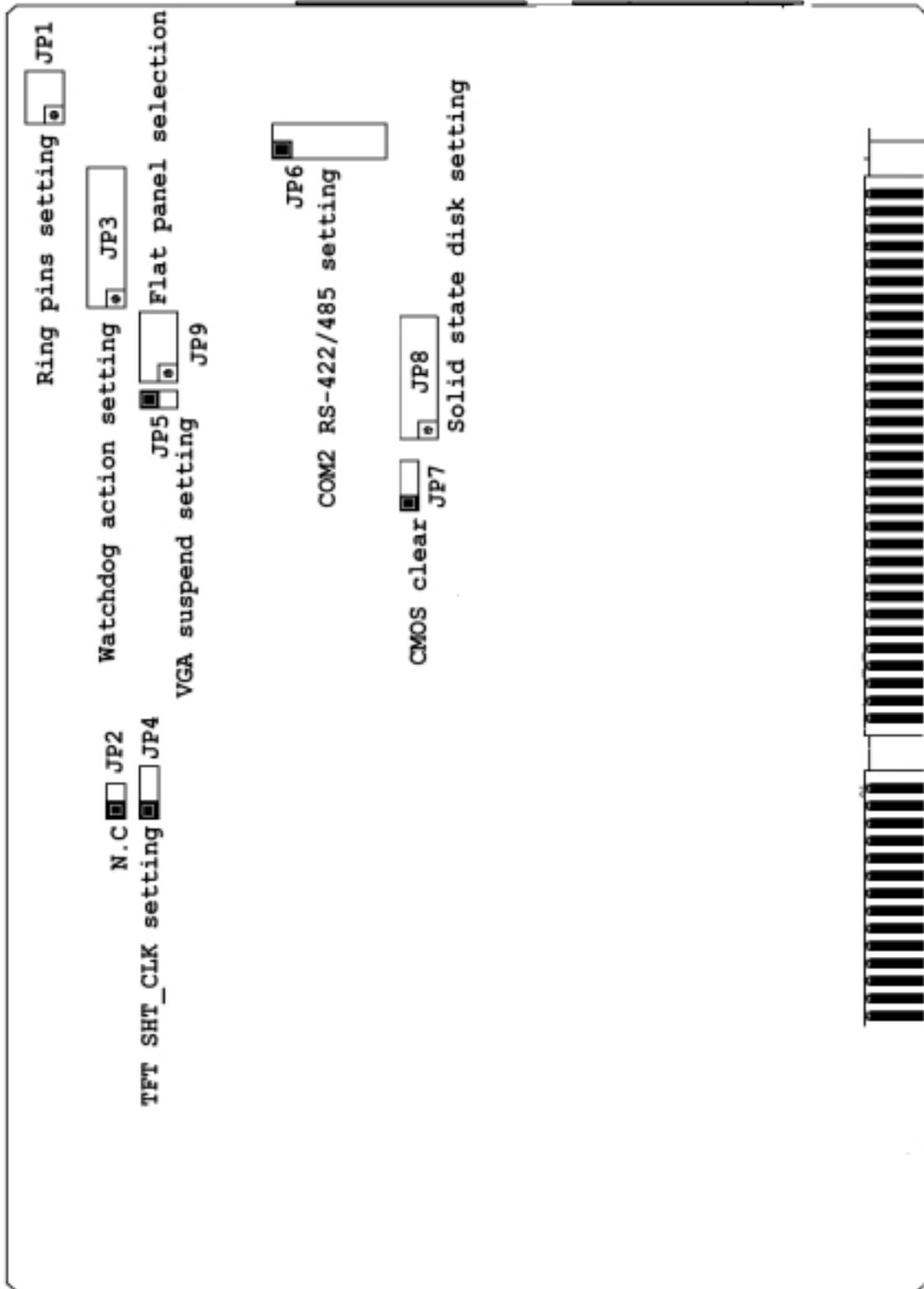
- **CPU:** AMD 5x86-133 low power CPU
- **Bus interface:** ISA bus(PC/AT)
- **Chipset:**
 - System : ALI M1489,M1487
 - I/O Audio : Build-in 82C686
 - LAN : RTL8139C
 - VGA : Chips 69000
- **Second level cache:** 512 KB
- **System BIOS:** AWARD PnP BIOS with VGA BIOS in a single FLASH ROM(Year 2000 Compliant BIOS)
- **Plug and Play:** Dual interrupt and DMA signal steering with plug and play control. Microsoft Windows 95/98/ME/NT/win2000 and plug and play BIOS compliant
- **System Memory:** On-board 4MB EDO DRAM and one 168-pin DIMM sockets, supports up to 32 MB SDRAM module
- **Display:** C&T69000 HiQVideo Accelerator with integrated memory. support TFT/STN/EL/Mono LCD, Resolutions up to 1024x768@16bpp
- **LAN:** PCI local bus single-chip Fast Ethernet controller and RJ-45 connector. supports 10 Mb/s and 100 Mb/s N-way Auto-negotiation operation
- **Floppy Disk Drive Interface:** Supports Up to two Floppy Disk Drives,5.25"(360KB or 1.2MB) and/or 3.5"(720KB or 1.44MB/2.88MB)
- **IDE Hard Disk Drive Interface:** Dual Channels Ultra-DMA 33/66/100MB/sec PCI EIDE
- **Serial Ports:**One RS-232C and one RS-422/485 serial Ports.
- **Printer Port:** One SPP/ECP/EPP Bi-direction Parallel Port.
- **Solid state disk:** On Board 1.7M Bytes(option) and one expended 32-pin Sockets for SRAM/Flash Disk or M-Systems **DiskOnChip**
- **Real-time clock/calendar:** Lithium battery with 10 year data retention
- **Keyboard/mouse connector:** A 6-pin mini-DIN PS/2 KBD connector and one 6pin PS/2 mouse FRC connector
- **Watch Dog timer:** Sixteen level watch dog timer range from 1 to 160 sec and Can generate NMI.
- **I/O bus expansion:** PC/104 connector with face-up installation
- **Power Supply Voltage:** + 5V, ±12V

- **Power Consumption:** +5VDC/15A(max), +12V/200mA(max), -12V/200mA(max)
(Power requirement will Vary with CPU type)
- **Operating Temperature:** 32 to 140F(0 to 60C). (A Heat Sink With Cooling Fan is Needed on CPU)
- **Operating Temperature:** 0 ~ 60° C (32 ~ 140° F)
- **Dimensions:** 340(L) x 123mm(W)
- **Local bus VGA functions**
 - Controller: VL-bus C&T 65550 VGA controller with Windows accelerator
 - Display memory: 1 MB on-board DRAM(up to 2MB)
 - Display resolution:
 - Supports resolutions up to 1280 x 1024
 - Non-interlaced CRT display up to 1024 x 768 with 256 colors
 - Flat panel display up to 640 x 480 resolution
 - Support True-color and Hi-color display capability
 - Display output: DB-15 VGA connector, 44 x 2 pin header general purpose flat panel display connector

Chapter 2

Jumper settings

2.1 Locating jumpers



2.2 Jumpers

The PI-64886VN has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of each of the board's jumpers:

Label	Function	page
JP1	COM port s RIING pin setting	13
JP3	Watchdog timer action	13
JP4	Flat Panel SHF_CLK setting	15
JP5	VGA Suspend setting	16
JP6	COM2 RS-422/RS-485 setting	16
JP7	CMOS clear	16
JP8	Solid state disk setting	17
JP9	Flat Panel type setting	15

2.3 Setting jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.

The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

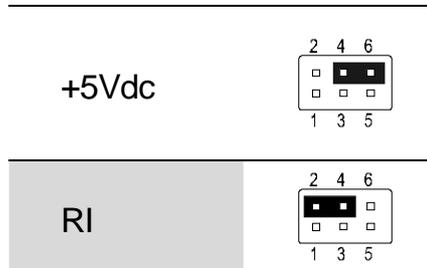
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The Jumper settings with background color  are factory default

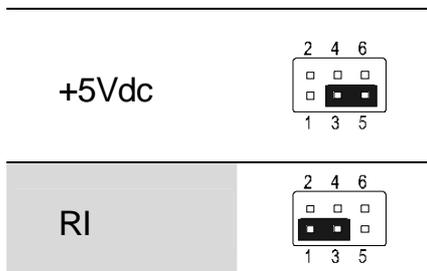
2.3.1 COM1/COM2 RING pin setting (JP1)

COM1 and COM2 can supply +5 V power to the serial devices via the RI pin of the COM port connectors. The outputs of the COM1/ COM2 RI pins are selected by setting JP1.

■ COM1/3 RI pins settings:



■ COM2/4 RI pins settings:



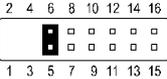
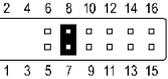
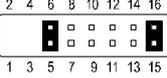
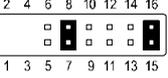
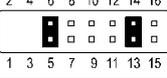
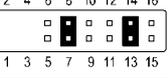
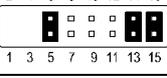
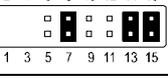
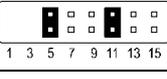
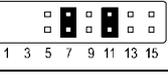
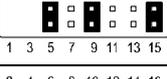
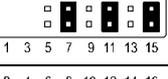
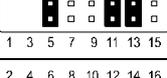
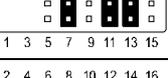
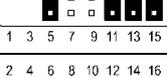
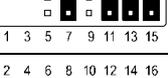
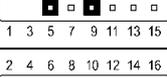
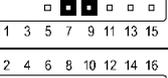
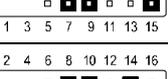
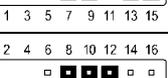
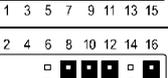
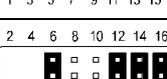
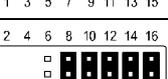
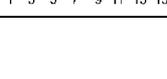
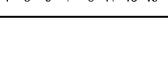
2.3.2 Watchdog timer action (JP3 pin[1~4])

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on NMI. This can be set via setting JP3 as shown below:

JP3	Action
	Reset
	NMI
	Disable

2.3.3 The Watchdog timeout value setting

The watchdog timeout factor can be selected by setting JP3 pin [5~16].

JP3 pin[5~16]	Time-out value	JP3 pin[5~16]	Time-out value
	1 sec		10 sec
	2 sec		20 sec
	3 sec		30 sec
	4 sec		40 sec
	5 sec		50 sec
	6 sec		60 sec
	7 sec		70 sec
	8 sec		80 sec
	9 sec		90 sec
	10 sec		100 sec
	11 sec		110 sec
	12 sec		120 sec
	13 sec		130 sec
	14 sec		140 sec
	15 sec		150 sec
	16 sec		160 sec

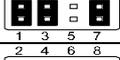
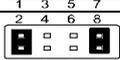
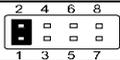
2.3.4 Watch Dog Timer I/O port mapping

The I/O port of the watchdog timer is fixed to 443H and 43H

Watchdog timer I/O	function
Read from 443H	Enable watchdog timer
Read from 443H	Refresh watchdog timer
Write to 43H	Disable watchdog timer

2.3.5 Panel type select (JP9)

JP5 is a 8-pin headers for selecting the type of panel and display mode.

JP9	Panel type
	1024x768 Dual scan STN color
	1280x1024 TFT color
	640x480 Dual scan STN color
	800x600 Dual scan STN color
	640x480 sharp 12bit TFT color
	640x480 18bit TFT color
	1024x768 TFT color
	800x600 TFT color

All modes can be run in simultaneous display with CRT

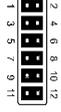
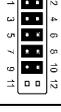
2.3.6 Flat Panel SHF_CLK settings (JP4 pin[1~3])

JP4pin[1,2,3].	Signal Name
	SHF_CLK inverted (for EL panel)
	Normal

2.3.7 VGA suspend setting

JP5	Function
	VGA suspend mode
	Normal

2.3.8 COM2 settings for RS-232/422/485 (JP6)

JP6	COM2 function
	RS-232C
	RS-485
	RS-422

2.3.9 CMOS clear (JP7)

Warning: To avoid damaging the computer, always turn off the power supply before setting “Clear CMOS.” Set the jumper back to “3V Battery On” before turning on the power supply.

Backup CMOS	
Clear CMOS	

2.3.10 Solid state disk settings (JP8)

■ Memory mapping (JP8 pin [1,2])

JP8 pin 1-2	Memory mapping
<p>Diagram showing pins 1 and 2 connected.</p>	D0000h – D5FFFh
<p>Diagram showing pins 1 and 2 not connected.</p>	CA000h - CFFFFh

■ Base I/O Port mapping (JP8 pin[3,4])

JP8 pin 3-4	Base I/O mapping
<p>Diagram showing pins 3 and 4 connected.</p>	136h,536h
<p>Diagram showing pins 3 and 4 not connected.</p>	236h,636h

■ Solid state disk device settings

JP8 pin [5~14]	1.7M flash disk	M1 socket	M2 socket
<p>Diagram showing pins 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 connected.</p>	Disable	DiskOnChip	SRAM
<p>Diagram showing pins 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 not connected.</p>	Enable	SRAM	SRAM
<p>Diagram showing pins 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 connected.</p>	Disable	DiskOnChip	DiskOnChip
<p>Diagram showing pins 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 not connected.</p>	Enable	DiskOnChip	DiskOnChip

2.3.11 Installing DRAM (SIMM1)

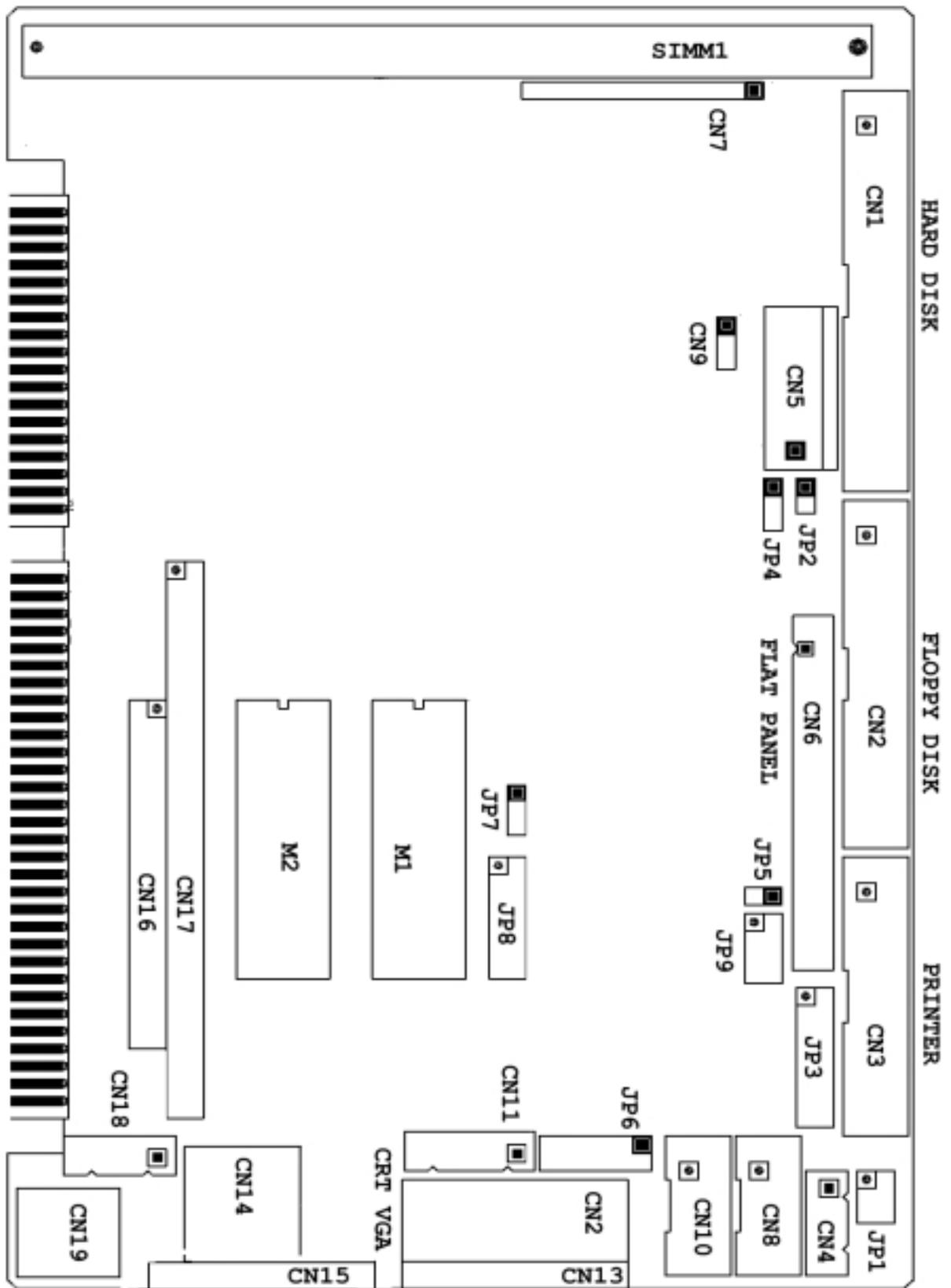
The PI-6488VN has on-board 4MB SRAM, but can be extended by installing from 4 MB to 32 MB RAM module to SIMM1 sockets.

For example: If a 16MB DRAM module installed to SIMM1 socket, the total system memory is $16\text{MB}+4\text{MB}=20\text{MB}$

Chapter 3

Connecting Peripherals

3.1 Locating Connectors



3.2 Connectors

On-board connectors link the PI-6488VN to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors:

Label	Function	page
CN1	Hard disk connector	21
CN2	Floppy disk connector	23
CN3	Parallel port connector	24
CN4	External Power connector(option)	26
CN5	AT PS/2 P8 power connector	26
CN6	Flat Panel VGA connector	26
CN7-[1,2]	Reset swith	25
CN7-[3~7]	Power LED and keyboard lock connector	25
CN7-[8,9]	Hard disk LED	24
CN7-[10~13]	External speaker connector	24
CN8	Extended COM2 connector	25
CN9	CPU FAN power connector	26
CN10	Extended COM1 connector	25
CN11	Extended PS/2 mouse connecotor	24
CN12	CRT VGA connecotr	26
CN13	COM2 connecotr	25
CN14	Ethernet RJ-45 connector	26
CN18	Extended keyboard connector	24
CN19	Keyboard and PS/2 mouse connector	24
SIMM1	72 pin SIMM socket	

3.3 IDE Hard Drive Connector (CN1)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the PI-6488VN's internal controller. The PI-6488VN's IDE controller uses a PCI local-bus interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4.

Connect one end of the cable to CN1. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).

Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

3.4 Floppy drive connector (CN2)

You can attach up to two floppy drives to the PI-6488VN's on-board controller. You can use any combination of 5.25" (360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB, and 2.88 MB) drives.

1. Plug the 34-pin flat-cable connector into CN2. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information. If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

3.5 Parallel port connector (CN3)

Normally, the parallel port is used to connect the card to a printer. The PI-6488VN includes a multi-mode (ECP/EPP/SPP) parallel port, accessed through CN3, a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end and a DB-25 connector on the other.

The parallel port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup. The parallel port interrupt channel is designated to be IRQ7. You can select ECP/EPP DMA channel via BIOS setup.

3.6 Keyboard/PS/2 mouse (CN19)

The PI-6488VN board provides a keyboard connector that supports both **a keyboard and a PS/2 style mouse**. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset if the keyboard is not present. The PI-6488VN's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST.

3.7 Extended PS/2 mouse connector (CN11)

In addition to CN19 connector. The PI-6488VN board also provides another PS/2 mouse connectors labeled CN11, which can be connected to outside world with convert cable.

3.8 Extended keyboard connector (CN18)

In addition to CN19 connector. The PI-6488VN board also provides another PS/2 mouse connectors labeled CN18, which can be connected to outside world with convert cable.

3.9 Speaker (CN7 [10~13])

The PI-6488VN can drive an 8 Ω speaker at 0.5 watts. Make sure that alternatives to this specification do not overload the card.

3.10 Hard disk LED (CN7 [8,9])

The hard disk LED indicator for hard disk access is an active low signal (24 mA sink rate).

3.11 Power LED (CN7 [3~7])

The Power LED indicator for system power is an active low signal (24 mA sink rate).

3.12 Hardware reset switch (CN7 [1,2])

The hardware reset switch button is an active low signal (24 mA sink rate).

3.13 COM-port connectors(CN8,CN10,CN13,CN15)

The COM port connectors are varies depends on the options of PI-6488 card

- For PI-6488VN/VNA (CN8 and CN10)

COM1/3	CN10
COM2/4	CN8

- For PI-6488V/VA (CN8,CN10,CN15)

COM1/3	CN10 and CN15
COM2/4	CN8

- PI-6488/A (CN8,CN10,CN13,CN15)

COM1/3	CN10 and CN15
COM2/4	CN8 and CN13

- The IRQ and the address range for COM ports is fixed. However, if you wish to disable the port or change these parameters later you can do this in the system BIOS setup.

3.14 VGA interface connectors (CN12,CN6)

The PI-6488VN's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

3.14.1 CRT display connector (CN12)

CN12 is a 16-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN12 to a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT display connector CN12 are detailed in Appendix C.8

3.14.2 Flat panel display connector (CN6)

CN6 is a 44-pin connector which can support a 24-bit TFT LCD. It is C&T product no. Chips 65550.

It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V or +3.3 V) and panel video signals are stable.

Pin assignments for connector CN6 are detailed in Appendix C.9

3.15 CPU fan connector (CN9)

The PI-6488 series provides a power connector (CN9) that can supply +12Vdc to CPU cooling fan

3.16 External power connector (CN4,CN5)

The connector CN5 is pin compatible to standard PS/2 power supply (AT-P8 connector)

The connector CN4 is five pins optional power connector(option only)

3.17 Ethernet 100Base-T connector (CN14)

The PI-6488VN is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

Chapter 4

VGA driver installation

4.1 Introduction

The PI-6680VN has an on-board PCI flat panel/VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PI-6488VN uses a C&T 65550 chipset for its PCI/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays and conventional analog CRT monitors. The 65550 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

4.1.2 Display memory

With 1 MB display memory on board, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 16.8 M colors.

4.1.3 Display types

CRT and panel displays can be used simultaneously. The PI-6488 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. The BIOS setup can be used to configure the display. In BIOS, select "Integrated Peripherals", then "Boot-up display type." You can then choose one of the following modes: "CRT only", "Panel only", or "Simultaneous."

4.1.4 Dual/simultaneous display

The PI-6680VNs is capable of providing multiple views and simultaneous display with mixed video and graphics on a flat panel and CRT. To set up dual display under Windows 98, follow these steps:

1. Select "Windows98", "Control panel", "Display", "Settings".
2. Select "1" for current display, or "2" for second display.
3. Enable "Extend my Windows desktop onto this monitor".
4. Click "OK".

4.2 Installation for Window 98

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PI-6680VN. Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

1. Select "Start" ,"Settings" ,"Control Panel" ,"Display" ,"Settings".
2. Press "Advanced Properties".
3. Choose the "Adapter" label.
4. Press the "Change..." button.
5. Select the second item.
6. Press the "Have Disk" button.
7. Insert the disc into the CD-ROM drive.
8. Type " D:\VGA\WIN98 ".
9. The 'Select Device' dialog box will appear. Select 'chips98.inf'
10. Press "OK".
11. Click the "Apply" button.
12. Press "Yes" to reboot.
13. Repeat Step 1 on the previous page of this manual. The "chips" label appears in "Display".
14. Adjust resolution and color.
15. Click "Advanced" for further adjustment.
16. Click "OK" to exit.

4.3 Installation for Windows NT

1. Click the Start button, then go to Settings and click on Control Panel.
2. Click on the Display icon to start the Display Properties window.
3. Click on the Settings tab, and then click on Display Type.
4. In the Change Display Type window, click on Change in Adapter Type. This will bring up the Select Device Window.
5. In the Change Display window, click on Have Disk. Follow the directions on the screen to supply the directory where the Windows NT driver files (D:\VGA\WINNT40) are located.
6. Then select OK, or press enter.
7. Select Chips Video Accelerator from Display list provided, then click OK or press enter.
8. You will then see a warning panel about Third Party Drivers. Click on Yes to finish the install.
9. Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.
10. When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected.
11. Click the Start button, then go to Settings and click on Control Panel.
12. Click on the Display icon to start the Display Properties window.
13. Click on the Settings tab.
14. A new screen setting can be selected using either of the following methods:
15. 1: Use the slide-bar in the Desktop Area to select new setting.
16. 2: Click on List All Modes. From the list provided, select a new setting, then click OK or press enter.
17. Click on Test to test the newly selected graphics mode. Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on Yes to continue. Click on Apply to switch to the new graphics mode.
18. Graphics modes are changed dynamically on NT 4.0, so you do not need to shutdown and restart for the new screen settings to work.

Chapter 5

Ethernet driver installation

5.1 Introduction

The PI-6680VN is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the RSET8139.exe program included on the utility disk. The Ethernet port provides a standard RJ-45 jack on board.

5.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PI-6680VN, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

Note: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

5.2.1 Installation for MS-DOS and Windows 3.1

If you want to set up your Ethernet connection under the MS-DOS or Windows 3.1 environment, you should first check your server system model. For example, MS-NT, IBM-LAN server, and so on.

Then choose the correct driver to install in your panel PC.

The installation procedures for various servers can be found on CD-ROM, the correct path being:

5.2.2 Installation for Windows 95/98

1. Turn the PC power ON then boot from Windows 98.
2. Windows 98 will prompt "PCI Ethernet Controller" in "New Hardware Found" dialog box and "Add New Hardware Wizard" dialog box.
3. Click "Next >" button when "Search for the best for your device. "[Recommended]" is on.
4. Insert the Adapter Driver Diskette in your floppy drive.
5. Disable the "Floppy disk drives" check box. Click "Specify a location" and type "D:\LANWIN95" or "D:\LANWIN98", then click "Next >" button.
6. Windows 98 will prompt "32-Bit PCI Fast Ethernet Adapter" in "Add New Hardware Wizard" dialog box.
7. Click "Next >" button and Windows starts to copy files from Windows 98 CD-ROM to your hard disk.
8. Click "Finish" button from "Add New Hardware Wizard" dialog box.
9. Restart your computer to take effect the network function.

10. Click the "My Computer" icon in the Main Program Group.
11. Click the "Control Panel" icon from My Computer window.
12. Click the "Network" icon from the Control Panel window.
13. Select "32-Bit PCI Fast Ethernet Adapter" item from "Network" dialog box, then click "Properties" button.
14. Click "Advanced" button from "32-Bit PCI Fast Ethernet Adapter Properties" dialog box.
15. Select the Line Speed/Duplex Mode (Auto,100 full,100 half,10 full,10half) from "Value" item, then click OK button in the "32-Bit PCI Fast Ethernet Adapter Properties" dialog box.
16. Click OK button from "Network" dialog box.
17. Restart your computer to take effect the new configuration.

5.2.3 Installation for Windows NT

1. Click the "Start" command button, select the "Settings" icon to display an option list under it.
2. Click the "Control Panel" icon.
3. Double-click the "Network" icon.
4. Select the "Adapters" item, then click the "Add..." button in the "Network" dialog box.
5. Click the "Have Disk..." button in the "Select Network Adapter" dialog box.
6. Insert the CD_ROM . Enter the full pathname D:\LAN\OEMSETNT.INF'
7. Select "32-Bit PCI Fast Ethernet Adapter" and then click the OK button in the "Select OEM Option" dialog box.
8. Select the Line Speed value (AUTO,100full,100half,10full, 10half) and then click the OK button in the "Select Line Speed" dialog box.
9. To complete network installation, remember to bind the adapter to the transport drivers by choosing the "Bindings" button from the "Network" dialog box.
10. Click the "Close" button in the "Network" dialog box.
11. Restart your computer to initialize the network function.

5.2.4 Installation for Windows 2000

Microsoft had put the RTL8139A/B/C chip driver in the Windows 2000 system. Please plug 32-Bit PCI Fast Ethernet Adapter into PCI slot. After Win2000 starts up, it can recognize this adapter automatically.

Appendix A

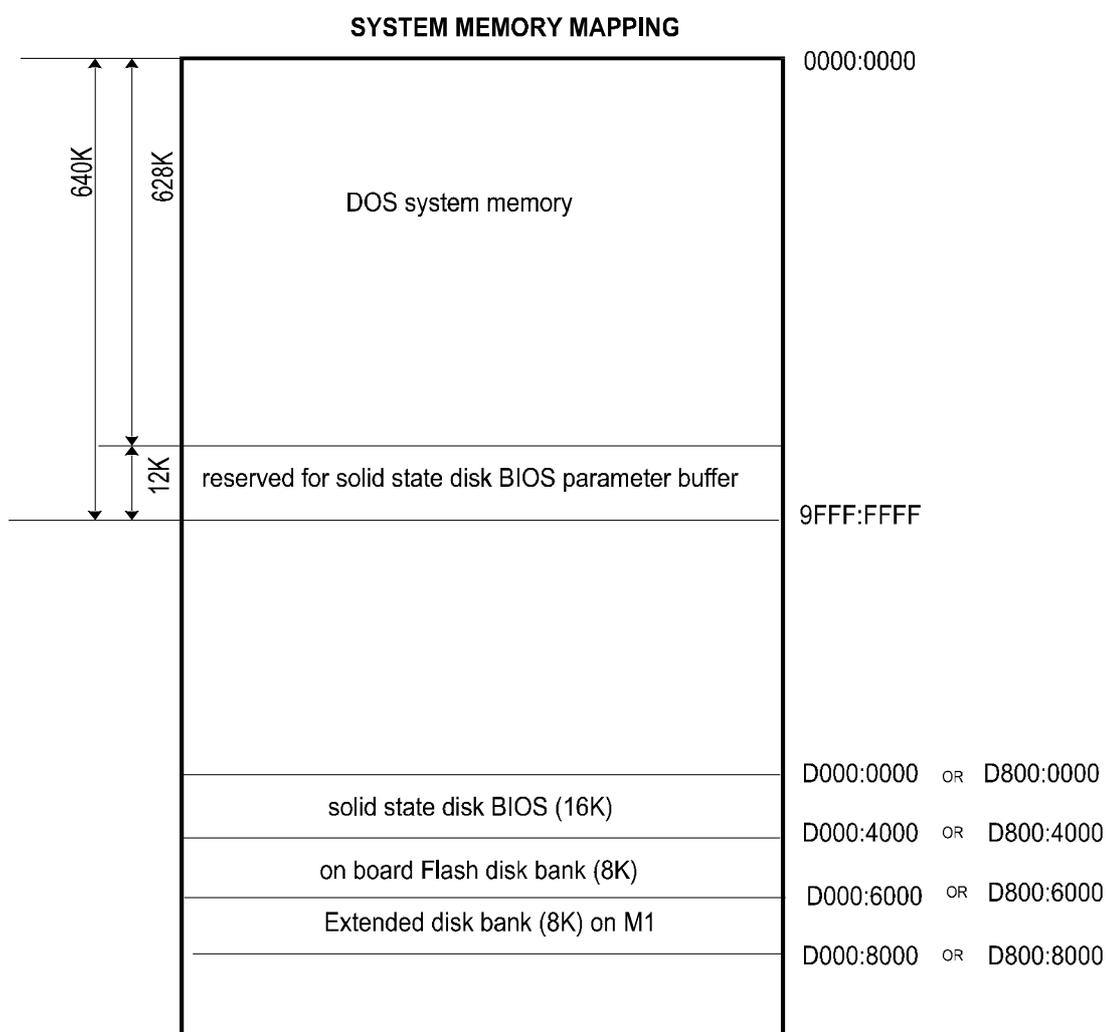
Flash Disk Setup

A.1 About solid state disk

The PI-6488VN provides on-board 1.7MB flash ROM disk and one extended solid state disk sockets (M1,M2) which can accept SRAM and also **DiskOnChip™** device

The PI-6488VN solid state disk occupies two system memory sections.

1. The last 12K bytes at higher memory address for solid state disk BIOS parameter buffer
2. Disk bank(32K) at D000:0000-D000:7FFFH or D800:0000-D800:7FFFH (16K disk BIOS+16K disk bank)



A.2 Solid state disk Setup

The solid state disk SETUP configures the solid state disk information that is stored in EEPROM. The solid state disk has a window Setup interface that is recognizable to anyone.

This setup function is available for on-board 1.7MB Flash and extended disk (M1 socket) configuration

As Award BIOS POST executes, the following appears:

```
.
.
.WAIT.....
```

Hit <F10> to Run Advanced Solid state disk SETUP

At this time, Hit <F10> to run Solid state disk SETUP. A SETUP window shows up on the screen.

All-in-one Pentium CPU Card ROM/RAM Disk SetUp Vx.x	
Primary disk drive	:A
Secondary disk drive	None
System boot sequence	:Flash disk
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

PgUp/PgDn:Select - Esc:No save - F7:Save

Where

■ Primary disk drive

The on board 1.7MB flash disk can emulate disk drive A:,B:,C:,D: or disabled.

A	=	Drive A:
B	=	Drive B:
C	=	Drive C:
D	=	Drive D:
Disabled:	=	Disable solid state disk

■ Secondary disk drive

There are two configurations for extended device on the extended socket called M1. The device can be configured into primary or to secondary drive as shown below

None	Combine device into on board 1.7MB flash disk
M1+M2	Be a secondary disk alone

■ System Boot Up Sequence

The system may boot up from two following sequences as:

CMOS SETUP	Boot up according to CMOS Setup sequence
ROM Disk	Boot up from solid state disk, if DOS files existed in the Primary disk

■ COM Port for Remote Flash PGM

If you are going to remotely access the 1.7MB Flash disk or extended disk on M1 socket with utility called "RDISK.EXE" . You should select which communication port be connected to communicate with host system.

COM1	COM1 port (3F8H) IRQ4
COM2	COM2 port (2F8H) IRQ3
Disabled	No remote Access required

■ Auto detect and boot from Disk A:

Enabled=	If system files(IO.SYS, SMDOS.SYS) existed in Floppy disk A:, the system will automatically boot form disk A:.
Disabled=	Normal boot sequence

■ Selects and save SETUP

PgDn	Moves reverse bar down
Esc	Quit without saving SETUP
F7=	Quit and saves current SETUP to EEPROM

A.3 Using on board 1.7MB Flash disk

The on-board 1.7MB flash disk provides you an easy way to build a *mechanical diskless system* without any additional disk devices. You can directly read/write this Flash disk at DOS prompt such as (COPY, DEL, FORMAT, ..etc).

The following procedures show you how to use this Flash disk

1. Setting JP8 (see page 17) properly before turn on system
2. Boot system form normal CMOS setup sequence
3. Format on-board 1.7MB Flash disk at DOS prompt as:
C>format <Flash disk drive name> /S
4. Create "AUOTOEXEC.BAT" file in the flash disk
5. Copy "DISKSWAP.EXE" file into flash disk
6. Modifies "AUTOEXEC.BAT" file to have "DISKSWAP.EXE" at first line
7. Reboot system and then modify the ROM/RAM disk setup to set "Boot Sequence" to "ROM Disk" and press F7 to save

A.4 How to install Flash or SRAM device on socket M1/M2

See jumper settings (see page 17) before installing device

A.4.1 Acceptable device on the socket M1

The extended sockets "M1,M2" can accept many types of Volatile memory devices, including 128KB ,512KB SRAM as shown followings

SRAM :SONY CXK581000/584000 or equivalents

A.4.2 Setting drive of extended disk

You have two way to use extended device on the sockets M1/M2

1. Combines into on board 1.7MB Flash disk in primary disk
2. Be a secondary disk alone

A.4.3 Format before usage

If device (Flash or SRAM) is first time installed into extended socket (labeled M1/M2) and combined into primary disk. The "FORMAT" process is necessary before usage.

C> FORMAT <Primary disk name>/S

The primary disk size=1.7MB + size of device on the sockets M1/M2

If device (Flash or SRAM) is first time installed into extended sockets (labeled M1/M2) and set to be secondary disk alone. The "FORMAT" process is necessary before usage.

C> FORMAT <Secondary disk name>

The primary disk size=1.7MB

Secondary disk size= size of device on the socket M1/M2

Flash disk installation examples

■ Example 1

Assume to use on board 1.7MB Flash disk and 128KB SRAM on the socket M1, and Primary disk is B”

Step 1 :Press “F10” at BIOS POST to run ROM/RAM disk setup

Step 2 :Set “Primary disk drive” to B, and “Secondary disk drive” to None
(Primary disk drive=on board 1.7MB+128KB SRAM)

All-in-one Pentium CPU Card ROM/RAM Disk SetUp Vx.x	
Primary disk drive	:B
Secondary disk drive	None
System boot sequence	: CMOS setup
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

Step 3 :Set “Boot sequence” to CMOS setup

Step 4 :Press “F7” to save setup value and exit

Step 5 :Format B:/S (Primary disk drive) at DOS prompt

The total capacity of disk B: is 1700KB +128KB=1828KB

Step 6 :Creat “Autoexec.bat” file in disk B:, and modify the first line in
“autoexec.bat” file to have “@ Diskswap.exe” command

Step 7 :Copy “DISKSWAP.EXE” file to disk B: from provided utility diskette

Step 8 :reboot your system and press “F10” again and modify “Boot
sequence” to ROM disk

■ Example 2

Assume to use on board 1.7MB Flash disk as disk A: (Primary disk), and 512KB SRAMs on the socket M1 and M2 as Disk B (Secondary disk)

Step 1: Press “F10” at BIOS POST to run ROM/RAM disk setup

Step 2: Set “Primary disk drive” to A, and “Secondary disk drive” to M1
 (Primary disk drive=on board 1.7MB)
 (Secondary disk drive=512KBx2 SRAM)

All-in-one Pentium CPU Card ROM/RAM Disk SetUp Vx.x	
Primary disk drive	:A
Secondary disk drive	M1+M2
System boot sequence	:CMOS setup
COM port for remote Flash PGM	:COM1
Auto detect and boot from Disk A:	:Disabled

Step 3: Set “Boot sequence” to CMOS setup

Step 4: Press “F7” to save setup value and exit

Step 5: Format A: and B: at DOS prompt

C>Format A:/S (format Primary disk with system files)

C>format B: (format Secondary disk)

Step 6: Create “Autoexec.bat” file in disk A:, and modify the first line in “autoexec.bat” file to have “@ Diskswap.exe” command

Step 7: Copy “DISKSWAP.EXE” file to disk A: from provided utility diskette

Step 8: reboot your system and press “F10” again and modify “Boot sequence” to ROM disk

A.5 How to use DiskOnChip Flash disk

The DiskOnChip™ Flash disk chip is produced by M-Systems. The DiskOnChip™ Flash disk occupies only 8KB system memory address, and can completely emulate a disk in PC system

The PI-6488VN card allows the user to install this device on the socket called M1/M2. A jumper called JP8 pin 7-8, pin 9-10 (see page 17) are used to enable or disable DiskOnChip™ Flash disks

A.5.1 Using DiskOnChip only

1. Setting JP9 pin 5-6 on, pin 7-8 off, and pin 9-10 off (see page 17).
2. Insert DiskOnChip flash disk module onto the M1 and/or M2 socket(s)
3. Boot system and format DiskOnChip at drive C: or D: before using

A.5.2 Using DiskOnChip and 1.7MB Flash disk simultaneously

1. Setting JP9 pin 5-6 off, pin 7-8 off, and pin 9-10 off (see page 17).
2. Insert DiskOnChip flash disk module onto the M1 and/or M2 socket(s)
3. Boot system and format 1.7MB flash disk at drive A:,B:,C: or D: and DiskOnChip at drive name after 1.7MB flash disk before using

Appendix B

Programming Watch dog timer

The following steps show how to program the watchdog timer

1. Setting the jumper JP3 properly (See 13)
2. you must write a program which reads I/O port address 443 (hex) to enable watch-dog timer. After enabled, your program must refresh the watchdog timer by reading the I/O port 443 (hex) again periodically.

The following example shows how you might program the watchdog timer in BASIC:

```
10 REM Watchdog timer example program
20 x=INP (&H443)  REM enable and start watchdog timer
30 GOSUB 1000    REM Your application task #1
40 X=INP (&H443) REM refresh the watchdog timer
50 GOSUB 2000    REM Your application task #2
60 X=INP (&H443) REM refresh the watchdog timer
70 X=INP (&H43)  REM Disable the watchdog timer
80 END

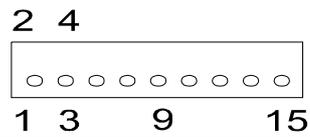
1000          REM Subroutine #1, you application task
.
.
.
1070 RETURN

2000          REM Subroutine #2, you application task
.
.
.
2090 RETURN
```

Appendix C

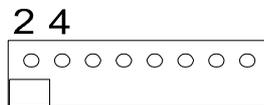
Pin assignment of connectors

C.1 Ext. Speaker Connector (CN17 pin[9,11,13,15])



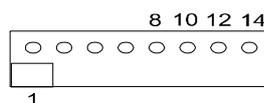
Pin	Function
15	Speaker Data
11,13	GND
9	+5V DC

C.2 HDD LED Connector (CN17 pin[2,4])



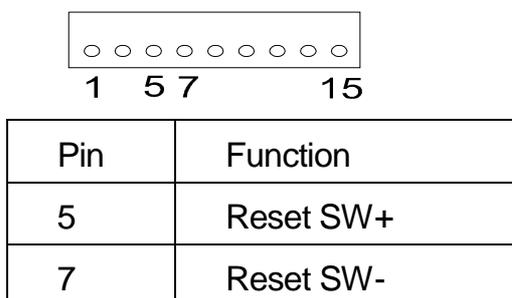
Pin	Function
2	LED+
4	LED--

C.3 Power LED (CN17 pin[8,10,12,14])

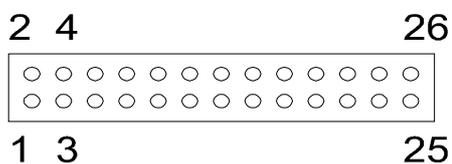


Pin	Function
8,10	+5V DC
12	GND
14	N.C.

C.4 Hardware reset switch connector (CN17 pin[5,7])

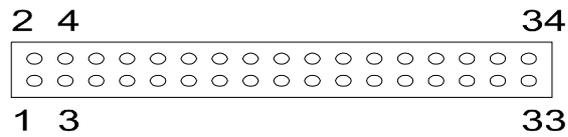


C.5 Parallel port connector (CN2)



Pin	Signal	Pin	Signal
1	STROBE*	2	AUTOFD*
3	D0	4	ERR
5	D1	6	INIT*
7	D2	8	SLCTINI*
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK*	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N/C

C.6 Floppy drive connector (CN9)



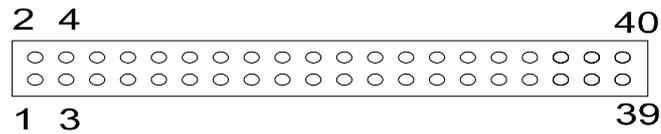
Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	DRIVE TYPE
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* low active

C.7 IDE hard disk connector (CN1,CN7)

PI-6488VN provides two hard disk connectors called CN1 and CN7

1. CN1: Primary hard disk connector
2. CN2: Secondary hard disk connector



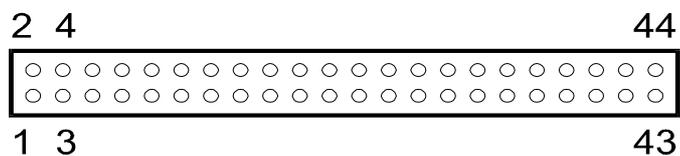
Pin	Signal	Pin	Signal
1	-RST	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C
21	N.C	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IRDY	28	BALE
29	N.C.	30	GND
31	IRQ	32	IO16
33	A1	34	N.C.
35	A0	36	A2 CS0
37	CS0	38	CS1
39	-ACT	40	GND

C.8 CRT display connector (CN15)



Pin	Signal
1	RED
2	GREEN
3	BLUE
4	N.C
5	GROUND
6	R/G/B return GND
7	R/G/B return GND
8	R/G/B return GND
9	N.C
10	GND
11	N.C
12	N.C
13	HSYNC
14	VSYNC
15	N.C

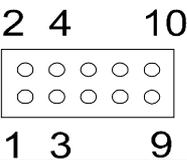
C.9 Ext. LCD display connector (CN6)



1	GND	2	GND
3	SHF_CLK	4	M/GND
5	LP (HSYNC)	6	FLM/GND
7	P0	8	P1
9	P2	10	P3
11	P4	12	P5
13	P6	14	P7
15	P8	16	P9
17	P10	18	P11
19	P12	20	P13
21	P14	22	P15
23	P16	24	P17
25	P18	26	P19
27	P20	28	P21
29	P22	30	P23
31	GND	32	GND
33	5V	34	5V
35	5V	36	ENABLK
37	ENAVEE	38	+12V
39	+12V	40	KB CLK/ENAVDD
41	KB DT/FUM	42	GND
43	NRX/3.3V	44	NTX/3.3V

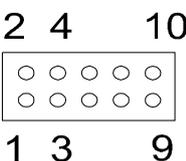
C.10 COM port connector (CN3,CN4)

C.10.1 COM1(CN3)



Pin	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI (or Vcc)

C.10.2 COM2(CN4)



P	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI (or Vcc)

C.11 CPU fan connector (CN24)



pin	signal
3	GND
2	+12V/DC
1	Rotation

C.12 Chassis fan connector (CN25)



pin	signal
3	GND
2	+12V/DC
1	Rotation

C.13 Extended PS/2 Mouse connector (CN22)



pin	Signal
1	MS_Data
2	nc
3	GND
4	+5V/DC
5	MS_CLK
6	nc

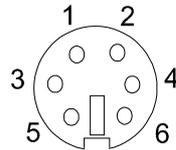
C.14 Keyboard/PS2 mouse connector (CN23,CN26)

There are two keyboard connectors(CN23,CN26) for PS2/keyboard

CN26: Supports PS/2 standard keyboard and PS/2 mouse with Mini DIN

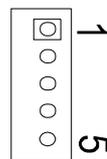
CN23: 5-pin keyboard socket for using the external keyboard socket on front panel

C.14.1 Keyboard/PS2 mouse DIN-connector : CN26



pin	Signal
1	KB_Data
2	MS_DATA
3	GND
4	+5V/DC
5	KB_CLK
6	MS_CLK

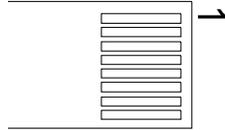
C.14.2 Extended Keyboard Connector : CN23



pin	Signal
1	KB_Data
2	KB_CLK
3	NC
4	GND
5	+5V/DC

C.15 RJ-45(LAN) connector (CN19)

This connector supports Ethernet 10Mbps/100Mbps network data transfer rate operation, with built-in Tx-link LED indicators for monitoring network communication



pin	signal
1	TX+
2	TX-
3	RX+
4	COMM
5	COMM
6	RX-
7	COMM
8	COMM

Appendix D

System configuration

D.1 System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, (NMI) mask
080-09F	DMA page register,
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Reserved (Game I/O)
278-27F	Reserved
2E8-2EF	Serial port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and LPT1
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Serial port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1
443	Watchdog timer

D.2 DMA channel assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available (Parallel Port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

D.3 IRQ mapping chart

IRQ no.	Device used
0	Interval timer
1	Keyboard
2	Interrupt from Controller 2
3	COM2
4	COM1
5	COM4
6	FDD
7	LPT1
8	RTC
9	Reserved
10	COM3
12	PS/2 mouse or for free to user
13	INT from co-processor
14	Primary IDE
15	Secondary IDE