

PCA-6042

Embedded Vortex86™ Half-Size AIO SBC

w/2S/CRT/LCD/Ethernet

User's Manual

(Revision 1.4)

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Chapter 0

Startup

0.1 Packing List

Product Name	Function	Package
PCA-6042	Embedded Vortex86™ (SiS) Half-size All-in-One SBC	<ul style="list-style-type: none">● PCA-6042 Embedded Vortex86 Half-size All-in-One SBC● Manual & Drivers CD x 1● FDD cable x 1● USB cable x 1● HDD cable x 1● RS232 cable x 1● I/O Bracket for Printer port x 1● PS2 Y-cable for Keyboard and Mouse x 1

0.2 Specifications

Features	PCA-6042
Processor Chipset	DM&P(SiS) Vortex86™ System-on-Chip CPU-166MHz
Bus Interface	Half size ISA Bus
Memory	168-pin DIMM Socket, support up to 128MB
BIOS	AMI BIOS
Multi I/O Chip	<ul style="list-style-type: none"> ● Enhanced IDE interface ● RS232 port x1 ● RS232/485 port x1 ● Parallel port x1 ● FDD interface x1 ● USB port x2
Video Display	<ul style="list-style-type: none"> ● AGP Rev.2.0 Compliant ● Shared system memory area up to 64MB. ● Resolution up to 1,920Cx1,440 true colors ● CRT/LCD display ● External 15-pin D-type female VGA connector ● 44-pin box header for LCD connector
LAN	<ul style="list-style-type: none"> ● Realtek 8100B single chip ● Full-duplex transfer mode, doubles effective bandwidth 16KB RAM buffer ● With built-in 16KB RAM buffer ● Throughput 10/100Mbps
Watchdog Timer	<ul style="list-style-type: none"> ● Software Watchdog Timer ● Three 8254 Compatible Programmable 16-bit Counters. ● From 4 ms to 1 hour
DiskOnChip	One socket for DiskOnChip 16MB and above

Connectors	<ul style="list-style-type: none"> ● External 15-pin D-type female VGA connector ● External 9-pin D-type male RS-232 connector ● External Mini DIN for PS/2 Keyboard and Mouse (the Y-cable is required when use PS/2 Mouse) ● One RJ-45 connector for 10/100Base-T ● One 26-pin box header for parallel port ● One 34-pin box header for floppy disk drive ● One 44-pin box header for LCD connector ● One 32-pin socket for for DiskOnChip ● One 10-pin box header for RS-232 (COM2) ● One 10-pin box header for USB (two USB ports) ● One 10-pin box header for RS-232 (COM2) ● One 2-pin header for RS-485 ● One 44-pin box header for LCD ● One 5-pin box header for Keyboard ● One 5-pin box header for Mouse ● One 4-pin connector for power input ● One DIMM socket for DRAM
Power Requirement	Single Voltage +5V @880 mA
Board Weight	225g
Board Size	184mm X 122mm
Operating Temperature	-20°C ~ +70°C

Chapter 1

Introduction

1.1 Features

- Embedded Half-size ISA Bus Single Board Computer (184 x122 mm)
- DM&P Vortex86™ System-On-Chip 166 MHz
- CRT and Flat Panel Display interface
- 168-pin DIMM Socket x1 for Memory expansion up to 128MB
- Enhanced IDE devices and FDD interface
- One Bi-directional Parallel Port
- RS-232/485 interface
- Watchdog timer
- Socket for DiskOnChip
- Onboard Keyboard & Mouse connector
- Onboard Ethernet
- Single voltage +5 V power connector
- Operating temperature from -20°C ~ $+70^{\circ}\text{C}$
- Board Support Package for Windows CE.NET 4.2, Windows CE 5.0

1.2 Specifications

- **Embedded CPU:** DM&P Vortex86™ System-on-Chip CPU – 166MHz, Realtime clock, and watchdog timer.
- **BIOS:** Y2K compliant AMI system BIOS
- **DRAM Memory:** Support up to 128MB DIMM PC133
- **Bus Interface:** ISA Bus
- **Data Bus:** 8-bit
- **Bus Speeds:** PCI Bus – 33MHz
- **DMA Channels:** 7
- **Interrupt Levels:** 15
- **Enhanced IDE:** supports one port and up to two hard drives or Enhanced IDE devices of PIO mode 4. BIOS enabled/disabled
- **Watchdog Timer:** The watchdog is configurable from 4 ms to 1 hour
- **Real-time Clock:** included in Vortex86 SOC with onboard lithium battery backup for 5 years of data retention. CMOS data backup of BIOS setup and BIOS default.
- **Keyboard and Mouse Connectors:** Supports PS/2 Keyboard and mouse
- **Serial ports:** Supports high speed RS-232 port, high speed RS-232/485 port (jumper selectable).
- **Floppy Disk Drive Interface:** supports up to two floppy drives, 5¼" (360 KB or 1.2 MB) and 3½ " (720 KB, 1.44 MB). BIOS enabled / disabled
- **Bi-directional Parallel Port:** supports SPP, EPP and ECP mode. BIOS enabled/disabled
- **Environmental and Power**
- **Power Requirements:** single voltage +5 V @ 880mA
- **Board Dimensions:** 184 (L) x 122 (W) mm.
- **Board Weight :** 225 g
- **Extended Operating Temperature:** -20°C ~+70 °C

1.3 VGA Interface

- **Chipset:** DM&P Vortex86™ SOC
- **Memory:** Shared system memory up to 64MB
- **System Bus:** 33-bit PCI bus
- **Panel Data Bus:** 18-bit
- **Display:** CRT and LCD Flat Panel

- **Compliance:**
 - AGP 2.0 / 4X Compliant / Fully DirectX 8 Compliant

- **Digital Output:**
 - Supports VESA Standard Super High Resolution Graphic Modes

1.4 DiskOnChip 2000 Flash Disk

Flash Disk DiskOnChip® 2000

- **Chipset:** DM&P Vortex86™ SOC
- **Package:** Single Chip FlashDisk in 32-pin DIP JEDEC
- **Capacity:** 8-512 MByte capacity
- **Data Reliability:** ECC/EDC error correction
- **Memory Window:** 8 Kbyte

Note: Please take note that you will need an up-to-date new version firmware of M-system DiskOnChip for PCA-6042 series product. The reason is to avoid any compatibility issue.

Please follow the steps as shown below when installing the up-to date firmware on your DiskOnChip.

- 1, Prepare a DOS diskette with a DOS config.sys to boot your system.
- 2, Make sure that you turn-off the power of your CPU board.
- 3, Plug your DiskOnChip onto the 32-pin DIP socket provided in your CPU board.
- 4, Be sure to double check the correct orientation of your DiskOnChip with the corresponding 32-pin DIP socket.
- 5, Connect your CPU board with a FDD.
- 6, Turn on the power of your CPU board.
- 7, Run the utility by executing through your Drive A
A:>dformat /win:e000 /s:doc514.exb → press ENTER.
- 8, Restart the power of your CPU board.

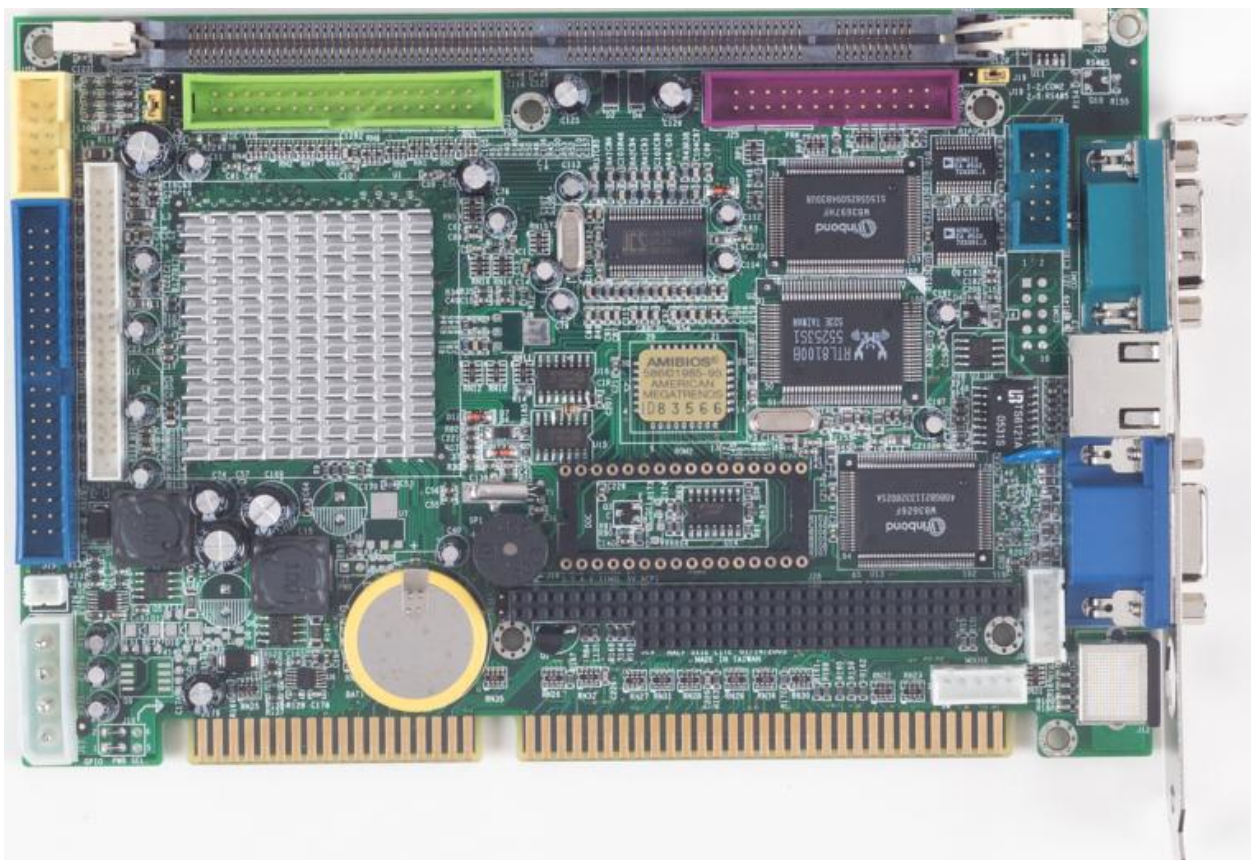
1.5 Network Interface

- **Chipset:** Realtek 8100B single chip
- **Type:** 10/100BASE-T
- **Transfer Mode:** Full duplex, doubles effective bandwidth
- **Buffer:** Built-in 16KB RAM Buffer.
- **Connectors:** 8-pin male header , pitch 2.0mm
- **Monitoring LEDs:** network ready indicator, network activity indicator

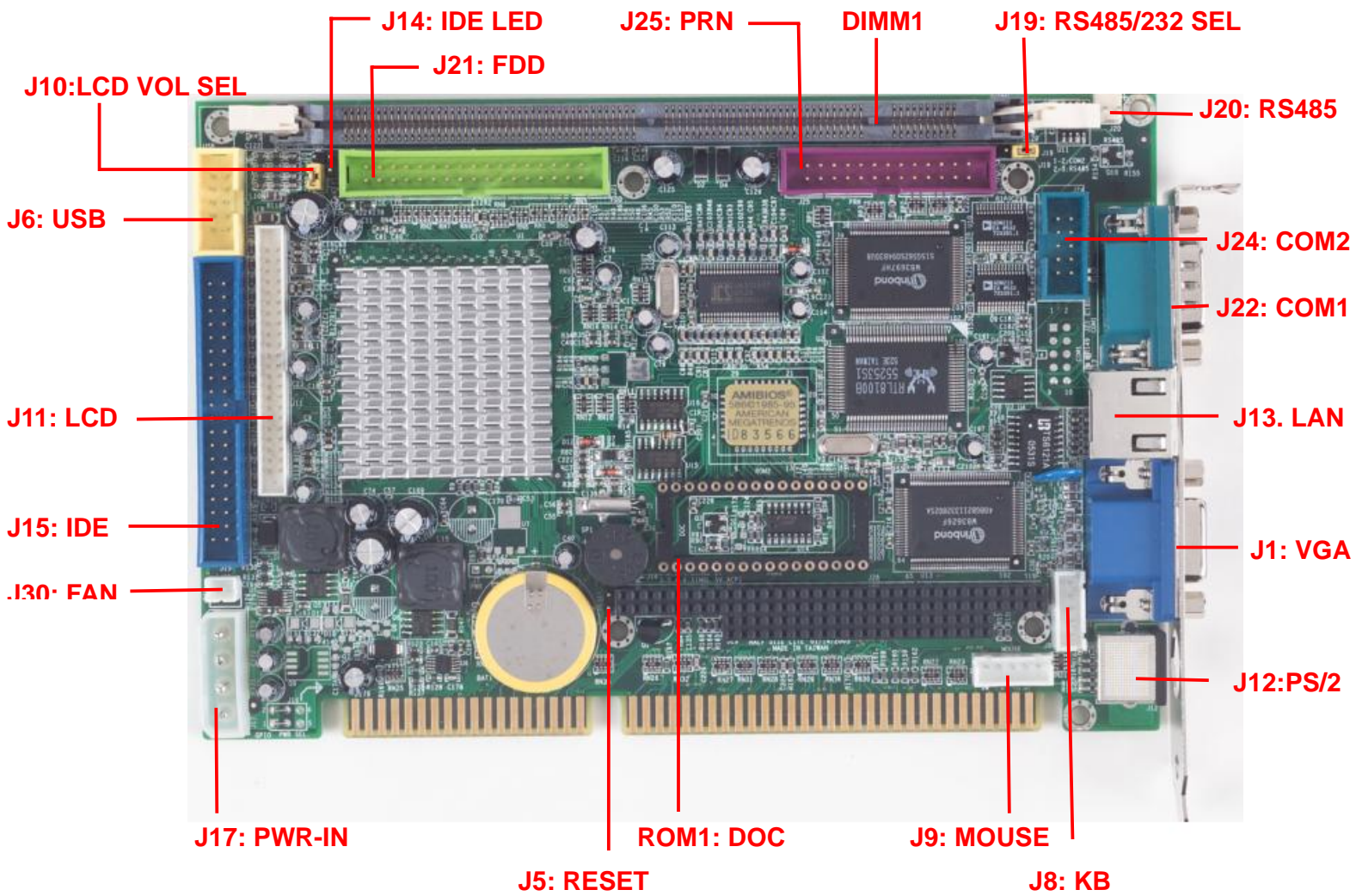
Chapter 2

Installation

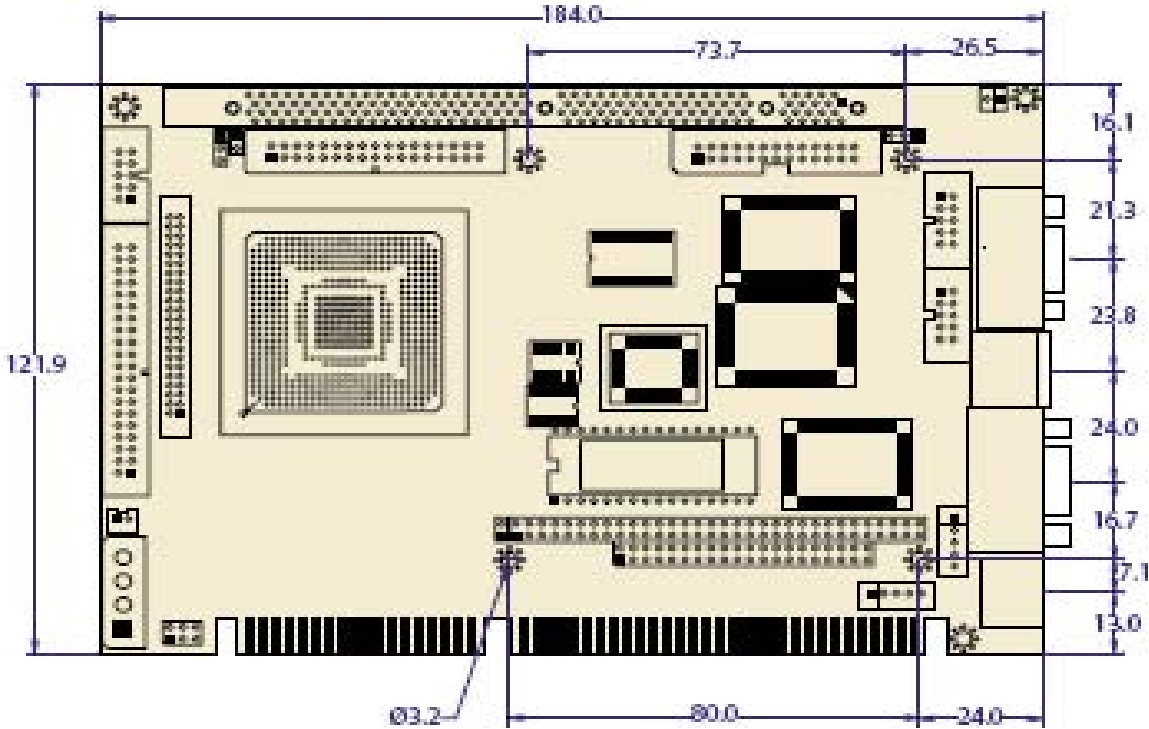
2.1 Board Outline



2.2 Connectors & Jumpers Location



2.3 Board Dimension



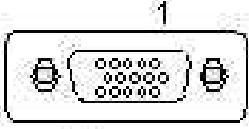
2.4 Connectors & Jumpers Summary

Summary Table


Nbr	Description	Type of Connections	Pin nbrs.
J1:	VGA Connector	D-Sub Connector	15-pin
J5:	RESET	Pin Header	2-pin
J6:	USB	Box Header, 5x2	10-pin
J8:	PS/2 Keyboard	Box Header, 2.0Ø Molex	5-pin
J9:	PS/2 Mouse	Box Header, 2.0Ø Molex	5-pin
J10:	LCD Volts Sel.	Pin Header	3-pin
J11:	LCD Connector	Box Header, 2.0Ø , 22x2	44-pin
J12:	PS/2 Keyboard & Mouse	Mini-Din Connector	6-pin
J13:	10/100Base-T Ethernet LAN	RJ45 Connector	12-pin
J14:	IDE LED	Pin Header	2-pin
J15:	IDE Connector	Box Header, 20x2	40-pin
J17:	Power Connector	Box Header, 5.0Ø Molex	4-pin
J19:	RS232/RS485 Select	Pin Header	3-pin
J20:	RS485	Pin Header, 2.54Ø Molex	2-pin
J21:	FDD Connector	Box Header, 17x2	34-pin
J22:	COM1	D-Sub Connector	9-pin
J24:	COM2	Box Header, 5x2	10-pin
J25:	Printer Connector	Box Header, 13x2	26-pin
J30:	FAN Connector	Pin Header	2-pin
ROM1	DOC Connector (DiskOnChip)	DIP Socket, Grid hole	32-pin

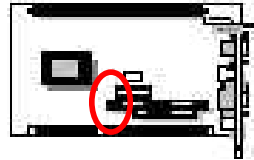
2.5 Pin Assignments & Jumper Settings

J1 :VGA Connector – 15-pin D-Sub Connector (female)

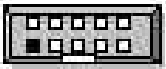
	Pin #	Signal Name	Pin #	Signal Name	Pin #	Signal Name
	1	MR	6	GND	11	NC
	2	MG	7	GND	12	VCC
	3	MB	8	GND	13	HYSYNC
	4	NC	9	NC	14	VSYNC
	5	GND	10	GND	15	VCC

J5: RESET- 2-pin Header

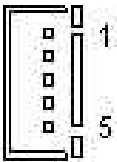
	Pin #	Status
	1-2 Close	RESET



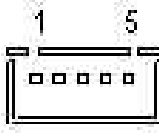
J6: USB Connector - 10-pin Box Header

	Pin #	Signal Name	Pin #	Signal Name
	1	VCC	2	VCC
	3	-DATA1	4	-DATA0
	5	+DATA1	6	+DATA0
	7	GND	8	GND
	9	GND	10	GND


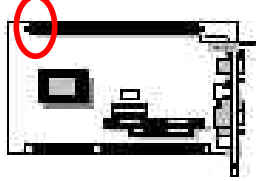
J8 : PS/2 Keyboard - 5-pin Header

	Pin #	Signal Name
	1	KBCLK
	2	KBDAT
	3	NC
	4	GND
	5	+5V (VCC)

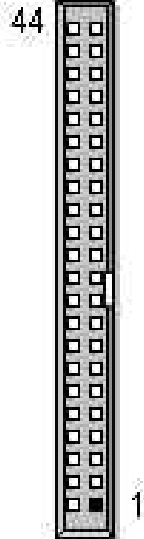
J9 : PS/2 Mouse - 5-pin Header

	Pin #	Signal Name
	1	PMCLK
	2	PMDAT
	3	NC
	4	GND
5	+ 5V (VCC)	

J10: LCD Volts Sel. - 3-pin Header

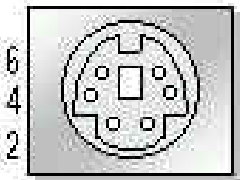
	Pin #	Signal Name	
	1	VCC	
	2	LCDVCC	
3	3.3V		

J11: LCD Connector - 2.0 Ø pitch 44-pin Box Header

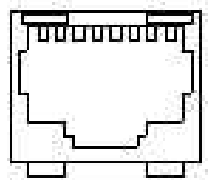
	Pin #	Signal Name	Pin #	Signal Name	SISSED CONN.	DSTN	DIGITAL 18-BIT	RGB 24-BIT
	1	LCDVCC	2	LCDVCC	VAD0	LD0	G2	G4
	3	VAD0	4	VAD1	VAD1	LD1	G3	G5
	5	VAD2	6	VAD3	VAD2	LD2	G4	G6
	7	VAD4	8	VAD5	VAD3	LD3	G5	G7
	9	VAD6	10	VAD7	VAD4	LD4		R0
	11	VAD8	12	VAD9	VAD5	LD5		R1
	13	VAD10	14	VAD11	VAD6	LD6	R0	R2
	15	GND	16	UD4	VAD7	LD7	R1	R3
	17	UD5	18	UD6	VAD8	UD0	R2	R4
	19	UD7	20	GND	VAD9	UD1	R3	R5
	21	VBD0	22	VBD1	VAD10	UD2	R4	R6
	23	VBD2	24	VBD3	VAD11	UD3	R5	R7
	25	VBD4	26	VBD5				
	27	VBD6	28	VBD7	VBD0			B0
	29	VBD8	30	VBD9	VBD1			B1
	31	VBD10	32	VBD11	VBD2		B0	B2
	33	GND	34	GND	VBD3		B1	B3
	35	PLDXCLK	36	VBGCLK	VBD4		B2	B4
	37	VADE	38	VBDE	VBD5		B3	B5
	39	AHSYNC	40	VBHSYNC	VBD6		B4	B6
	41	AVSYNC	42	VBVSYNC	VBD7		B5	B7
	43	DISPOFF	44	VDDEN	VBD8			G0
					VBD9			G1
				VBD10		G0	G2	
				VBD11		G1	G3	

UD4	UD4		
UD5	UD5		
UD6	UD6		
UD7	UD7		
PLDXCLK	SHFCLK		
VADE	MOD/LDE		
VAHSYNC	LP/HYSNC		
VHVSNC	FLM/VYSNC		
DISOFF	ENBT		
VBGCLK		XCLK	XCLK
VBDE		DEN	DEN
VBHSYNC		HSYNC	HSYNC
VBVSYNC		VSNC	VSNC
VDDEN	VDDEN	VDDEN	VDDEN


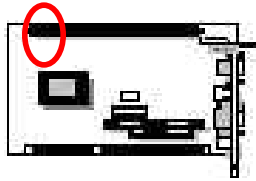
J12 : PS/2 Keyboard & Mouse - 6-pin Mini Din Connector

	Pin #	Signal Name
	1	KBCLK
	2	PMCLK
	3	GND
	4	KBDAT
	5	PMDAT
	6	+ 5V (VCC)

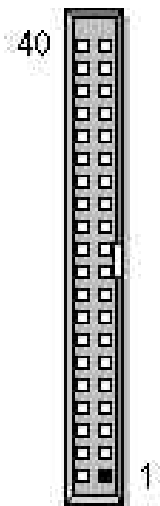
J13 : 10/100Base-T Ethernet LAN – 12-pin RJ45 Connector

	Pin #	Signal Name	Pin #	Signal Name
	1	TD+	2	TD-
	3	R0+	4	NC
	5	NC	6	R0-
	7	NC	8	NC
	9	VCC	10	VCC
	10	PLED0	12	PLED1

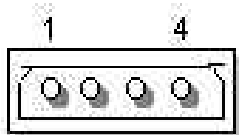
J14: IDE LED - 2-pin Header

	Pin #	Signal Name	
	1	VCC	
	2	DASP	


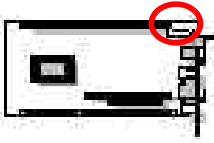
J15: IDE Connector - 40-pin Box Header

	Pin #	Signal Name	Pin #	Signal Name
	1	IDERST-	2	GND
	3	IDED7	4	IDED8
	5	IDED6	6	IDED9
	7	IDED5	8	IDED10
	9	IDED4	10	IDED11
	11	IDED3	12	IDED12
	13	IDED2	14	IDED13
	15	IDED1	16	IDED14
	17	IDED0	18	IDED15
	19	GND	20	NC
	21	IDEREQ	22	GND
	23	IDEIOW-	24	GND
	25	IDEIOR-	26	GND
	27	ICHRDY	28	GND
	29	IDACK-	30	GND
	31	IDEIRQ	32	NC
	33	IDESA1	34	CBLID
	35	IDESA0	36	IDESA2
	37	IDECS-0	38	IDECS-1
39	DASP	40	GND	


J17: Power Connector – 4-pin Header (P4 Molex 5mm)

	Pin #	Signal Name
	1	+5V
	2	GND
	3	GND
	4	+12V

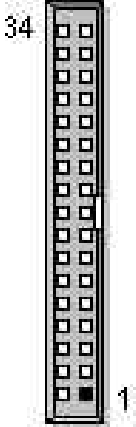
J19: RS232/RS485 Select - 3-pin Header

	Pin #	Signal Name	
	1-2	COM2 / RS232	
	2-3	RS485	

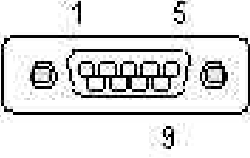
J20: RS485 - 2.54 Ø, 2-pin Molex Header

	Pin #	Signal Name
	1	RS485+
	2	RS485-

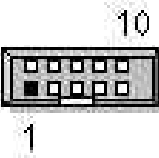
J21 : FDD Connector - 34-pin Box Header (17x2)

	Pin #	Signal Name	Pin #	Signal Name
	1	GND	2	DENSEL
	3	GND	4	NC
	5	GND	6	NC
	7	GND	8	INDEX\
	9	GND	10	MTRO\
	11	GND	12	DS1\
	13	GND	14	DS0\
	15	GND	16	MTR1\
	17	GND	18	DIR\
	19	GND	20	STEP\
	21	GND	22	WD\
	23	GND	24	WG\
	25	GND	26	TRO\
	27	GND	28	WP\
	29	GND	30	RD\
	31	GND	32	HDSEL\
33	GND	34	DSKCHG\	

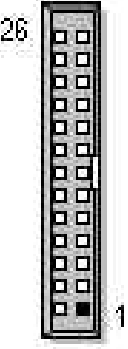
J22 : COM1 – 9-pin D-Sub Connector

	Pin #	Signal Name	Pin #	Signal Name
	1	DCD1	2	RXD1
	3	TXD1	4	DTR1
	5	GND	6	DSR1
	7	RTS1	8	CTS1
	9	RI1	10-11	GGND


J24 : COM2 - 10-pin Box Header

	Pin #	Signal Name	Pin #	Signal Name
	1	DCD2	2	RXD2
	3	TXD2	4	DTR2
	5	GND	6	DSR2
	7	RTS2	8	CTS2
	9	RI2	10	VCC

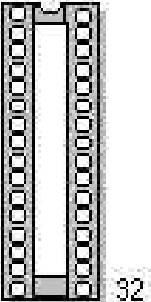
J25 : Printer Connector - 26-pin Box Header

	Pin #	Signal Name	Pin #	Signal Name
	1	STB-	2	PD0
	3	PD1	4	PD2
	5	PD3	6	PD4
	7	PD5	8	PD6
	9	PD7	10	ACK-
	11	BISY	12	PE
	13	SLCT	14	AFD-
	15	ERR-	16	PRINIT-
	17	SLIN-	18	GND
	19	GND	20	GND
	21	GND	22	GND
	23	GND	24	GND
	25	GND	26	NC

J30: FAN - 2.54 Ø, 2-pin Pin Header

	Pin #	Signal Name
	1	GND
	2	+5v

ROM1 : (DiskOnChip) DOC Connector – 32-pin Grid hole DIP Socket

	Pin #	Signal Name	Pin #	Signal Name
	1	NC	2	NC
	3	NC	4	XA12
	5	XA7	6	XA6
	7	XA5	8	XA4
	9	XA3	10	XA2
	11	XA1	12	XA0
	13	XD0	14	XD1
	15	XD2	16	GND
	17	XD3	18	XD4
	19	XD5	20	XD6
	21	XD7	22	ROMCS1
	23	XA1	24	MDRCL
	25	XA11	26	XA9
	27	XA8	28	NC
	29	NC	30	NC
	31	MWTCL	32	VCC

2.6 DiskOnChip Flash Disk

2.6.1 Setup a DiskOnChip ® 2000 Flash Disk

Installation Instructions

1. Make sure the power of PCA-6042 is turned OFF.
2. Plug the DiskOnChip 2000 device into its socket. Verify the mounting orientation of the DiskOnChip 2000 is correct (DiskOnChip 2000 pin 1 must be aligned with pin 1 of the socket).
3. Turn on the power of the system, and you may observe the messages displayed by the DiskOnChip 2000 when its drivers are automatically loaded into system's memory. Start Address is assigned and fixed at "0E0000 HEX".
4. If the DiskOnChip 2000 is the only disk in the system, it will appear as the first disk (drive C: in DOS).
5. If there are more disks besides the DiskOnChip 2000, the DiskOnChip 2000 will appear by default as the last drive.
6. If you want the DiskOnChip 2000 to be bootable: a - copy the operating system files into the DiskOnChip by using the standard DOS command (for example: sys d:) b - The DiskOnChip should be the only disk in the systems or should be configured as the first disk in the system (c:) using the DUPDATE utility

For more information on DiskOnChip2000 technology, visit M-Systems Web site – [http:// www.m-sys.com](http://www.m-sys.com) where you can find Utilities Manual, Data Sheets and Application Notes. In addition, you can find the latest DiskOnChip 2000 S/W Utilities.

2.7 Watchdog Timer

The watchdog timer work flow of Vortex86 is: If the watchdog timer expires the first time, the expired event will set SFTMR0_STS and timer will reload its initial value and count again. If the timer expire the second time, the expired event will set SFTMR1_STS.

Software Watchdog Timer Initial Value: Default Value: FFh

I/O Address	Bit	Access	Description
84Ah	7:0	R/W	Software Watchdog Timer Initial Value Writing to this register will reload the software watchdog timer with the value specified in this register. If the software watchdog timer expires the first time, the expired event will set the SFTMR0_STS and the timer will reload its initial value and count again. If the timer expire the second time, the expired event will set the SFTMR1_STS. The timer value can't be read from this field.

Software Watchdog Timer Control Register: Default Value: 00h

I/O Address	Bit	Access	Description
84Bh	7	R/W	Software Watchdog Timer Counting Enable The software watchdog timer will start to count when this bit is set to one.
	6	RO	Reserved
	5:4	R/W	Software Watchdog Timer Clock Select 00 : 4 ms 01 : 1 second 10 : 1 minute 11 : 1 hour
	3:2	R/W	Software Watchdog Timer Expiration Event 1 Routing Select When SFTMR1_STS is set to one, an SMI#/SFTIRQ/PCIRST# will be generated according to the following combination. 00 : No effect 01 : SMI# 10 : SFTIRQ 11 : PCIRST#

1:0	R/W	Software Watchdog Timer Expiration Event 0 Routing Select When SFTMR0_STS is set to one, an SMI#/SFTIRQ/PCIRST# will be generated according to the following combination. 00 : No effect 01 : SMI# 10 : SFTIRQ 11 : PCIRST#
-----	-----	--

Legacy Event Status Register: Default Value: 00h

I/O Address	Bit	Access	Description
841h	7	R/WC	Software Watch Dog Timer Event 1 Status (SFTMR1_STS) This bit is set when the software watchdog timer expires the second time. This status bit does not have its corresponding enable bit and can survive under PCIRST#.
	6	R/WC	Software Watch Dog Timer Event 0 Status (SFTMR0_STS) This bit is set when the software watchdog timer expires the second time. This status bit does not have its corresponding enable bit and can survive under PCIRST#.

C Example

Those C code for DOS will show you more: ([Download C source code for DOS and execute file](#))

```
#include <conio.h>
#include <stdio.h>
#include <time.h>

void main()
{
    clock_t clk;
    int      nTime = 5;

    /* set time out */
    outp(0x84a, nTime);

    /* set timer clock to 1 second and "Timer Expiration Event 0/1" to reset system.
    */
    outp(0x84b, 0x9c);
```

```

printf("Press any key to stop clearing watchdog timer status...\n");
while(!kbhit())
{
    /* clear "Timer Expiration Event 0/1" bit */
    outp(0x841, 0xc0);
}

getch();

printf("System will be reset after %d seconds.\n", nTime * 4);

clk = clock();
while(!kbhit())
    printf("%2.2f\r", (clock() - clk) / CLK_TCK);
}

```

Assembler Example code

```

mov dx,84ah ; set timeout = 20 second
mov al,5
out dx,al
mov dx,84bh ; set timer clock to 1 second and "Timer Expiration Event 0/1" to
reset system.
mov al,9ch
out dx,al

; clearing watchdog timer status
mov dx,841h
mov al,0c0h
out dx,al

```

Chapter 3

SVGA Setup

3.1 Introduction

The PCA-6042 offers high performance/low cost Vortex™ SoC (System on Chip) solution that integrates a x86 compatible processor, high performance North Bridge, advanced hardware GUI engine and Super-South bridge into a single chipset – this SoC design supports the now PC technology, USB, Legacy Removal, CIR, Memory Stick, Smart Card and Slotless Design for a variety of IA (Information Appliance) applications. It also has a built-in VGA controller.

3.1.1 SoC Chipset

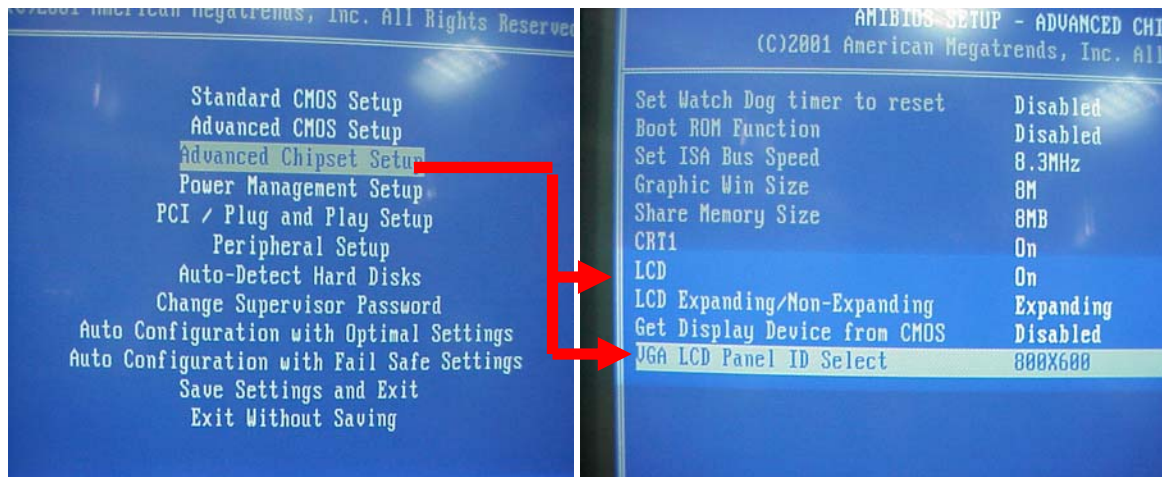
The embedded video uses the integrated Ultra-AGP™ VGA controller for Hardware 2D/video/Graphics Accelerators, this board supports conventional analog CRT monitor or flat panel. It is both AGP 4X / Fully DirectX 8 Compliant. It also provides Monitor / Secondary CRT Monitor output. This video SVGA controller supports conventional analog CRT monitor or flat panel. 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. Multiple frequency (multi-sync) monitors are handled as if they were analog monitors.

3.1.2 Display memory

The VGA controller can drive CRT displays or color panel displays with resolutions up to 1920 x 1440 at 256 colors (True colors). It supports Shared System Memory up to 128 MB.

3.2 Flat Panel BIOS Setting

The VORTEX86-6042 offers the option in the BIOS Setting to ON/OFF the LCD Flat Panel. Before you connect the LCD Flat Panel to CPU Board, please go to BIOS → Advanced Chipset Setup, to turn "ON" the "LCD", and select the corresponding resolution on "VGA LCD Panel ID Select".



Supported Flat Panels:

- PVI 6.4" TFT LCD panel P/N: V16C6448AC
- SHARP 6.4" TFT LCD panel P/N: LQ64D341 (HIROSE DF9BA-31P-1V)
- NEC 6.5" TFT Color LCD panel P/N: NL6448BC20-08 (HIROSE DF9B-31P-1V)

For more Flat Panels information, please contact your regional sales.

3.3 Flat Panel Wiring

Before you connect the LCD Flat Panel with PCA-6042, please make the your LCD Flat Panel is 3.3V or 5V, then place the J10 (J10, see page 13) on the correct position.

For the Wiring, please refer to page 13, J11 , LCD connector. Or email support@emacinc.com if you have any question.

- PVI 6.4" TFT LCD panel P/N: V16C6448AC

TFT-LCD Panel Driving

Pin No.	Symbol	Function	Remark
1	GND	Ground (0V)	
2	CLK	Clock Signal for Sampling Image Digital Data	
3	Hsync	Horizontal Synchronous Signal	Note 5-1
4	Vsync	Vertical Synchronous Signal	Note 5-1
5	GND	Ground (0V)	
6	R0	Red Image Data Signal (LSB)	
7	R1	Red Image Data Signal	
8	R2	Red Image Data Signal	
9	R3	Red Image Data Signal	
10	R4	Red Image Data Signal	
11	R5	Red Image Data Signal (MSB)	
12	GND	Ground (0V)	
13	G0	Green Image Data Signal (LSB)	
14	G1	Green Image Data Signal	
15	G2	Green Image Data Signal	
16	G3	Green Image Data Signal	
17	G4	Green Image Data Signal	
18	G5	Green Image Data Signal (MSB)	
19	GND	Ground (0V)	
20	B0	Blue Image Data Signal (LSB)	
21	B1	Blue Image Data Signal	
22	B2	Blue Image Data Signal	
23	B3	Blue Image Data Signal	
24	B4	Blue Image Data Signal	
25	B5	Blue Image Data Signal (MSB)	
26	GND	Ground (0V)	
27	DENB	Disable	
28	VCC	DC +5.0V Power Supply	
29	VCC	DC +5.0V Power Supply	
30	R/L	Horizontal Image Shift-direction Select Signal	Note 5-2
31	U/D	Vertical Image Shift-direction Select Signal	Note 5-3

Note: The TFT-LCD panel display is compatible with four kinds of timing. They are VGA-480, VGA-400, VGA-350 and freedom mode. The polarization of Hsync and Vsync determine the timings.

	VGA-480	VGA-400	VGA-350	Freedom Mode
Hsync Polarization	Negative	Negative	Positive	Positive
Vsync Polarization	Negative	Positive	Negative	Positive

- SHARP 6.4" TFT LCD panel P/N: LQ64D341 (HIROSE DF9BA-31P-1V)

TFT-LCD panel driving

CNI Used connector: DF9BA-31P-1V (Hirose Electric Co., Ltd.)

1		31	Corresponding connector: DF9 -31S-1V(#)
2		30	DF9A-31S-1V(#)
			DF9B-31S-1V(#)
			DF9M-31S-1V(#)

*CNI pin arrangement from module surface
(Transparent view)

Pin No.	Symbol	Function	Remark
1	GND	—	—
2	CK	Clock signal for sampling each data signal	—
3	Hsync	Horizontal synchronous signal	【Note1】
4	Vsync	Vertical synchronous signal	【Note1】
5	GND	—	—
6	R0	R E D data signal(LSB)	—
7	R1	R E D data signal	—
8	R2	R E D data signal	—
9	R3	R E D data signal	—
10	R4	R E D data signal	—
11	R5	R E D data signal(MSB)	—
12	GND	—	—
13	G0	G R E E N data signal(LSB)	—
14	G1	G R E E N data signal	—
15	G2	G R E E N data signal	—
16	G3	G R E E N data signal	—
17	G4	G R E E N data signal	—
18	G5	G R E E N data signal(MSB)	—
19	GND	—	—
20	B0	B L U E data signal(LSB)	—
21	B1	B L U E data signal	—
22	B2	B L U E data signal	—
23	B3	B L U E data signal	—
24	B4	B L U E data signal	—
25	B5	B L U E data signal(MSB)	—
26	GND	—	—
27	ENAB	Signal to settle the horizontal display position	【Note2】
28	Vcc	+ 3.0V power supply	—
29	Vcc	+ 3.0V power supply	—
30	R/L	Horizontal display mode select signal	【Note3】
31	U/D	Vertical display mode select signal	【Note4】

- NEC 6.5" TFT Color LCD panel P/N: NL6448BC20-08 (HIROSE DF9B-31P-1V)

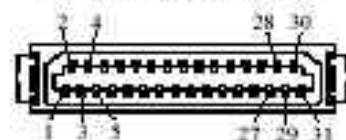
CN31 socket (LCD module side): DF9B-31P-1V (Hirose Electric Co., Ltd.)

Adaptable plug: DF9-31S-1V (Hirose Electric Co., Ltd.)

Pin No.	Symbol	Signal	Remarks
1	GND	Ground	
2	CLK	Dot clock	
3	Hsync	Horizontal synchronous	
4	Vsync	Vertical synchronous	
5	GND	Ground	
6	R0	Red data (LSB)	Least significant bit
7	R1	Red data	
8	R2	Red data	
9	R3	Red data	
10	R4	Red data	
11	R5	Red data (MSB)	Most significant bit
12	GND	Ground	-
13	G0	Green data (LSB)	Least significant bit
14	G1	Green data	
15	G2	Green data	
16	G3	Green data	
17	G4	Green data	
18	G5	Green data (MSB)	Most significant bit
19	GND	Ground	-
20	B0	Blue data (LSB)	Least significant bit
21	B1	Blue data	
22	B2	Blue data	
23	B3	Blue data	
24	B4	Blue data	
25	B5	Blue data (MSB)	Most significant bit
26	GND	Ground	-
27	DE	Select of DE / Fixed mode	DE mode: Data enable signal, Fixed mode: Open
28	VCC	Power supply	
29	VCC	Power supply	
30	NC	Non connection	
31	DPSR	Select of scan direction	Normal scan: Low or Open, Reverse scan: High Note1.

Note1: See "4.8 SCANNING DIRECTIONS".

CN31: Figure of socket



Chapter 4

Network Interface

4.1 Introduction

The Realtek RTL-8100B 10/100Mbps Ethernet controller board supports both 10/100BASE-T and Coax 10Base-2 'BNC' connectors, and allows direct connection to your 10/100Mbps Ethernet based Local Area Network for full interaction with local servers, wide area networks such as the Internet.

I/O and IRQ settings can be done by software with the supplied utility software, or it can be set for Plug and Play compatibility. The controller supports : Full-Duplex Ethernet function to double channel bandwidth, auto media detection.

4.2 Software Support

- On-board EEPROM (93C46) programming
- Setup/Diagnostic program for DOS
- Help utility for easy installation
- RPL boot ROM for Novell Netware, Microsoft NT
- NDIS2 (DOS,OS/2,Lantastic,WFW3.1;K;K)
- NDIS3,NDIS4,NDIS5 for WIN95,98,NT3.51,4.0,5.0,WFW3.11
- Netware 16-bit ODI driver for DOS,OS/2 and 32-bit ODI driver for Netware 3.x,4.x,5.0 Server
- Packet driver for UNIX Client
- SCO Unix driver
- Linux driver
- Board Support Package for Windows CE.NET 4.2 , Windows CE 5.0

All operating systems that support standard NE2000

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, originality to use this product. Vendor will not be liable for any claim made by any other related party. Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.