



VORTEX86-6047-4S

Embedded Vortex86 CPU AIO Board

**With 4S/VGA/LCD/LAN/CF/Audio/2USB/16-bit GPIO
128MB SDRAM Onboard**

User's Manual

(Revision 1.1A)

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Chapter 0

Startup

0.1 Packing List

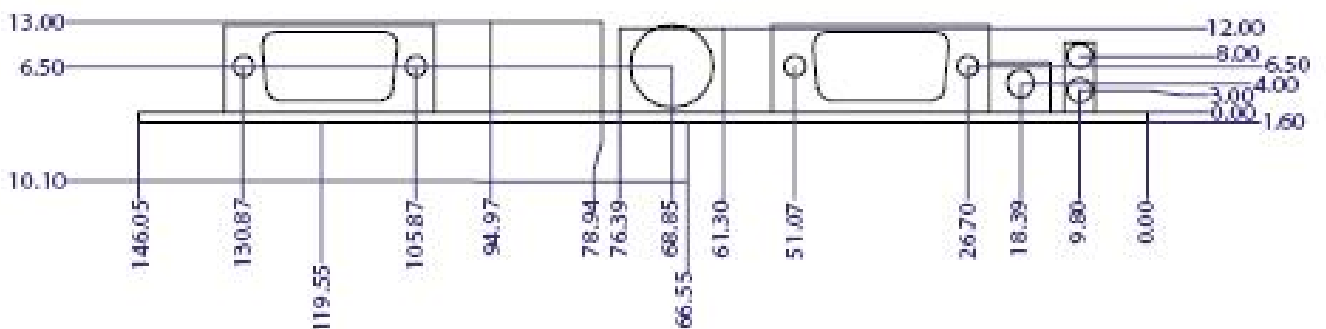
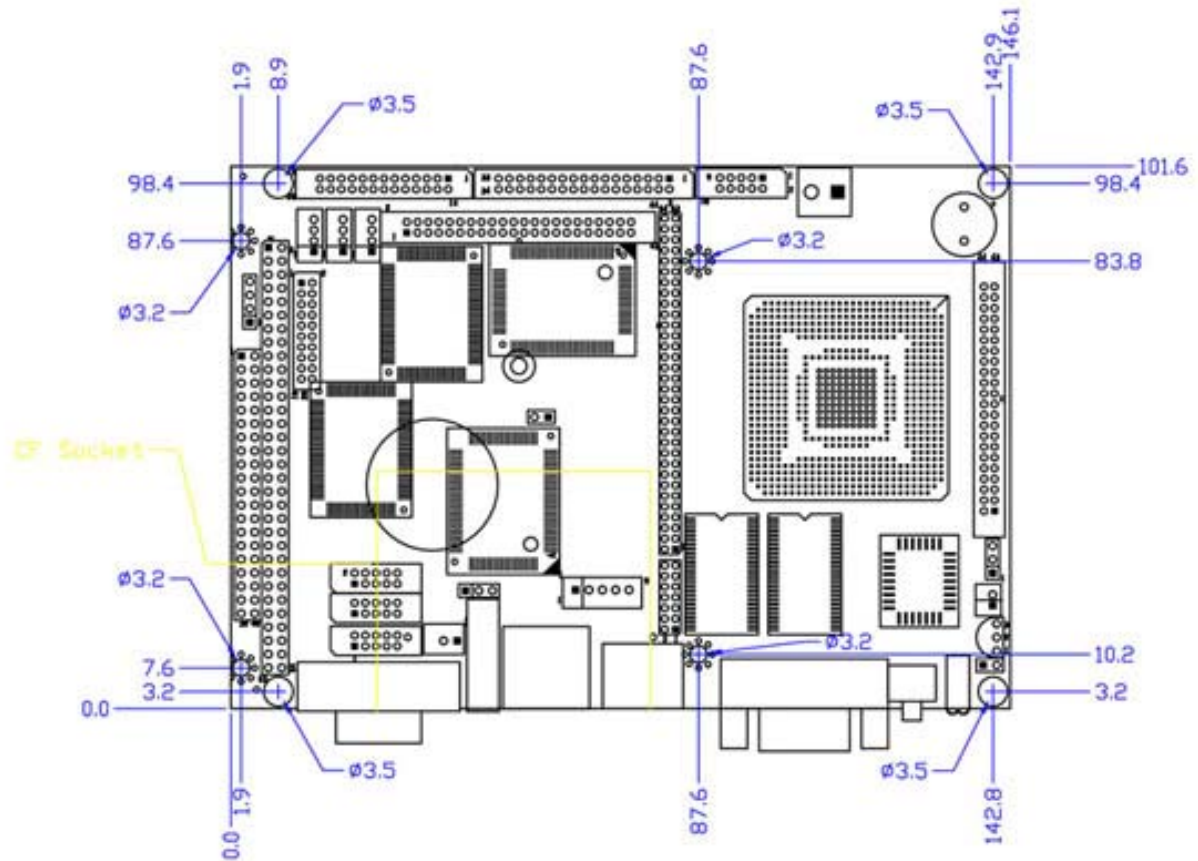
Product Name	Package
VORTEX86-6047-4S	<ul style="list-style-type: none">● Embedded Vortex86 CPU All-in-One Board● Manual & Drivers CD x 1● RS232 cable x 3● PRINTER cable x1● FDD cable x 1● IDE cable x 1 (44pin to 40 pin)● Audio cable x 1● USB cable x 1 (USB port x 2)● Y Cable for Keyboard & PS/2 Mouse x 1● PS/2 Keyboard cable x1

0.2 Specification (VORTEX86-6047-4S)

Features	VORTEX86-6047-4S
Chipset	DM&P(SiS) Vortex86™ System-on-Chip CPU-166MHz (Low Voltage) Real Time Clock with Lithium Battery Backup
BIOS	AMI BIOS
System Memory	128MB SDRAM onboard
Bus Interface	PC/104 standard compliant 32-bit x-PCI interface, compatible with PCI Rev.2.2, PC 98/99
Watchdog Timer	Software programmable from 4ms to 1hour
VGA	AGP Rev.2.0 compliant Shared system memory up to 64MB (Default 8 MB) Support resolution up to 1,280x1,024 true colors VGA and TFT/LVDS Flat Panel interface support
LAN	Realtek 8100B 10/100Mbps Ethernet Controller Half/Full duplex capability
Audio	Fully compliant with AC97 V2.1 Hardware DirectSound accelerator
I /O Interface	<ul style="list-style-type: none"> ● Enhanced IDE port x1 ● RS232 port x 3 ● RS232/485 port x1 (RS485 with Auto Direction) ● Parallel port x1 ● FDD port x1 ● USB port x2 (USB 1.1 version) ● 16 bit GPIO port x1 ● 10/100Mbps Ethernet port x1

Connectors	<ul style="list-style-type: none"> ● 2.0mm Ø 44-pin box header for IDE x1 ● 2.0mm Ø 34-pin box header for FDD x1 ● 2.0mm Ø 26-pin box header for Printer x1 ● 2.0mm Ø 10-pin box header for RS-232 x3 ● 2.0mm Ø 20-pin header for GPIO x1 ● 2.0mm Ø 10-pin box header for USB x1 ● 2.0mm Ø 44-pin box header for LCD connector x1 ● 2.0mm 4-pin wafer for Line-in/Line-out/MIC-in x3 ● 2.54mmØ 3-pin header for RS-485 x1 ● 2.54mm 2-pin header for Reset x1 ● 2.54mm 4-pin header for +12V, -12V, -5V DC-in x1 ● External 15-pin D-Sub female connector for VGA x1 ● External 9-pin D-Sub male connector for RS-232 x1 ● External RJ-45 connector for Ethernet x1 ● External Mini DIN socket for Keyboard/Mouse x1 ● Type I/II Compact Flash slot x1
Flash Disk Support	<ul style="list-style-type: none"> ● 44-pin IDE Flash Disk(EmbedDisk 16MB or above) ● Type I/II CF Card
Power Requirement	Single Voltage +5V @1.06A
Dimension	102mm X 144mm (4.01" x 5.67 inches)
Weight	190g
Operating Temperature	-20°C ~ +70°C

0.3 Board Dimension



Unit: mm

Chapter 1

Introduction

1.1 Features

- **Embedded CPU:** DM&P Vortex86™ System-on-Chip CPU – 166MHz, Realtime clock, and watchdog timer.
- **BIOS:** AML system BIOS
- **DRAM Memory:** Onboard 128MB
- **Bus Interface:** X-PCI Bus & PC/104 Standard Compliant
- **Data Bus:** 64-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:** generates either a RESET, NMI or an IRQ when your application loses control over the system. Optionally the watchdog can trigger a user specified interrupt. The watchdog is configurable from 16m sec. to 512 seconds
- **Real-time Clock:** included in Vortex86 SOC with onboard lithium battery backup for 10 years of data retention. CMOS data backup of BIOS setup and BIOS default.
- **PS/2 Keyboard & Mouse:** Supports PS/2 Keyboard and mouse
- **Serial ports:** Supports high speed RS-232 port x3, high speed RS-232/485 port x1 (jumper selectable). The RS485 interface is Auto Direction.
- **USB ports:** Version 1.1 USB port x 2
- **GPIO port:** General Purpose Input / Out x 16 bit
- **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

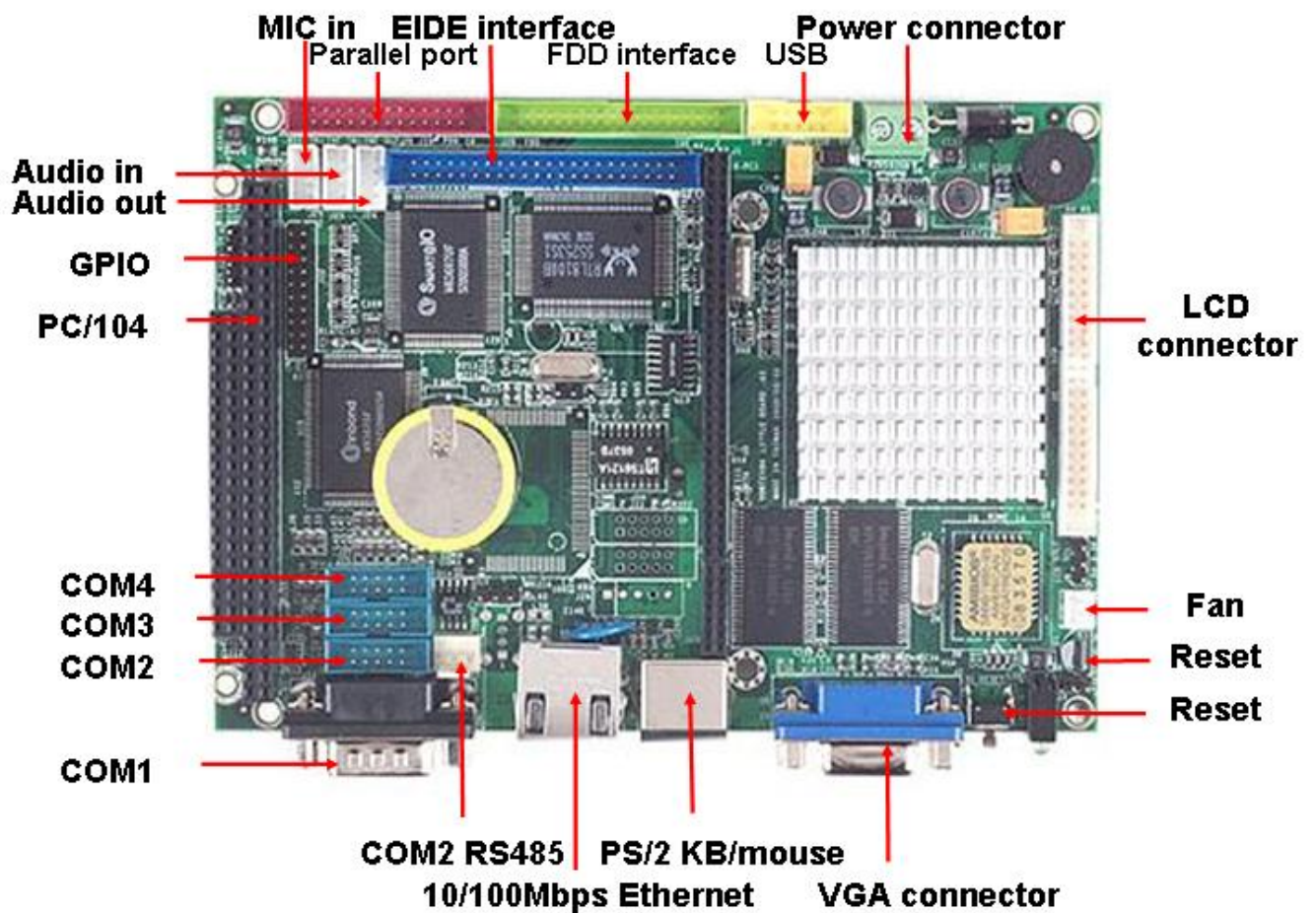
1.2 VGA Interface

- **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

Chapter 2

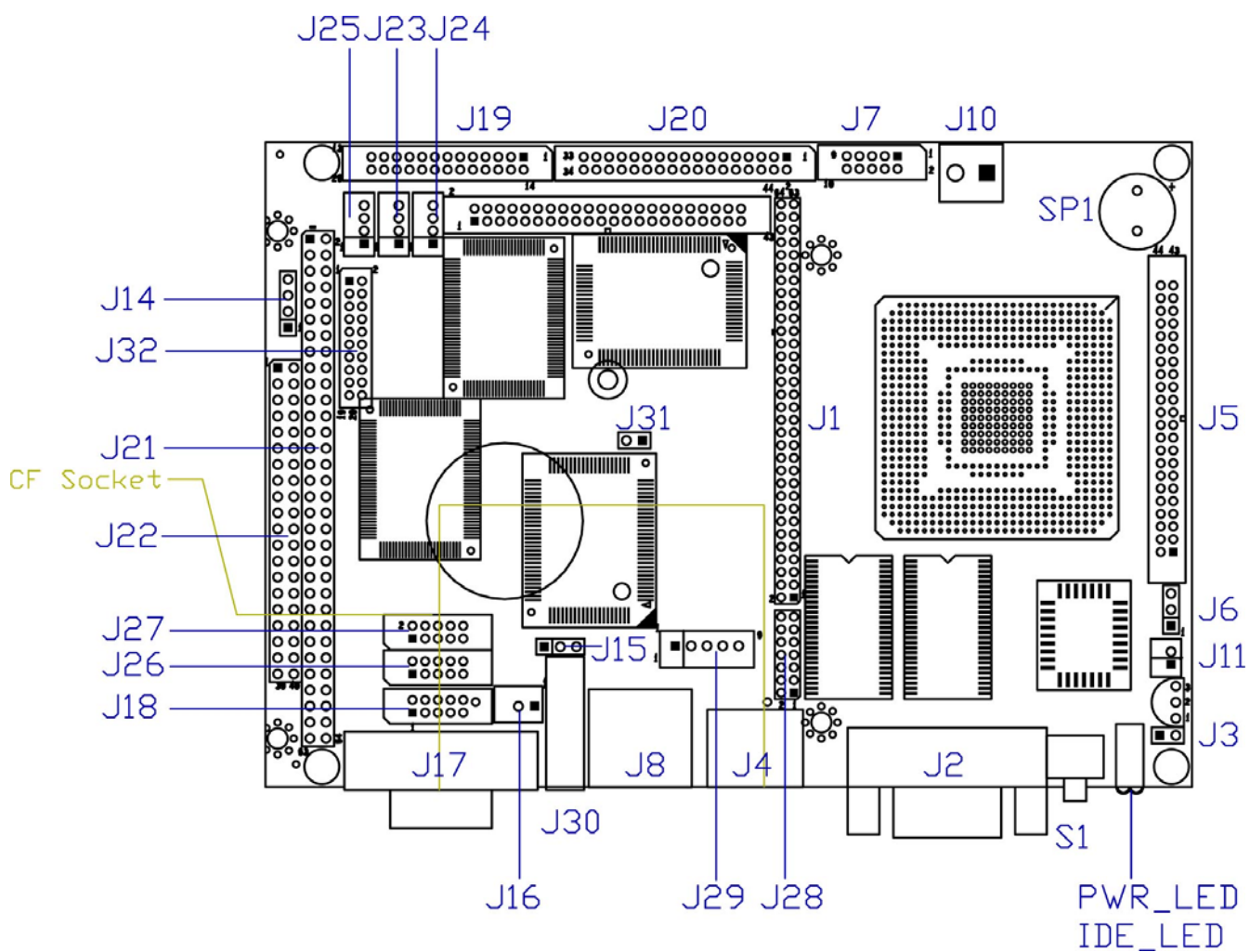
Installation

2.1 Board Outline

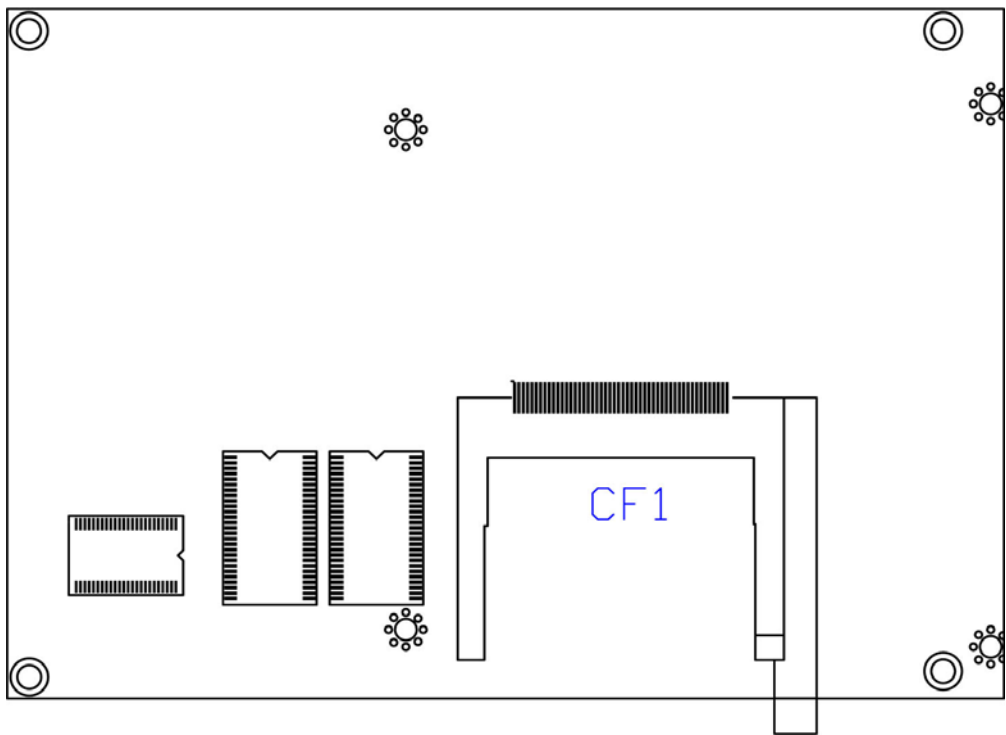


2.2 Connectors & Jumpers Location

Solder Side



Bottom side



2.3 Connectors & Jumpers Summary

Summary Table

Nbr	Description	Type of Connections	Pin nbrs.
J1	X-PCI	Box Header, 2.0Ø , 32x2	64-pin
J2	VGA	D-Sub Female	15-pin
J3	RESET	Pin Header, 2.54Ø, 1x2	2-pin
J4	PS/2 Keyboard / Mouse	Mini-DIN Female	6-pin
J5	LCD Connector	Box Header, 2.0Ø , 22x2	44-pin
J6	LCD Volts Sel.	Pin Header, 2.54Ø , 3x1	3-pin
J7	USB	Box Header, 2.0Ø , 5x2	10-pin
J8	LAN	RJ 45	8-pin
J9	IDE	Box Header, 2.0Ø , 22x2	44-pin
J10	Reserved for FAN	Molex Header, 2.0Ø , 2x1	2-pin
J11	Power Connector	Terminal Block 5.0Ø , 2x1	2-pin
J14	4P Power Source	Pin Header, 2.54Ø , 4x1	4-pin
J15	RS232/RS485 Select (COM 2)	Pin Header, 2.54Ø, 3x1	3-pin
J16	RS485	Molex Header 2.54Ø, 2x1	2-pin
J17	COM1	D-Sub Male	9-pin
J18	COM2	Pin Header, 2.0Ø 5x2	10-pin
J19	PRINT	Pin Header, 2.0Ø , 13x2	26-pin
J20	FDD	Pin Header, 2.0Ø , 17x2	34-pin
J21	PC104 Connector – 64 pin	Box Header, 2.54Ø 32x2	64-pin
J22	PC104 Connector – 40 pin	Box Header, 2.54Ø 20x2	40-pin
J23	LINE IN	Molex Header, 2.0Ø, 4x1	4-pin
J24	LINE OUT	Molex Header, 2.0Ø, 4x1	4-pin
J25	MIC IN	Molex Header, 2.0Ø, 4x1	4-pin
J26	COM3	Pin Header, 2.0Ø 5x2	10-pin
J27	COM4	Pin Header, 2.0Ø 5x2	10-pin
J28	LPC	Box Header, 2.0Ø , 7x2	14-pin
J29	Keyboard	Pin Header, 2.54Ø, 1x5	5-pin
J31	CF Card Master/Slave Select	Pin Header, 2.54Ø, 2x1	2-pin
J32	GPIO	Pin Header, 2.0Ø , 10x2	20-pin
CF1	Compact Flash	Type I/II CF Connector	50-pin
PWR_LED	POWER Active LED		
IDE_LED	IDE Link LED		

SP1	BUZZER		
S1	RESET SWITCH		

2.4 Pin Assignments & Jumper Settings

J1: X-PCI - Box Header - 2.0 Ø 32x2

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	GND
3	AD0	4	AD1
5	AD2	6	AD3
7	AD4	8	AD5
9	AD6	10	AD7
11	AD8	12	AD9
13	AD10	14	AD11
15	AD12	16	AD13
17	AD14	18	AD15
19	VCC	20	VCC
21	AD16	22	AD17
23	AD18	24	AD19
25	AD20	26	AD21
27	AD22	28	AD23
29	AD24	30	AD25
31	AD26	32	AD27
33	AD28	34	AD29
35	AD30	36	AD31
37	VCC3	38	VCC3
39	CBE-0	40	CBE-1
41	CBE-2	42	CBE-3
43	PGNT-0	44	PREQ-0
45	PGNT-1	46	PREQ-1
47	PGNT-2	48	PREQ-2
49	INT-A	50	INT-B
51	INT-C	52	INT-D
53	GND	54	GND
55	FRAME-	56	IRDY-
57	TRDY-	58	STOP-
59	SERR-	60	PAR
61	DEVSEL-	62	PLOCK-
63	PCIRST-	64	PCICLK1

J2: VGA

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

J3: RESET

Pin #	Signal Name	Pin #	Signal Name
1	VCC	2	GND

J4: PS/2 Keyboard / Mouse

Pin #	Signal Name	Pin #	Signal Name
1	KBCLK	2	PMCLK
3	GND	4	KBDAT
5	PMDAT	6	SB5V

J5: LCD Connector (for 18-bit TFT LCD)

Pin #	Signal Name	Pin #	Signal Name
1	LCDVCC	2	LCDVCC
3	G2	4	G3
5	G4	6	G5
7	-----	8	-----
9	R0	10	R1
11	R2	12	R3
13	R4	14	R5
15	GND	16	-----
17	-----	18	-----
19	-----	20	GND
21	-----	22	-----
23	B0	24	B1
25	B2	26	B3
27	B4	28	B5
29	-----	30	-----
31	G0	32	G1
33	GND	34	GND
35	-----	36	XCLK
37	-----	38	DEN
39	-----	40	HSYNC
41	-----	42	VSNC
43	-----	44	VDDEN

J6: LCD Volts Sel.

Pin #	Signal Name	Pin #	Signal Name
1-2	+5V	2-3	+3.3V

J7: USB

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: LAN

Pin #	Signal Name	Pin #	Signal Name
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	NC	8	NC
9	VCC	10	VCC
11	GND	12	GND

J9: IDE

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
41	VCC	42	VCC
43	GND	44	NC

J10: FAN

Pin #	Signal Name	Pin #	Signal Name
1	+5V	2	GND-

J11: Power Connector

Pin #	Signal Name	Pin #	Signal Name
1	+5V	2	GND-

J14: 4P Power Source

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

J15: RS232/RS485 Select (COM2)

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

J16: RS485

Pin #	Signal Name
1	RS485+
2	RS485-

J17: COM 1

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

J18: COM2

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	VCC

J19: PRINT

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	BUSY	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	--	--

J20: FDD

Pin #	Signal Name	Pin #	Signal Name
34	DSKCHG\	33	GDN
32	HDSEL\	31	GDN
30	RD\	29	GDN
28	WP\	27	GDN
26	TR0\	25	GDN
24	WG\	23	GDN
22	WD\	21	GDN
20	STEP\	19	GDN
18	DIR\	17	GDN
16	MTR1\	15	GDN
14	DS0\	13	GDN
12	DS1\	11	GDN
10	MTR0\	9	GDN
8	INDEX\	7	GDN
6	NC	5	GDN
4	NC	3	GDN
2	DENSEL	1	GDN

J21: PC104 Connector – 64pin

Pin #	Signal Name	Pin #	Signal Name
1	IOCHCHK *	2	GND
3	SD7	4	RESETDRV
5	SD6	6	+5V
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	DRQ2
13	SD2	14	-12V
15	SD1	16	ENDXFR *
17	SD0	18	+12V
19	IOCHRDY	20	(KEY)
21	AEN	22	SMEMW *
23	SA19	24	SMEMR *
25	SA18	26	IOW *
27	SA17	28	IOR *
29	SA16	30	DACK3 *
31	SA15	32	DRQ3
33	SA14	34	DACK1 *
35	SA13	36	DRQ1
37	SA12	38	REFRESH *
39	SA11	40	SYSCLK
41	SA10	42	IRQ7
43	SA9	44	IRQ6
45	SA8	46	IRQ5
47	SA7	48	IRQ4
49	SA6	50	IRQ3
51	SA5	52	DACK2 *
53	SA4	54	TC
55	SA3	56	SALE
57	SA2	58	+5V
59	SA1	60	OSC
61	SA0	62	GND
63	GND	64	GND

J22: PC104 Connector – 40pin

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	GND
3	MEMCS16 *	4	SBHE *
5	IOCS16 *	6	LA23
7	IRQ10	8	LA22
9	IRQ11	10	LA21
11	IRQ12	12	LA20
13	IRQ15	14	LA19
15	IRQ14	16	LA18
17	DACK0 *	18	LA17
19	DRQ0	20	MEMR *
21	DACK5 *	22	MEMW *
23	DRQ5	24	SD8
25	DACK6 *	26	SD9
27	DRQ6	28	SD10
29	DACK7 *	30	SD11
31	DRQ7	32	SD12
33	+5V	34	SD13
35	MASTER *	36	SD14
37	GND	38	SD15
39	GND	40	(KEY)

J23: LINE IN

Pin #	Signal Name
1	LINEIN_R
2	GND
3	GND
4	LINEIN_L

J24: LINE OUT

Pin #	Signal Name
1	LOUTR
2	GND
3	GND
4	LOUTL

J25: MIC IN

Pin #	Signal Name
1	VREFOUT
2	GND
3	GND
4	MIC1

J26: COM3

Pin #	Signal Name	Pin #	Signal Name
1	DCD5	2	RXD5
3	TXD5	4	DTR5
5	GND	6	DSR5
7	RTS5	8	CTS5
9	RI5	10	VCC

J27: COM4

Pin #	Signal Name	Pin #	Signal Name
1	DCD6	2	RXD6
3	TXD6	4	DTR6
5	GND	6	DSR6
7	RTS6	8	CTS6
9	RI6	10	VCC

J28: LPC

Pin #	Signal Name	Pin #	Signal Name
1	SIRQ	2	GND
3	VOSCX	4	GND
5	PCIRST	6	GND
7	AC RESET	8	GND
9	SDATI0	10	SDAT0
11	SYNC	12	VCC3
13	SDATI1	14	GND

J29: Keyboard

Pin #	Signal Name
1	KBCLK
2	KBDAT
3	X
4	GND
5	SB5V

J31: CF Card Master/Slave Select

Pin #	Signal Name
CLOSE	Master
OPEN	Slave

J32: GPIO

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	VCC
3	GPIO 0	4	GPIO 8
5	GPIO 1	6	GPIO 9
7	GPIO 2	8	GPIO 10
9	GPIO 3	10	GPIO 11
11	GPIO 4	12	GPIO 12
13	GPIO 5	14	GPIO 13
15	GPIO 6	16	GPIO 14
17	GPIO 7	18	GPIO 15
19	VCC	20	GND

2.5 IRQ Mapping

IRQ#	Description
IRQ0	System Timer
IRQ1	Keyboard Controller
IRQ2	Cascade for IRQ8 – 15
IRQ3	Serial Port 2
IRQ4	Serial Port 1
IRQ5	Unassigned
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port 1
IRQ8	Real Time Clock
IRQ9	USB
IRQ9	Ethernet 10/100M LAN
IRQ10	Serial Port 3
IRQ11	Serial Port 4
IRQ12	PS/2 Mouse
IRQ13	Math Coprocessor
IRQ14	Hard Disk Controller
IRQ15	Unassigned

2.6 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

```

2.7 GPIO (General Purpose Input / Output)

The Vx86-6047LV-6S equipped with a 16 bit General Purpose Input / Output port which is provided by the onboard W83697UF multi I/O -chip. The 16-bit GPIO offer the system integrators to control the I/O devices with an easy way.

Below is the sample program for the W86697UF GPIO.

```
#include <stdio.h>
#include <conio.h>
#include <dos.h>
inline void w697uf_write_reg(unsigned char idx, unsigned char data)
{
    outp(0x2e,idx);
    outp(0x2f,data);
}
inline unsigned char w697uf_read_reg(unsigned char idx)
{
    outp(0x2e,idx);
    return inp(0x2f);
}
// unlock configuration register
inline void w697uf_unlock_config_reg()
{
    outp(0x2e, 0x87);
    outp(0x2e, 0x87);
    w697uf_write_reg(0x2a, 0x00);
    w697uf_write_reg(0x07, 0x09);
    w697uf_write_reg(0x30, 0x03);
}

int main()
{
    printf("DM&P Winbond W83679UF GPIO TEST PROGRAM...\n");
    // open configure..
    w697uf_unlock_config_reg();
    char byte1=0x01;
    w697uf_write_reg(0xf3, 0xff); // set gp 8-15 as input
    w697uf_write_reg(0xf0, 0x00); // set gp 0-7 as output
    w697uf_write_reg(0xf1, 0x00);
    int i;
    delay(100);
    //
    for(i=0;i<8;i++)
    {
        w697uf_write_reg(0xf1, byte1);
        if(w697uf_read_reg(0xf4) != byte1)
        {
            printf("write GP %d -> %02x , Read GP %d -> %02x ,error!\n",i, byte1, i+8,
w697uf_read_reg(0xf4));
            return 1;
        }
    }
}
```



```

    }
    byte1 <<= 1;
}
w697uf_write_reg(0xf0, 0xff); // set gp 0-7 as input
w697uf_write_reg(0xf3, 0x00); // set gp 8-15 as output

for(i=0;i<8;i++)
{
    w697uf_write_reg(0xf4, byte1);
    if(w697uf_read_reg(0xf1) != byte1)
    {
        printf("write GP %d -> %02x, Read GP %d -> %02x ,error!\n",i+8, byte1, i,
w697uf_read_reg(0xf1));
        return 1;
    }
    byte1 <<= 1;
}
printf("Test OK!!\n");
return 0;
}

```

Chapter 3

SVGA Setup

3.1 Introduction

The VORTEX86-6047-4S 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. It also has a built-in VGA controller.

3.1.1 SoC Chipset

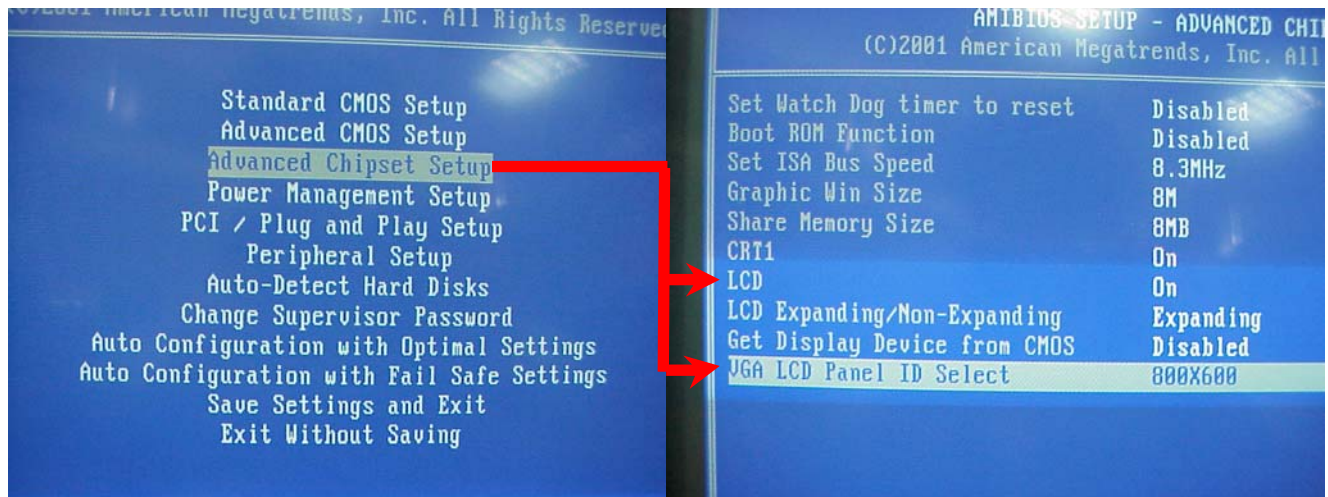
The embedded video uses the integrated Ultra-AGP™ VGA controller for Hardware 2D/video/Graphics Accelerators, this board supports conventional analog CRT monitor or flat panel. It is both AGP 4X / Fully DirectX 8 Compliant. It also provides Monitor / Secondary CRT Monitor output. This video SVGA controller 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 64 MB.

3.2 Flat Panel BIOS Setting

The VORTEX86-6047-4S 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".



3.3 Flat Panel Wiring

Before you connect the LCD Flat Panel with VX86-6047-4S, please make sure that the LCD Flat Panel use 3.3V or 5V, then place the [J6 \(see page 14\)](#) on the correct position.

For the Wiring, please refer to page 14([J5: LCD connector](#)).Or for more LCD lighting and integration service, please contact our regional sales or mail to info@icop.com.tw if you have any question.

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.

- **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

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, WFW3.11;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

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.