



Vortex86-6072

PC/104 Embedded Vortex86™ CPU Module

64MB/2S/2USB/CRT/LCD/GPIO

User's Manual

(Revision 1.1)

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Chapter 0

Startup

0.1 Packing List

Product Name	Function	Package
Vortex86-6072	PC/104 Embedded Vortex86™ CPU Module	<ul style="list-style-type: none"> ● Vortex86-6072 PC/104 Embedded Vortex86™ CPU Module ● Manual & Drivers CD x 1 ● FDD cable x 1 ● HDD cable x 1 ● VGA cable x 1 ● USB cable x 1 ● RS232 cable x 2 ● Printer cable x 1 ● PS/2 cable for Keyboard and Mouse x 2 ● GPIO cable x 1

0.2 Option Accessory

Product Name	Function	Package
ICOP-0094	IDE Exchange Kit	<ul style="list-style-type: none"> ● IDE 44 pin (2.0mm Pitch) to IDE 40 pin (2.54mm Pitch), Board size: 70 x 50 mm)

0.3 Specification

Features	Vortex86-6072
SoC	DM&P(SiS) <i>Vortex86™</i> System-on-Chip CPU-133MHz Real Time Clock with Lithium Battery Backup
Bus Interface	PC/104 Standard Compliant
Memory	Onboard 64MB SDRAM (optional 128MB)
BIOS	AMI BIOS
Multi I/O	<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 (Ver 1.1) ● 12-bit GPIO port x1
Video Display	<ul style="list-style-type: none"> ● AGP Rev.2.0 Compliant ● Shared system memory area up to 16MB. ● Resolution up to 1,920x 1,440 true colors ● CRT/LCD display
Connectors	<ul style="list-style-type: none"> ● 2.0mm 44-pin box header for IDE ● 2.0mm 10-pin box header for RS-232 x2 ● 2 pin header for RS-485 ● 2.0mm 26-pin box header for Printer ● 2.0mm 34-pin box header for FDD ● 2.0mm 10-pin box header for USB ● 2.0mm 10-pin box header for VGA ● 2.0mm 20-pin header for GPIO ● 2.0mm 44-pin box header for LCD connector ● 5-pin box header for AT-KeyBoard connector ● 5-pin header for PS/2 Mouse
Watchdog Timer	<ul style="list-style-type: none"> ● Software Watchdog Timer ● 4μs to 1hour
Power Requirement	Single Voltage +5V @750mA
Board Weight	112g
Board Size	90mm X 96mm
Operating Temperature	-20°C ~ +70°C

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Chapter 1

Introduction

1.1 Features

- PC/104 Embedded *Vortex86™* CPU Module (90 x 96 mm)
- DM&P *Vortex86™* System-On-Chip
- CRT and Flat Panel Display interface
- Onboard 64MB SDRAM (optional 128MB)
- Enhanced IDE devices and FDD interface
- One Bi-directional Parallel Port
- RS-232/485 interface
- Watchdog timer
- Onboard Keyboard & Mouse connector
- Single voltage +5V power connector
- Operating temperature from $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
- Board Support Package for Windows CE
- Accept custom modification

1.2 Specifications

- Embedded CPU: DM&P *Vortex86™* System-on-Chip CPU – 133MHz, Realtime clock, and watchdog timer.
- BIOS: Y2K compliant AMI system BIOS
- System Memory: Onboard 64MB SDRAM (optional 128MB)
- Bus Interface: PC/104 ISA Bus Interface
- 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.
- Real-time Clock: included in *Vortex86™* SOC with onboard lithium battery backup. 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
- Power Requirements: single voltage +5 V @ 750mA
- Board Dimensions: 90 (L) x 96 (W) mm.
- Board Weight: 112 g
- Extended Operating Temperature: -20°C ~+70 °C

1.3 VGA & LCD Interface

- Chipset: DM&P *Vortex86™* SOC
- Memory: Shared system memory up to 16MB
- System Bus: 32-bit PCI bus
- Panel Data Bus: 24-bit
- Display: CRT and LCD Flat Panel
- Compliance:
 - AGP 2.0 / 4X Compliant / Fully DirectX 8 Compliant
 - Cooperates with "Video Bridge" to support Digital LCD/CRT Monitor
- Digital Output:
 - Supports VESA Standard Super High Resolution Graphic Modes

- Supported Flat Panels:

- 18-Bit TFT LCD

- PVI 6.4" LCD panel P/N: V16C6448AC
 - SHARP 6.4" LCD panel P/N: LQ64D341
 - NEC 6.4" TFT LCD panel P/N: NL6448BC20-08
 - LG-PHILIPS 6.4" LCD Panel P/N: LB064V01
 - Toshiba 8.4" LCD Panel P/N: LTM08C351
 - NEC 10.4" TFT LCD panel P/N: NL6448AC33-29
 - NEC 10.4" TFT LCD panel P/N: NL8060BC31-01
 - LG-PHILIPS 10.4" LCD Panel P/N: LP104V2
 - SHARP 12.1" LCD panel P/N: LQ121S1DG11

- LVDS LCD (to support LVDS LCD, you must have ICOP-0096)

- AU 8.4" LVDS Color LCD panel P/N: B084SN01
 - AU 10.4" LVDS Color LCD panel P/N: B104SN01
 - AU 13.3" LVDS Color LCD panel P/N: UB133X01

- DSTN LCD

- Nan Ya 7.4" DSTN Color LCD panel P/N: LCBLDT163

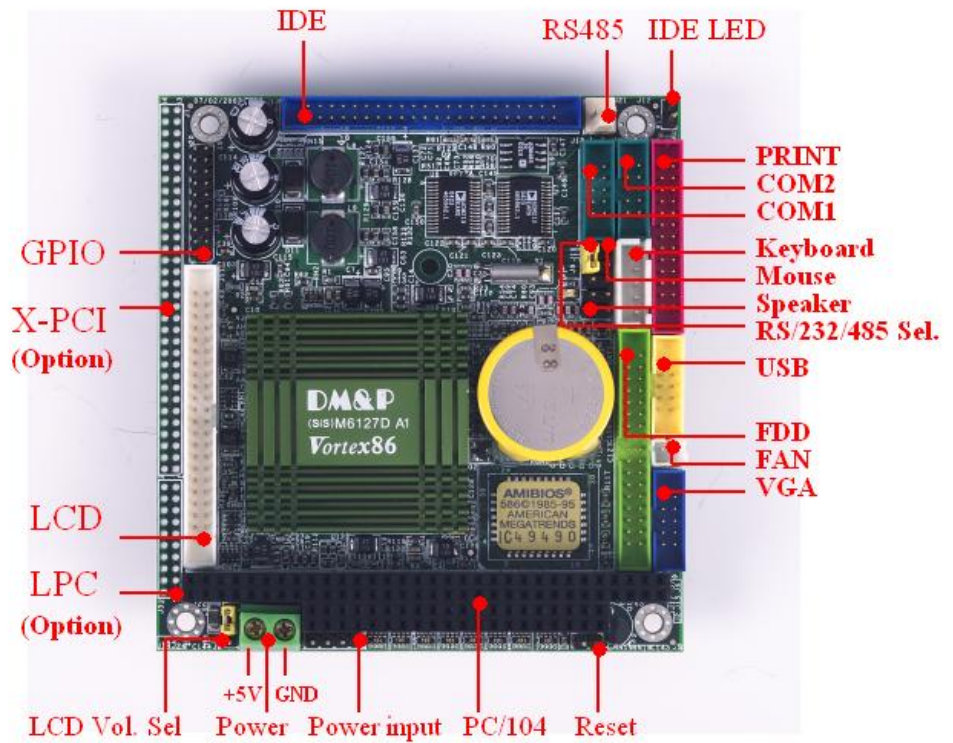
Note: if your LCD is not on above list, please contact info@icop.com.tw to check if ICOP can provide the BIOS for your LCD.

Chapter 2

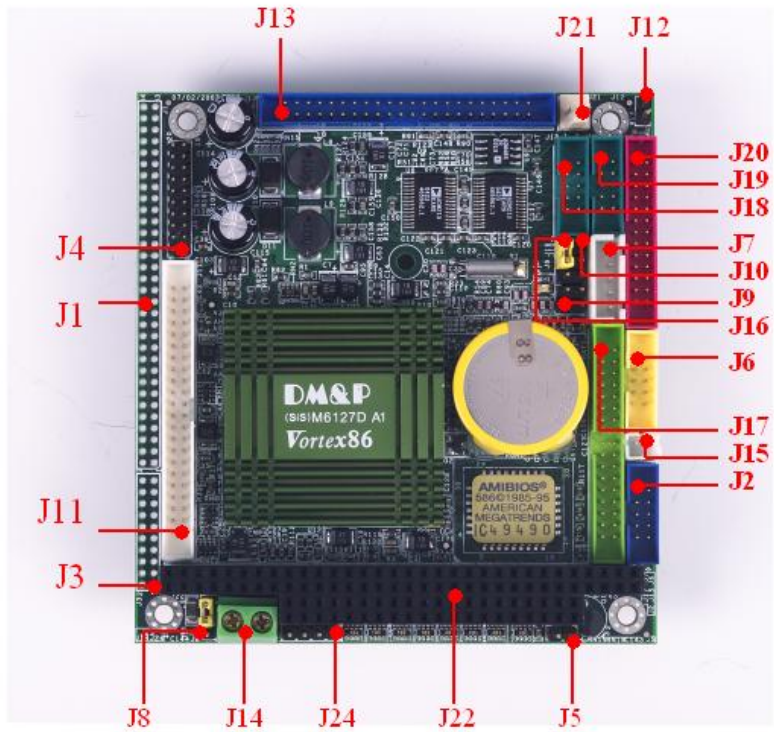
Installation

2.1 Board Outline

2.1.1 By Function



2.1.1 By Location



2.2 Connectors & Jumpers Summary

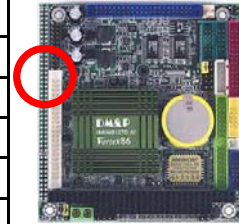
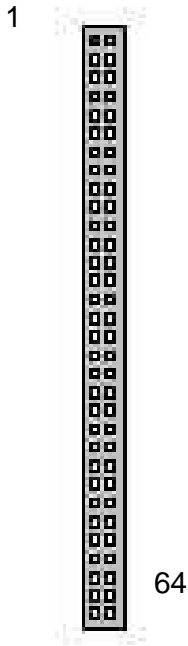
SUMMARY

J1:	X-PCI Connection (Option)	Box Header
J2:	VGA Connection	2.0 ØBox Header
J3:	LPC Connection (Option)	Box Header
J4:	GPIO Connection	2.0 ØPin Header
J5:	RESET	Pin Header
J6:	USB Connection	2.0 ØBox Header
J7:	PS/2 Keyboard Connection	2.0 ØMolex Header
J8:	LCD Volts Selection	Pin Header
J9:	Speaker	Pin Header
J10:	PS/2 Mouse connector	2.0 ØPin Header
J11:	LCD Connection	2.0 ØBox Header
J12:	IDE LED	Pin Header
J13:	IDE Connection	2.0 ØBox Header
J14:	Power Connector	Box Header
J15:	CPU Fan connector	Molex Box Header
J16:	RS232/485 Selection for COM2	Pin Header
J17:	FDD Connection	2.0 ØBox Header
J18:	COM1 Connection	2.0 ØBox Header
J19:	COM2 Connection	2.0 ØBox Header
J20:	Printer Connection	2.0 ØBox Header
J21:	RS485 Connector	2.0 ØPin Header
J22,J23:	PC104 Connector	Box Header
J24:	Power input	Pin Header

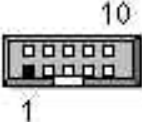

2.3 Pin Assignments & Jumper Settings

J1 : X-PCI Connector – 64-pin Box Header

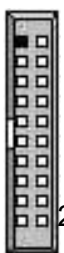

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	GND
3	AD0	4	AD1
5	AD2	6	AD3
7	AD4	8	AD5
9	AD6	10	AD7
11	AD8	12	AD9
13	AD10	14	AD11
15	AD12	16	AD13
17	AD14	18	AD15
19	VCC	20	VCC
21	AD16	22	AD17
23	AD18	24	AD19
25	AD20	26	AD21
27	AD22	28	AD23
29	AD24	30	AD25
31	AD26	32	AD27
33	AD28	34	AD29
35	AD30	36	AD31
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 Connector - 2.0 Ø 10-pin Box Header

	Pin #	Signal Name	Pin #	Signal Name	
	1	ROUT	2	GND	
	3	GOUT	4	GND	
	5	BOUT	6	GND	
	7	HSYNC	8	GND	
	9	VSYNC	10	GND	



J3 : LPC Connector – 20-Pin Box Header

	Pin #	Signal Name	Pin #	Signal Name	
	1	GND	2	VCC	
	3	LAD0	4	LAD1	
	5	LAD2	6	LAD3	
	7	SIRQ	8	LDRQ-	
	9	VOSCX	10	LFRAME-	
	11	PCIRST-	12	PCICKL	
	13	AC RESET-	14	BIT CLK	
	15	SDAT10	16	SDATO	
	17	SYNC	18	VCC3	
	19	SDAT11	20	GND	


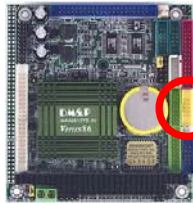
J4 : GPIO Connector – 20-Pin Pin Header

	Pin #	Signal Name	Pin #	Signal Name	
	1	GND	2	VCC	
	3	GPIO0	4	GPIO8	
	5	GPIO1	6	GPIO9	
	7	GPIO2	8	GPIO10	
	9	GPIO3	10	GPIO11	
	11	GPIO4	12	NC	
	13	GPIO5	14	NC	
	15	GPIO6	16	NC	
	17	GPIO7	18	NC	
	19	VCC	20	GND	

J5 : RESET - 2-pin Header

	Pin #	Signal Name	
	1	PWROK	
	2	GND	



J6 : USB Connector - 2.0 Ø pitch 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	


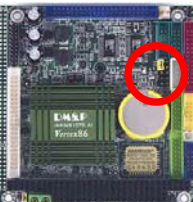
J7 : PS/2 Keyboard Connection - 5-pin Molex Header

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

J9 : Speaker - 2-pin Header

	Pin #	Signal Name	
	1	SPKR	
	2	VCC	

J10 : PS/2 Mouse Connection- 5-pin Header


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

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

Pin #	Signal Name	Pin #	Signal Name	SISSED	DSTN	DIGITAL	RGB
				CONN.		18-BIT	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	VAHSYNC	40	VBHSYNC	VBD6		B4	B6
41	VAVSYNC	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		
				VHSYNC	FLM/VYSNC		
				DISOFF	ENBT		
				VBGCLK		XCLK	XCLK
				VBDE		DEN	DEN
				VBHSYNC		HSYNC	HSYNC
				VBVSYNC		VSNC	VSNC
				VDDEN	VDDEN	VDDEN	VDDEN



J5: LCD Volts Selection - 3-pin Header

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

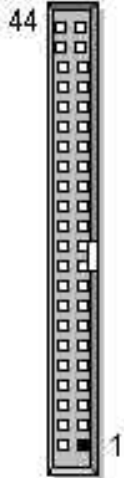



UD4	UD4		
UD5	UD5		
UD6	UD6		
UD7	UD7		
PLDXCLK	SHFCLK		
VADE	MOD/LDE		
VAHSYNC	LP/HYSNC		
VHSYNC	FLM/VYSNC		
DISOFF	ENBT		
VBGCLK		XCLK	XCLK
VBDE		DEN	DEN
VBHSYNC		HSYNC	HSYNC
VBVSYNC		VSNC	VSNC
VDDEN	VDDEN	VDDEN	VDDEN

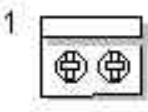
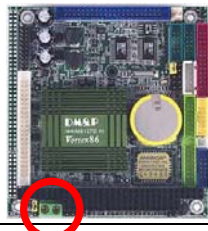
J12 : IDE LED - 2-pin Header

	Pin #	Signal Name	
	1	VCC	
	2	DASP	



J13 : IDE Connector - 2.0 Ø pitch 44-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	
	41	VCC	42	VCC	
	43	GND	44	NC	



J14 : Power Connector - 2-pin Header

	Pin #	Signal Name	
	1	SB5V	
	2	GND	

J15 : CPU FAN - 2-pin Molex Header

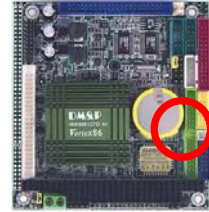
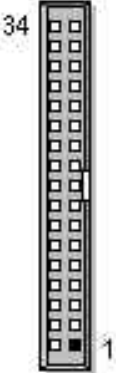
	Pin #	Signal Name	
	1	VCC	
	2	GND	

J16 : RS232/RS485 Select - 3-pin Header

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

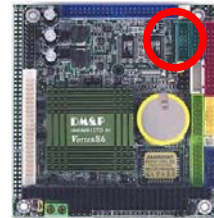
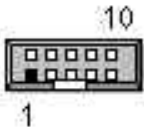
J17 : FDD Connector - 2.0 Ø 34-pin Box Header (17x2)

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	TR0\
27	GND	28	WP\
29	GND	30	RD\
31	GND	32	HDSEL\
33	GND	34	DSKCHG\

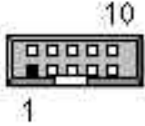



J18 : COM1 Connection (RS-232 Connector) - 2.0 Ø 10-pin Box Header

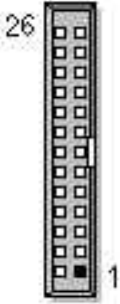

Pin #	Signal Name	Pin #	Signal Name
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	VCC





J19 : COM2 Connection (RS-232 Connector) - 2.0 Ø 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	

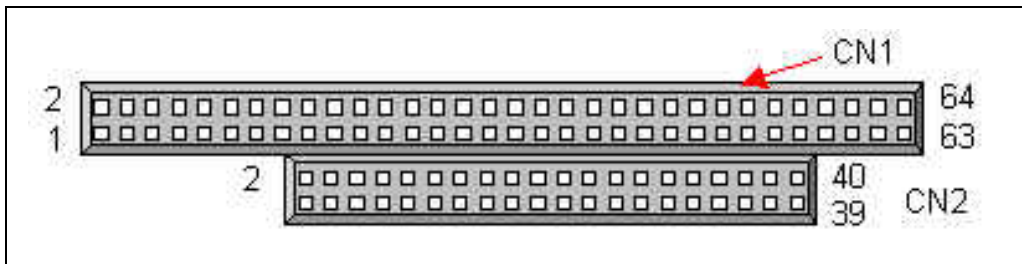
J20 : Printer Connector - 2.0 Ø 26-pin Box Header

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

J21 : RS485 Connection- 2.54 Ø 2-pin Molex Header

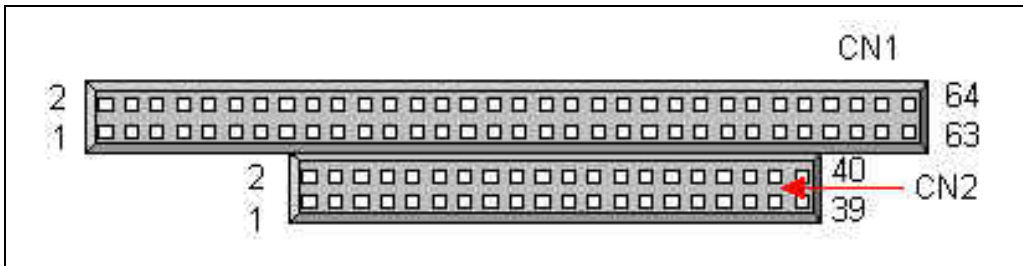
	Pin #	Signal Name	
	1	RS485+	
	2	RS485-	

J22 : PC/104 Connector - 64-pin Header Connector (CN1)



1	IOCHCHK *	2	GND
3	SD7	4	RSTDRV
5	SD6	6	VCC
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	DRQ2
13	SD2	14	-12V
15	SD1	16	OWS
17	SD0	18	+12V
19	IOCHRDY	20	GND
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	BALE
57	SA2	58	VCC
59	SA1	60	OSC
61	SA0	62	GND
63	GND	64	GND

J23 : PC/104 Connector - 40pin Header Connector (CN2)



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	VCC	34	SD13
35	MASTER *	36	SD14
37	GND	38	SD15
39	GND	40	NC

J24 : Power input - 2.0 Ø 4-pin Box Header Connector

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

2.4 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("%2.2fr", (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 Vortex86-6072 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 Industrial Applications covering automation, data acquisition, internet communication, and other information exchange devices. 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 16 MB.

3.2 Flat Panel BIOS Wiring

The Vortex86-6072 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 Information Exchange applications. It also has a built-in VGA controller. Shown on next page are the -

● Supported Flat Panels:

18-Bit TFT LCD

- PVI 6.4" LCD panel P/N: V16C6448AC
- SHARP 6.4" LCD panel P/N: LQ64D341
- NEC 6.4" TFT LCD panel P/N: NL6448BC20-08
- LG-PHILIPS 6.4" LCD Panel P/N: LB064V01
- Toshiba 8.4" LCD Panel P/N: LTM08C351
- NEC 10.4" TFT LCD panel P/N: NL6448AC33-29
- NEC 10.4" TFT LCD panel P/N: NL8060BC31-01
- LG-PHILIPS 10.4" LCD Panel P/N: LP104V2
- SHARP 12.1" LCD panel P/N: LQ121S1DG11

LVDS LCD (to support LVDS LCD, you must have ICOP-0096)

- AU 8.4" LVDS Color LCD panel P/N: B084SN01
- AU 10.4" LVDS Color LCD panel P/N: B104SN01
- AU 13.3" LVDS Color LCD panel P/N: UB133X01

DSTN LCD

- Nan Ya 7.4" DSTN Color LCD panel P/N: LCBLDT163

Note 1: if your LCD is not on above list, please contact info@icop.com.tw to check if ICOP can provide the BIOS for your LCD.

Note 2: Before you use the LCD Panel on Vortex86-6072, please go to BIOS → Advance Chipset Setup, to adjust "LCD" become "ON" and choice the suitable resolution on "VGA LCD Panel ID Select".

Vortex86 44pin LCD interface wiring table

Pin Number	Vortex Symbol	TFT LCD			DSTN LCD
		12 Bit	18 Bit	24 Bit	16 Bit
1	LCDVDD	VDD	VDD	VDD	VDD
2	LCDVDD	VDD	VDD	VDD	VDD
3	VAD0	G0	G2	G4	LD0
4	VAD1	G1	G3	G5	LD1
5	VAD2	G2	G4	G6	LD2
6	VAD3	G3	G5	G7	LD3
7	VAD4	—	—	R0	LD4
8	VAD5	—	—	R1	LD5
9	VAD6	—	R0	R2	LD6
10	VAD7	—	R1	R3	LD7
11	VAD8	R0	R2	R4	UD0
12	VAD9	R1	R3	R5	UD1
13	VAD10	R2	R4	R6	UD2
14	VAD11	R3	R5	R7	UD3
16	UD4	—	—	—	UD4
17	UD5	—	—	—	UD5
18	UD6	—	—	—	UD6
19	UD7	—	—	—	UD7
21	VBD0	—	—	B0	—
22	VBD1	—	—	B1	—
23	VBD2	—	B0	B2	—
24	VBD3	—	B1	B3	—
25	VBD4	B0	B2	B4	—
26	VBD5	B1	B3	B5	—
27	VBD6	B2	B4	B6	—
28	VBD7	B3	B5	B7	—
29	VBD8	—	—	G0	—
30	VBD9	—	—	G1	—
31	VBD10	—	G0	G2	—
32	VBD11	—	G1	G3	—
35	PLDXCLK	—	—	—	CL2
37	VADE	—	—	—	M
39	VAHSYNC	—	—	—	CL1
41	VHVSYNC	—	—	—	FLM
43	DISPOFF	—	—	—	/DISPOFF
36	VBGCLK	XCLK	XCLK	XCLK	—
38	VBDE	DEN	DEN	DEN	—
40	VBHSYNC	HSYNC	HSYNC	HSYNC	—
42	VBVSYNC	VSYNC	VSYNC	VSYNC	—
44	VDDEN	VDDEN	VDDEN	VDDEN	—
15	GND	VSS	VSS	VSS	VSS
20	GND	VSS	VSS	VSS	VSS
33	GND	VSS	VSS	VSS	VSS
34	GND	VSS	VSS	VSS	VSS

Jumper : +5.0v:1-2 Close 2-3 Open; +3.3v:1-2 Open 2-3 Close
 ICOP-6070: J6 ICOP-6071: J5 ICOP-6042: J10 ICOP-6047: J6

ICOP-6072:J5

- 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.