VORTEX86-6076L2

Embedded Vortex86 CPU AIO Board

with 3USB/VGA/2LAN/128MB DRAM Onboard

Quick Reference Manual

(Revision 1.1A)

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T a b l e   o f   C o n t e n t s

C h a p t e r   0

Startup

0.1   Packing List

Product Name	Function	Package
VORTEX86-6076L2	Embedded Vortex86™ (SiS) All-in-One SBC	🔴 Embedded Vortex86 CPU All-in-One Board x1 🔴 Manual & Drivers CD x 1 🔴 PRINT cable x1 🔴 HDD 44P cable x 1

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0.2 Specification (VORTEX86-6076L2)

Features	VORTEX86-6076L2
Chipset	DM&P(SiS) Vortex86™ System-on-Chip CPU–200MHz Real Time Clock with Lithium Battery Backup Watchdog Timer: 4 ms to 1hour
BIOS	AMI BIOS
RAM	128MB SDRAM onboard
Bus Interface	Specific X-PCI bus interface, compatible with PCI Rev.2.2
I/O	● Enhanced IDE interface ● Parallel port x1 ● 10/100Mbps Ethernet port x2 ● USB port x3 (Ver1.1)
Connectors	● 2.0mm ∅ 64-pin socket for 32-bit x-PCI interface ● 2.0mm ∅ 44-pin box header for IDEx1 ● 2.0mm ∅ 26-pin box header for Printer ● 2.54mm ∅ 2-pin header for Reset x1 ● 2.54mm 5-pin box header for USB x1 ● External 15-pin D-sub female connector for VGA x1 ● External RJ-45 connector for Ethernet x2 ● External USB connector x2 ● External 6-pin Mini-Din connector for Keyboard x1 ● External 6-pin Mini DIN connector for Mouse x1
Display	● 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 STN /DSTN/TFT Flat Panel interface support
LAN	● Realtek 8100B 10/100Mbps Ethernet Controller ● Half/full-duplex capacity
Power Requirement	Single Voltage +5V @1.28A
Dimension	133mm X 111mm (5.24 x 4.37 inches)
Weight	150g
Operating Temperature	-20°C ~ +70°C

0.3   Ordering information

VORTEX86-6076L2	Vortex86 ATX CPU Module
Power-15W-3pin-EU/US	Mini Din 3pin 15W Adapter
POWER-20W-3PIN-PSE	Mini Din 3pin 20W Adapter for Japan Only

Chapter 1

Introduction

1.1   Features

- Embedded CPU AIO Board (133 x111 mm or 5.24 x 4.37 inches)
- DM&P Vortex86™ System-On-Chip
- CRT Display interface
- Onboard RAM 128MB
- Enhanced IDE interface x1
- External Bi-directional Parallel Port x1
- USB x3, version 1.1
- Watchdog timer
- Two External Mini-Din 6-pin connector for Keyboard and Mouse
- External RJ-45 connector for Ethernet x2
- Expansion Slot – Specific X-PCI bus interface
- Single voltage +5 V power connector
- Operating temperature from –20°C ～ +70°C
- Board Support Package for Windows CE.NET

1.2 Specifications

- **Embedded CPU:** DM&P Vortex86™ System-on-Chip CPU – 200MHz, Realtime clock, and watchdog timer.
- **BIOS:** Y2K compliant AMI 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 16 msec. 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
- **USB ports:** Version 1.1 USB port x3
- **Bi-directional Parallel Port:** supports SPP, EPP and ECP mode. BIOS enabled/disabled
- **Environmental and Power**
- **Power Requirements:** single voltage +5 V @ 1.28A
- **Board Dimensions:** 133 (L) x 111 (W) mm or 5.24 (L) x 4.37 (W) inches
- **Board Weight :** 150 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:** 32-bit PCI bus
- **Panel Data Bus:** 24-bit
- **Display:** CRT
- **Compliance**: - AGP 2.0 / 4X Compliant / Fully DirectX 8 Compliant

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1.4 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:** RJ-45
- **Monitoring LEDs:** Network ready indicator, network activity indicator

Chapter 2

Installation

2.1   Board Outline

Power ON/OFF IDE LED

COM2 RS232   Reset   PWR LED

USB2

COM1 RS232

EIDE interface

X-PCI

KB connector

Power connector
PS/2 KB/mouse

Parallel port

Audio in

USB1   VGA connector   Audio out

10/100Mps Ethernet   MIC in
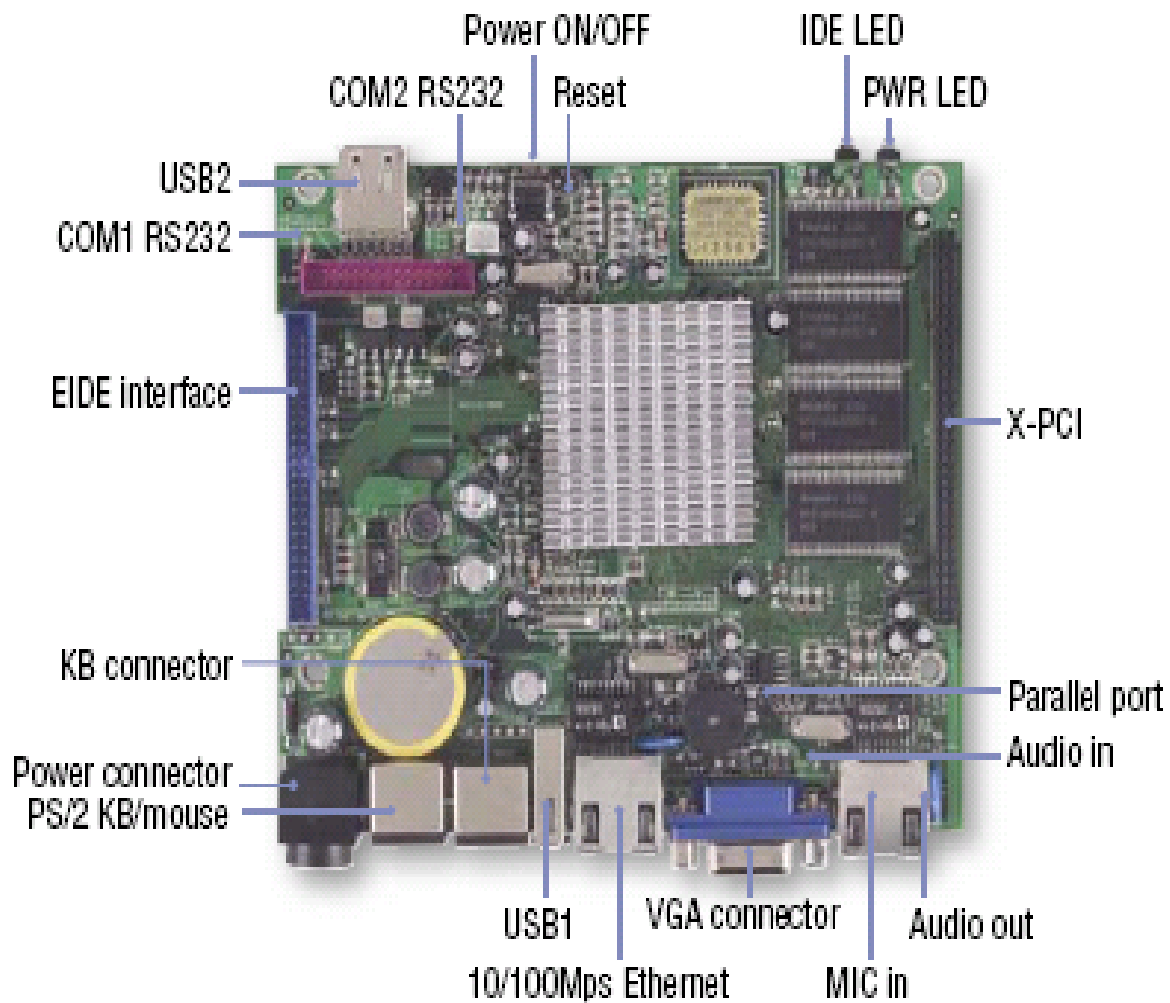
2.2 Board Dimension
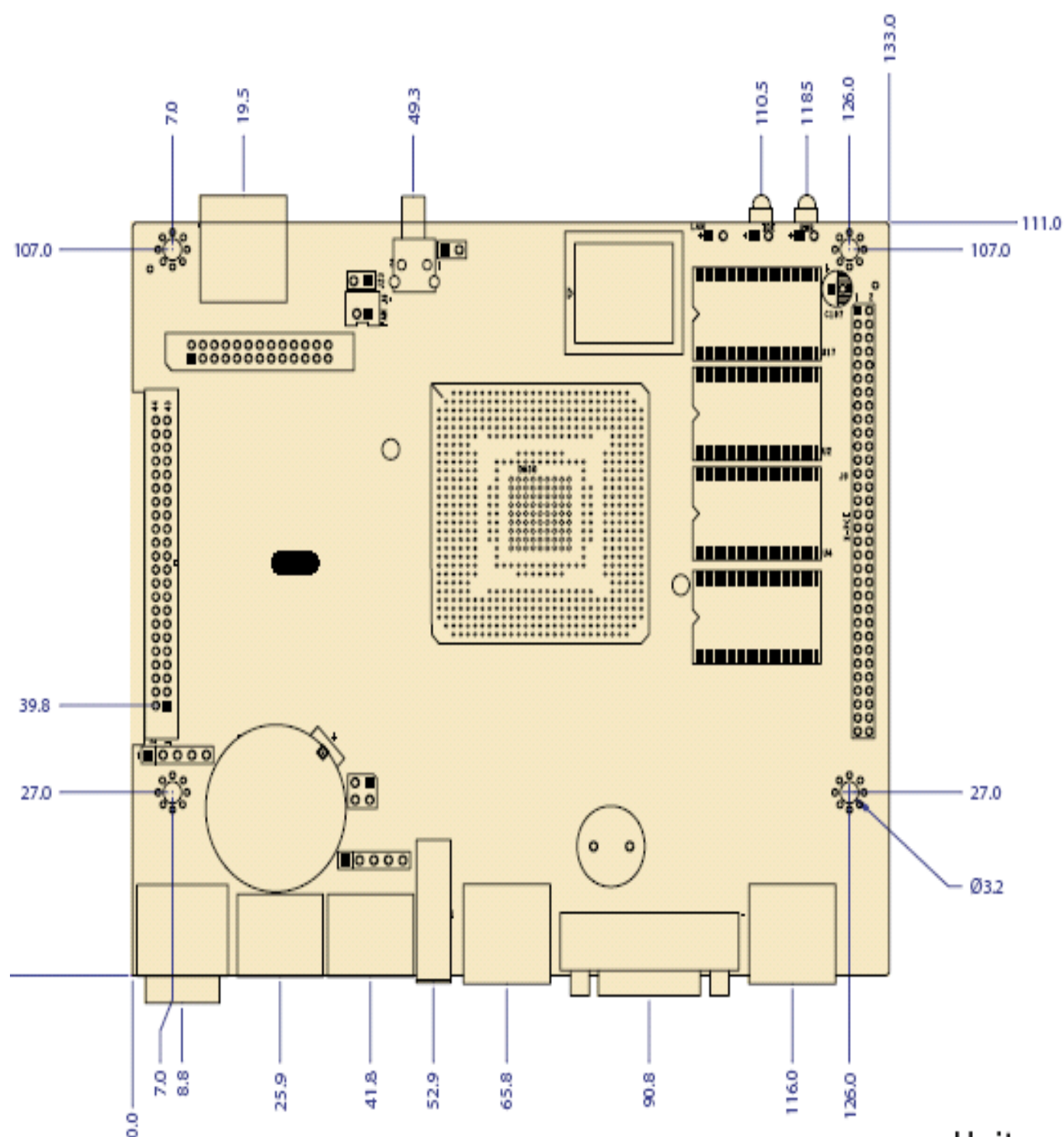
Unit: mm

2.3 IRQ Mapping

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

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 inital 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 VORTEX86-6076L2 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.

C h a p t e r 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

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.