EBC-1000 Series

NS GeodeGX1 Embedded Industrial SBC

User's Guide

Recycled Paper

Manual Rev. 1.00 : November. 02, 2001

Part NO: 50-13025-100

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Trademarks

NuPRO is a registered trademark of ADLINK Technology Inc.,

Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Getting service from ADLINK

- Customer Satisfaction is always the most important thing for ADLINK Tech Inc. If you need any help or service, please contact us and get it.

ADLINK Technology Inc.			
Web Site	http://www.adlink.com.tw http://www.adlinktechnology.com		
Sales & Service	service@adlink.com.tw		
Technical Support	NuDAQ + USBDAQ	nudaq@adlink.com.tw	
	NuDAM	nudam@adlink.com.tw	
	NuIPC	nuipc@adlink.com.tw	
	NuPRO	nupro@adlink.com.tw	
	Software	sw@adlink.com.tw	
TEL	+886-2-82265877	FAX	+886-2-82265717
Address	9F, No. 166, Jian Yi Road, Chungho City, Taipei, 235 Taiwan, R.O.C.		

- Please inform or FAX us of your detailed information for a prompt, satisfactory and constant service.

Detailed Company Information			
Company/Organization			
Contact Person			
E-mail Address			
Address			
Country			
TEL		FAX	
Web Site			

Questions	
Product Model	
Environment to Use	OS: _____ Computer Brand: _____ M/B: CPU: Chipset: BIOS: Video Card: Network Interface Card: Other:
Challenge Description	
Suggestions to ADLINK	

Table of Contents

How to Use This Guide

This manual is designed to help you to use the EBC-1000 series.

Chapter 1, **"Introduction"** gives an overview of the product features and specifications.

Chapter 2, **"Installation"** describes how to install the SBC. The PCB layout, jumper setting and connector pin assignments are shown. Also including the Watchdog timer programming guide.

Chapter 3, **"NS Geode GX1 VGA and Audio Driver "** describes how to install the VGA drivers of the NS GeodeGX1 chipset.

Chapter 4, **"Realtek 8139C LAN driver installation"** describes how to install the Realtek RTL8139C LAN driver.

EBC-1000 Series Function List

Model	**EBC-1000LVA**	**EBC-1000LV**
Processor	NS GeodeGX1	NS GeodeGX1
Chipset	CS5530A	CS5530A
BIOS	Award	Award
Max. SDRAM	256MB un-buffered	256MB un-buffered
Memory Sockets	1 x SO-DIMM	1 x SO-DIMM
VGA	Integrated in Chipset	Integrated in Chipset
TV Out	Video/S-Video	None
Ethernet (10/100Mbps)	Realtek RTL8139C	Realtek RTL8139C
Multi I/O Chip	Winbond 83977F-A	Winbond 83977F-A
Enhanced IDE	Yes	Yes
2S/1P	Yes	Yes
USB	Yes	Yes
IrDA	Yes	Yes
Audio	Yes	None
H/W Monitoring	Winbond W83781D	

1

Introduction

This manual is designed to give you information on the EBC-1000 embedded board. The information inside this user's manual can be applied to EBC-1000 series if without specified.

The topics covered in this chapter are as follows:

- Checklist
- Description
- Features
- Specifications
- Intelligence
- Layout of Key Components
- Mechanical Drawing

1.1 Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The EBC-1000 Industrial Computer Main Board
- This User's Manual
- 1 IDE Ribbon Cable (44 pin)
- 1 Floppy Ribbon Connector
- 1 Serial Port Ribbon Cable and 1 Parallel Port Cable
- 1 PS/2 Y cable for mouse and keyboard
- 1 CD Containing hardware configuration file, VGA Driver, Realtek RTL8139 LAN Driver and Hardware Monitor utility

1.2 Description

The EBC-1000 is a NS (National Semiconductor) GeodeGX1 based Industrial Computer main board with the CS5530A chipset and is fully designed for harsh industrial environment. It built-in GeodeGX1-233 / 300MHz processors. This board accommodates up to 256MB SDRAM configuration.

The EBC-1000 comes with Winbond's W83977F-A Super I/O chip. The hardware monitoring device (Winbond W83781D) monitors system and CPU temperature, system voltages.

1.3 Features

- NS GeodeGX1 233 / 300MHz processors on board
- NS CS5530A chipset (built-in VGA controller)
- Up to 256MB SDRAM system memory
- IDE support up to Ultra/DMA33
- One RS-232 and one RS-232/422/485 interface
- High speed bi-directional SPP/ECP/EPP parallel port
- Programmable watchdog timer
- Hardware Monitoring
- 10/100 Base-T Ethernet interface (Realtek RTL8139)

1.4 Specifications

- **Processor: NS GeodeGX1 233 / 300MHz on board**
- **Secondary Cache: built in CPU**
- **Chipset: NS GeodeGX1 + CS5530A**
- **Memory Sockets:**
  - One 144-pin SO-DIMM sockets
  - Max. 256MB SDRAM
  - Memory type: PC-100 un-buffered SDRAM
- **Integrated Graphics Controller:**
  - DDC2B compliant
  - Up to 1280x1024 in 8-bit color at 85Hz refresh
- **BIOS: Award BIOS, support PnP**
- **PCI Compliance: Fully compliant to PCI rev. 2.1 standards**
- **CRT:**
  - On-board VGA Controller Built-in 2D Accelerator
  - Video memory sharing from main memory
  - Memory size is controlled by device driver from 1 MB up to 4 MB
- **LCD:**
  - On-board VGA Controller support 18-bit TFT LCD Panel
  - Resolution up to 1024 x 768@18bpp
- **TV-Out : (For EBC-1000LVA)**
  - Chipset : CHRONTEL 7006
  - Supports NTSC, NTSC-EIA (Japan), and PAL (B, D, G, H, I, M and N) TV formats
  - Auto-detection of TV presence
  - Complete Windows and DOS driver software

- **Audio : (For EBC-1000LVA)**
  - Chipset : Built-in CS5530A
  - Meets AC97 stereo specification
  - Audio Interface support Line-in (Stereo), Line-out (Stereo), MIC-in (Mono)
- **PCI Bus Ethernet Interface:**
  - Realtek RTL8139 chipset
  - PCI local bus Ethernet controller
  - 10/100Mbps operation in a single port PCI bus master architecture
  - IEEE 802.3 10base-T and 100base-TX compatible physical longer support
  - IEEE802.3u auto-negotiation support for automatic speed selection
  - IEEE 802.3X (100base-TX Flow control support)
- **Enhanced IDE:**

  Bus Master IDE controller, one EIDE interfaces for up to two devices, support PIO Mode 3/4 or Ultra DMA/33 IDE devices, including Hard Disk Drive, ATAPI CD-ROM, LS120, and ZIP drives.
- **Super I/O Chipset:** Winbond W83977F-A
- **Parallel Port:**
  - One high-speed parallel port, SPP/EPP/ECP mode
  - ESD protection to 4KV
  - Downstream device protection to 30V
- **Serial Port:**
  - One 16550 UART compatible ports with RS-232 interface
  - One 16550 UART compatible ports with RS-232/422/485
  - ESD protection to 2KV
- **FDD Interface: Two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB)**
- **USB Interface:**

  Two USB connectors, compliant with USB Specification Rev. 1.0, Individual over-current protection

- **Watchdog Timer:**

  Program I/O port 3F0H and 3F1H to configure watchdog timer

  Time-out timing select 0~7635 seconds/minutes

- **CompactFlash:**

  One CompactFlash Type socket for IDE interface, support CompactFlash flash disk and bootable.

- **Keyboard and Mouse Connectors:**

  Combed PS/2 type mini-DIN connectors, and supports a 5-pin internal keyboard connector

- **Power supply: +5V DC (For main system operation)**

- **Environmental:**

  - Storage Temperature: -20°C to 80°C
  - Operation Temperature: 0°C to 55°C
  - Humidity: 5% to 95%

- **Power Requirement:**

Configurations	+5V
GX1 300 MHz / 128MB	2A

Note: The above values are the maximum power requirement for SBC with CPU and RAM only, the CPU is running under 100% loading. The power for all the other peripheral devices such as keyboard, mouse, add-on cards, HDD, or CD ROM is not included.

- **Dimension:**

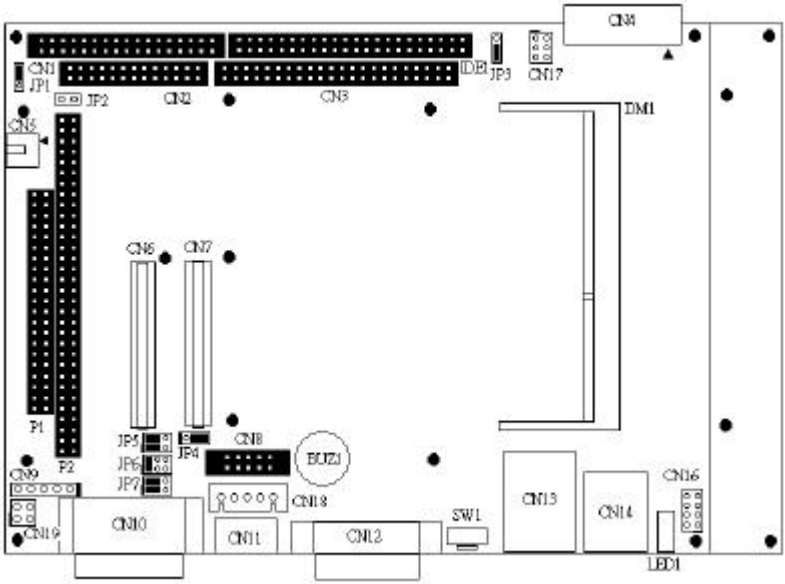
  - Main Board : 122 x 152mm (4.8" x 5.98")
  - With PMC support : 122mm x 167.5mm (4.8" x 6.59")

1.5 Intelligence

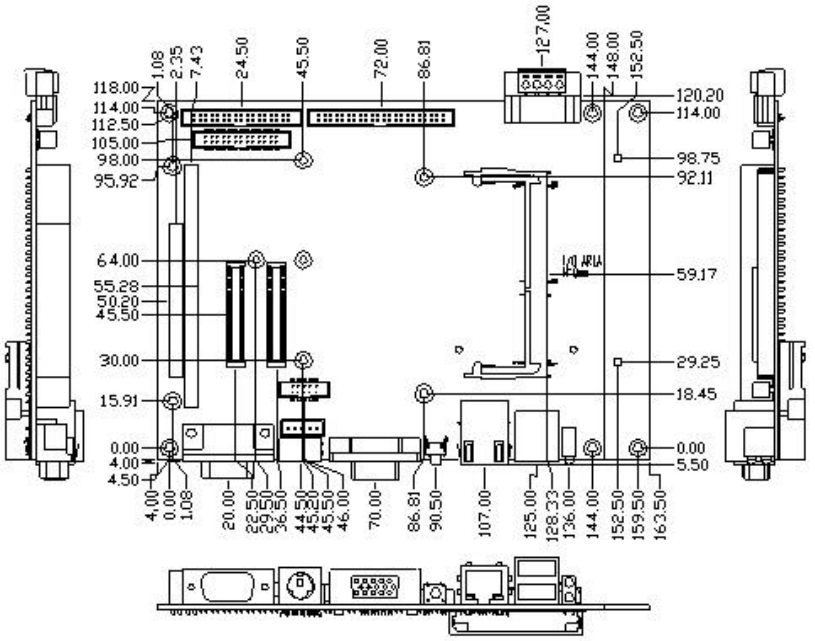
- **System Health Monitoring:**

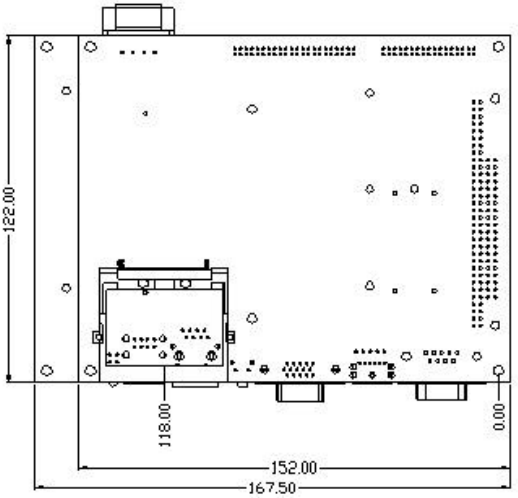
  A sensor for the CPU temperature on the EBC-1000 monitors the CPU temperature, system voltages monitoring.

1.6 PCB Layout Drawing



1.7 Mechanical Drawing





2

Installation

This chapter provides information on how to use the jumpers and connectors on the EBC-1000 in order to set up a workable system. The topics covered are:

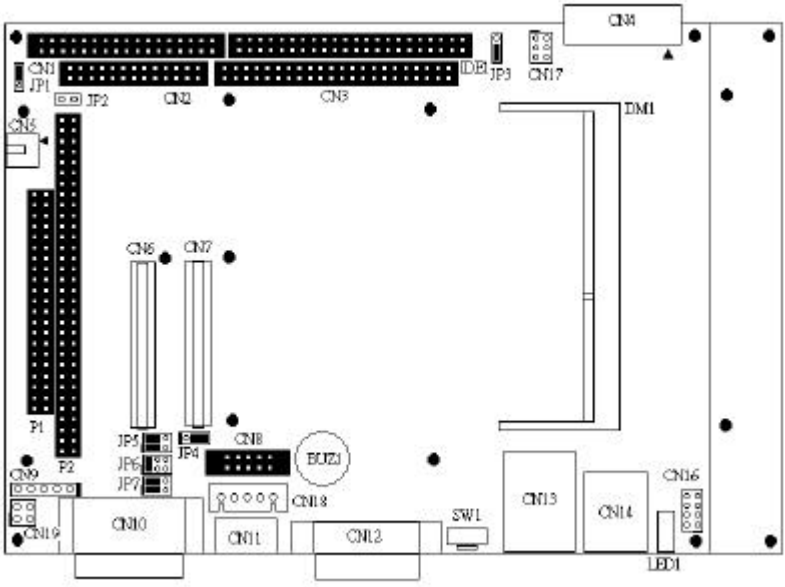
- Memory Installation
- Jumpers Setting
- Connectors Pin Assignments
- Watchdog timer configuration

2.1 Memory Installation

The EBC-1000 industrial computer main board supports one 144-pin SO-DIMM socket for a maximum total memory of 256 MB. The memory modules can come in sizes of 32MB, 64MB, 128MB, and 256MB SDRAM.

2.2 Jumpers on the EBC-1000

The jumpers on the EBC-1000 allow you to configure your main board according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The figure and table below show the correct setting to match the CPU frequency.



JP5 / JP6 / JP7 : COM2 RS-232-422-485 Selection

COM2	JP5	JP6	JP7
RS-232	1-3 ON 2-4 ON	1-2 ON	1-3 ON 2-4 ON
RS-422	3-5 ON 4-6 ON	3-4 ON	3-5 ON 4-6 ON
RS-485	3-5 ON 4-6 ON	5-6 ON	3-5 ON 4-6 ON

JP4 : PMC V/IO Selection

JP4 PMC V/IO	
+5V	1-2 ON
+3.3V	2-3 ON

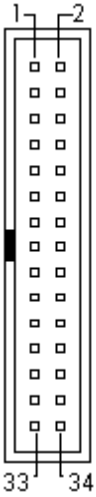
JP3 : LCD Power Selection

JP3 LCD POWER	
+5V	1-2 ON
+3.3V	2-3 ON

JP1 : Clear CMOS

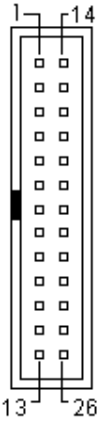
JP1 (CMOS)	
1-2 ON	Clear CMOS
2-3 ON	Normal

CN1: Floppy Drive Connector



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	Drive density selection
Ground	3	4	No connect
Ground	5	6	Drive density selection
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

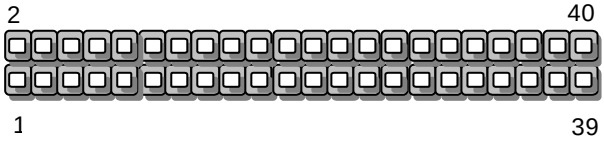
CN2: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

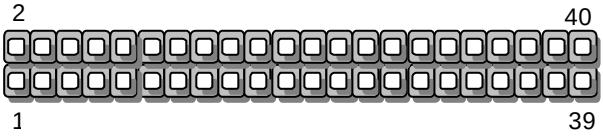
IDE1 : IDE INTERFACE CONNECTOR

Pin	DESCRIPTION	Pin	DESCRIPTION
1	RESET#	2	GROUND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GROUND	20	NC
21	NC	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IOCHRDY	28	GROUND
29	NC	30	GROUND
31	INTERRUPT	32	IOCS16#
33	SA1	34	NC
35	SA0	36	SA2
37	HDC CSO#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC	42	VCC
43	GROUND	44	NC

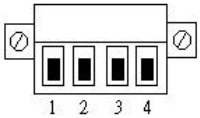


CN3 : LCD INTERFACE CONNECTOR

Pin	DESCRIPTION	Pin	DESCRIPTION
1	GND	2	FPCLK
3	GND	4	FPHSYNC
5	FPVSYNC	6	GND
7	NC	8	NC
9	FD0	10	FD1
11	FD2	12	FD3
13	GND	14	FD4
15	FD5	16	NC
17	NC	18	FD6
19	FD7	20	GND
21	FD8	22	FD9
23	FD10	24	FD11
25	NC	26	NC
27	GND	28	FD12
29	FD13	30	FD14
31	FD15	32	FD16
33	FD17	34	GND
35	FVCC	36	FVCC
37	+12V	38	+12V
39	GND	40	GND
41	DATA ENABLE	42	ENBKL
43	GND	44	NC

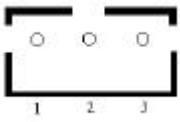


CN4 : System Power Connector



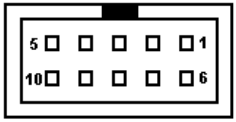
Pin No.	
1	+12V
2	GND
3	GND
4	+5V

CN5 : External Power Input Connector



Pin No.	
1	-5V
2	GND
3	-12V

CN8 : COM2 Serial Port

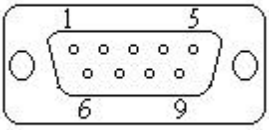


Pin		Signal Name	
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

CN9 : ALTERNATE IrDa CONNECTOR

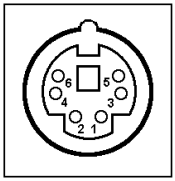
Pin	DESCRIPTION
1	+5V
2	NC
3	IRRXD
4	GND
5	IRTXD

CN10 : COM1 Port



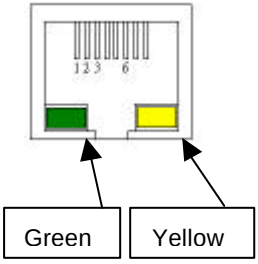
Pin	DESCRIPTION
1	DCD1#
2	RX1#
3	TX1#
4	DTR1#
5	GND
6	DSR1#
7	RTS1#
8	CTS1#
9	RI1#

CN11 : PS/2 Keyboard /Mouse Connector



Pin	Signal Name
1	Keyboard data
2	Mouse data.
3	GND
4	5V
5	Keyboard clock
6	Mouse clock.

CN13 : RJ45 for 10/100Mbps Ethernet

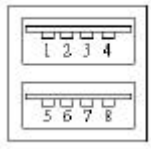


Pin	DESCRIPTION
1	TD+
2	TD-
3	RD+
6	RD-

Yellow (Speed status)	Function
OFF	10Mbps
ON	100Mbps

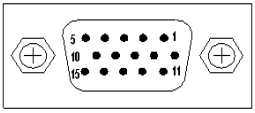
Green (Link status)	Function
ON	Link
OFF	Link off
Blinking	Data transfer in Progress

CN14 : USB PORT



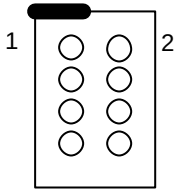
Pin	DESCRIPTION	Pin	DESCRIPTION
1	+5V	5	+5V
2	PORT 0-	6	PORT 1-
3	PORT 0+	7	PORT 1+
4	GND	8	GND

CN12 : VGA CRT Connector



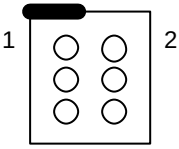
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

CN16: Audio Connector



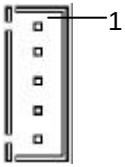
Pin	Signal Name	Pin	Signal Name
1	GND	5	GND
2	MIC IN	6	GND
3	Line Out L	7	Line Out R
4	Line In L	8	Line In R

CN17: TV out Connector



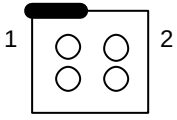
Pin	Signal Name	Pin	Signal Name
1	LUM	4	GND
2	GND	5	COMPOSITE
3	CHROM	6	GND

CN18: External Keyboard Connector



Pin	Signal Name
1	Keyboard clock
2	Keyboard data
3	NC
4	GND
5	Vcc

CN19: External LAN LED Connector

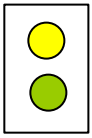


Pin	Signal Name	Pin	Signal Name
1	Speed status	3	Link status
2	GND	4	GND

Speed status	Function
OFF	10Mbps transfer rate
ON	100Mbps transfer rate

Link status	Function
ON	Link
OFF	Link off
Blinking	Data transfer in Progress

- **LED1:**
  - **A: IDE Active**
  - **B: Power ON**



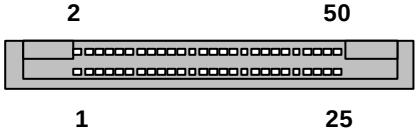
A (up) (Yellow)

B (down) (Green)

SW1 : System Reset Button

CN15 : COMPACT FLASH socket

Pin	DESCRIPTION	Pin	DESCRIPTION
1	GND	26	CD1-
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CE1#	32	CE2#
8	A10	33	VS1
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	READY#
13	BVCC	38	BVCC
14	A6	39	NC
15	A5	40	VS2
16	A4	41	RESET
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	BVD2
21	DATA0	46	BVD1
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	WP	49	DATA10
25	CD2#	50	GND



2.3 Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically. It contains a down counter, CRF2 of logical device 8, and two Watchdog control registers, WDT_CTRL0 and WDT_CTRL1 of logical device 8. We can uses compatible PNP protocol to access configuration registers for setting up watchdog timer configuration.

To program configuration registers, the following configuration sequence must be followed:

1. Enter the extended function mode by writing 87h to the location 3F0h twice.

2. Configure the configuration registers.

3. Exit the extended function mode by writing 0AAh to the location 3F0h.

The following example is written in Intel 8086 assembly language. It will reset the system in 16 seconds. We can use both keyboard interrupt and mouse interrupt to cause the watchdog to reload and start to count down from the value of CRF2. Write 0 (Zero) to CRF2 will disable the WATECHDOG Timer.

```
MODEL SMALL

DATA

CODE

STARTUP

BEGIN:

    ------------------------------------------------------------------------
    Enter the extended function mode, interruptible double-write
    ------------------------------------------------------------------------
    MOV     DX,3F0H
    MOV     AL,87H
    OUT     DX,AL
    OUT     DX,AL
    ------------------------------------------------------------------------
    Configurate logical device 7, configuration register CRE2
    ------------------------------------------------------------------------
    MOV     DX,3F0H
    MOV     AL,07H
```

```
OUT     DX,AL       ;point to logical Device Number Reg.
MOV     DX,3F1H
MOV     AL,07H      ;select device 7
OUT     DX,AL

MOV     DX,3F0H
MOV     AL,0E2H     ;device 7, CRE2
OUT     DX,AL
MOV     DX,3F1H
MOV     AL,0AH      ;Watch Dog Timer Output
OUT     DX,AL

MOV     DX,3F0H
MOV     AL,2AH      ;CR2A
OUT     DX,AL
MOV     DX,3F1H
MOV     AL,80H      ;bit7=0 -> KBRST, bit7=1 -> GP12
OUT     DX,AL

MOV     DX,3F0H
MOV     AL,07H
OUT     DX,AL
MOV     DX,3F1H
MOV     AL,08H      ;select device 8
OUT     DX,AL

MOV     DX,3F0H
MOV     AL,0F3H     ;device 8, CRF3
OUT     DX,AL
MOV     DX,3F1H
MOV     AL,06H      ;Watch Dog Timer is reset upon a
OUT     DX,AL       ;Mouse & Keyboard interrupt

MOV     DX,3F0H
MOV     AL,0F2H     ;CRF2
OUT     DX,AL
MOV     DX,3F1H
MOV     AL,01H      ;Time-out occurs after the value of CRF2
OUT     DX,AL       ;range 1~255, 00 -> disable Time-out
                    ;Table 1 describes more information about
                    ;the resolution
-----------------------------------
Exit extended function mode
-----------------------------------
MOV     DX,3F0H
MOV     AL,0AAH
```

```
    OUT     DX,AL
EXIT
END
```

ADLINK also provides watchdog programs and subroutines for easy use under DOS, Windows 95/98/2000, and Windows NT. Please browse ADLINK CD for more information.

Value of CRF2	Time Out (Sec.)
00h	Disable
01h	15
02h	45
03h	75
.	.
.	.
.	.
.	.
FFh	7635

Table 1

3

NS Geode GX1 VGA and audio Driver

This chapter describes the installation procedure of NS GX1 Device Driver for Windows 98/NT/2000/ME.

3.1 VGA Driver Installation

This section provides information on how to install the VGA driver that come in the Compact Disk with the package. Please follow the instructions set forth in this section carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA driver.

Installing the Drivers for Windows 98/ME

The following section describes the normal display driver installation procedures for Windows 98/ME. Use the following procedures when installing the display drivers for Windows 98/ME.

1. The driver is included in the ADLINK CD. Run the "CyrixMediaGXCertifiedWin9xDrivers4.0.exe" under the following directory: **X: \CHIPDRV\Chipset\GX1\Gx1_win9xMe** .
2. Click **NEXT** on **Welcome Screen** to read and Click **YES** to agree the license agreement.
3. Click **NEXT** if you agree to continue. NOTE: If you click **Cancel**, the program will terminate.

4. Click **Yes** to restart your computer and for the new settings to take effect.

5. Follow the screen instructions and use default settings to complete the setup when Windows 98/ME re-started.

Installing the Drivers for Windows NT 4.0

[**IMPORTANT**]**:** You should install the Windows NT 4.0 with at least Service Pack 4 (version number: 4.00.1381) first before installing the VGA driver. If you don't have the Windows NT 4.0 Service Pack 4, please contact your software vendor or download it from Microsoft's web site.

The procedures below show you how to install the VGA driver for Windows NT 4.0.

1. Boot Windows NT 4.0 Click **Start**. Select **Settings** then double-click the **Control Panel**.

2. Select **Display,** Click **Settings→Display Type,** than click **CHANGE** in Adapter Type.

3. Select Have Disk, Browse the VGA Driver in the following PATH: X: CHIPDRV\Chipset\GX1\GX1_NT\NT4.0 Display Driver5.05 highlight GX.inf, click Open, then click OK.

4. Click **Finish** than reboot Windows NT4.0.

Installing the Drivers for Windows 2000

The procedures below show you how to install the VGA driver for Windows 2000.

1. Boot Windows 2000 Click **Start**. Select **Settings** then double-click the **Control Panel**.

2. Select Display, Click Settings →, than click Advanced, Click Adapter in Adapter Type and Click Properties →Driver→Update Driver.

3. An Upgrade Device Driver Wizard windows, click **Next.**

4. Select “Search for a suitable driver for my device” and Click **Next.**

5. Select “specify a location”**, Browse** the VGA Driver in the following PATH:**X:\CHIPDRV\Chipset\GX1\Gx1_win2k\Win2k_VGA** highlight **GX.inf**, click **Open**, then click **OK**.

6. Click **Finish** than reboot Windows2000.

3.2 Audio Driver Installation

This section provides information on how to install the AUDIO driver that come in the Compact Disk with the package. Please follow the instructions set forth in this section carefully. Please note that there must be relevant software installed in your system before you could proceed to install the AUDIO driver.

Installing the Drivers for Windows 98/ME

The following section describes the AUDIO driver installation procedures for Windows 98/ME. Use the following procedures when installing the display drivers for Windows 98/ME.

1. The driver is included in the ADLINK CD. Run the "CyrixMediaGXCertifiedWin9xDrivers4.0.exe" under the following directory: ***X: \CHIPDRV\Chipset\GX1\Gx1_win9xMe*** .

2. Click **NEXT** on **Welcome Screen** to read and Click **YES** to agree the license agreement.

3. Click **NEXT** if you agree to continue. NOTE: If you click **Cancel**, the program will terminate.

4. Click **Yes** to restart your computer and for the new settings to take effect.

5. Follow the screen instructions and use default settings to complete the setup when Windows 98/ME re-started.

Installing the Drivers for Windows NT 4.0

The procedures below show you how to install the AUDIO driver for Windows NT 4.0.

1. On the Start Menu, select **"Settings"** and then **"Control Panel"**.

2. Double click on **Multimedia**.

3. Select the **"Devices"** tab.

4. Click on **"Audio Devices"** and select **"ADD"**.

5. On the Combo box, select "Unlisted or Updated driver".

6. Select **Have Disk, Browse** the AUDIO Driver in the following PATH: **X: CHIPDRV\Chipset\GX1\GX1_NT\NT4.0 Audio Driver 1.2** highlight **OEMSETUP.inf**, click ***Open***, then click ***OK***.

7. Click **Finish** than reboot Windows NT4.0.

Installing the Drivers for Windows 2000

The procedures below show you how to install the AUDIO driver for Windows 2000.

1. Right-Click on **"My computer"** on your desktop, Click on Properties. Select the **"Hardware"** tab.

2. Click on the **"Device Manager"** button, Click on the "+" symbol at the right side of **"Sound, Video and Game controllers"**.

3. Right-click on "Sound Blaster 16 or AWE32 compatible (WDM)", Select "Properties".

4. Select the "Driver" tab, Click on the "Update driver" button, and Click on "Next" and Select "Display a list of the known drivers etc, Click on "Next".

5. Select **Have Disk, Browse** the AUDIO Driver in the following PATH: **X: CHIPDRV\Chipset\GX1\GX1_win2k\Win2K_AUDIO** highlight **Gxwdmxa.inf**, click ***Open***, and then click **Next.**

6. Click on **"Finish"** than reboot your machine.

4

Realtek 8139C LAN Driver Installation

This chapter describes LAN driver installation for the onboard Ethernet controller **RTL8139C**. The relative drivers are under the following ADLINK CD directory: ***X:\ CHIPDRV\LAN\RTL8139c***, where X: is the location of the CD-ROM drive.

4.1 Software and Drivers Support

The RTL-8139C drivers support the following OS or platforms: Windows 98, Windows ME, Windows 2000, Windows NT

All the above drivers are included in the ADLINK CD. In the following section, we will describe the driver installation for Windows 98, Windows 2000, and Windows NT. For the driver installation of the other OS, please refer the readme file inside the CD.

4.2 Driver Installation on Windows 2000

The Windows 2000 may install the LAN driver. We recommend you to manually installed the most updated LAN driver, which shipped with ADLINK CD to guarantee the compatibility. After installing the Windows 2000, please update the new drivers by the following procedures.

1. Boot Windows 2000, Click **Start**. Select **Settings** then double-click the **Control Panel**.

2. Double-click ***System*** icon, click **Hardware** tab, click **Device Manager** button.

3. Double-click Network Adapters entry,Double-click the Realtek RTL 8139 PCI Fast Ethernet Adapter entry.

4. Click **Driver** tab, then click **Update Driver…** button.

5. An Upgrade Device Driver Wizard windows, click **Next>**.

6. Select **Display a list of ...** and click **Next>**. The next window may show a list of hardware models.

7. Insert the CD and click **Have Disk**.

8. Browse the RTL-8139C driver in the following path: ***X:*\ CHIPDRV\LAN\RTL8139c\WINDOWS\Win2k**, highlight **Netrts5.inf**, click **Open**, then click **OK**.

9. Highlight the model: **Realtek RTL 8139 PCI Fast Ethernet Adapter,** then click **NEXT>**. An Update Driver Warning window may pop up, click Yes to continue.

10. Click **NEXT>** button, then the Wizard summary window appears.

11. Click **Finish** button, then click **CLOSE** button.

4.3 Driver Installation on Windows 98

The Windows 98 will install the LAN driver automatically. We recommend you to manually updated the LAN, which on the ADLINK CD to guarantee the compatibility. After installing Windows 98, please update the new drivers by the following procedures.

1. Boot Windows 98, Click **Start**. Select **Settings** then double-click the **Control Panel**.

2. Double-click on the **System** icon, click on the **Device Manager** tab.

3. Double-click on the **Network Adapters** entry,. Click the **Properties**.

4. Click on the **Driver** button, then click **Update Driver…** button.

5. Update Device Driver Wizard starts, click **NEXT.**

6. Select **Display a list of ...** and click **NEXT**. The next window allows the user to specify a specific path. Insert the CD and click **Have Disk**.

1. **Browse** the RTL-8139 driver in the following path:

   X:*\ CHIPDRV\LAN\RTL8139c\WINDOWS\Win9*8 highlight **NETRTS5.INF**, click **OK**. The Update Wizard displays the message that it has found the driver. Click **OK** again to update the driver.

Note: Windows 98 may ask you to insert the original Windows 98 CD to install the LAN protocols.

8. Click **NEXT** button, then the Wizard summary window appears.

9. Click **Finish** button, then restart the computer to active the new driver.

4.4 Driver Installation on Windows NT

Before install the LAN driver on Windows NT, please copy the LAN driver in the CD to a floppy diskette. You have to put a new disk into drive A, then type the following batch command under DOS environment to copy the relative NT drivers.

X: \CHIPDRV\LAN\RTL8139c\WINDOWS\NT4.0

where X is the CD-ROM drive.

Windows NT may ask to installs a LAN driver from its own library of drivers. We recommend you to manually update the LAN, which on the ADLINK CD to guarantee the compatibility. After installing Windows NT, please update the new driver by the following procedures.

1. From the **Control Panel**, double-click the **Network** icon, a Network Configuration window pop up, click **Yes**.

2. In Network Setup Wizard, click **Next>**, click **Select From List…** button.

3. Copy all files in the directory: **X:\CHIPDRV\LAN\RTL8139c\WINDOWS\NT4.0** to floppy diskette.

4. Insert LAN driver floppy diskette into A drive and click **Have Disk**.

5. In the dialog box of Insert Disk window, type in **A:**, Click **OK**.

6. A Select OEM Option window pop up, click **OK**, then click **Next>**.

7. Select necessary Network Protocols, click **Next>**.

8. Select necessary Network Services, click **Next>**.

9. Click **Next>** until Window NT Setup dialog box pop up. Type in **D:\i386** in the dialog box, then insert the original Windows NT CD, and click **Continue**.

10. Then click **OK** until the setup completed.

11. Restart the computer to reboot.

Product Warranty/Service

ADLINK warrants that equipment furnished will be free from defects in material and workmanship for a period of one year from the date of shipment. During the warranty period, we shall, at our option, either repair or replace any product that proves to be defective under normal operation.

This warranty shall not apply to equipment that has been previously repaired or altered outside our plant in any way as to, in the judgment of the manufacturer, affect its reliability. Nor will it apply if the equipment has been used in a manner exceeding its specifications or if the serial number has been removed.

ADLINK does not assume any liability for consequential damages as a result from our product uses, and in any event our liability shall not exceed the original selling price of the equipment. The remedies provided herein are the customer's sole and exclusive remedies. In no event shall ADLINK be liable for direct, indirect, special or consequential damages whether based on contract of any other legal theory.

The equipment must be returned postage-prepaid. Package it securely and insure it. You will be charged for parts and labor if the warranty period is expired or the product is proves to be misuse, abuse or unauthorized repair or modification.