NuPRO-770 Series

Full Size Socket-370 PICMG Industrial SBC

User's Guide



Recycled Paper

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How to Use This Manual

This manual is designed to help you to use the NuPRO-770/771.

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.

Chapter 3 **BIOS configuration** describes the BIOS key features.

Chapter 4 **Intel chipset configuration** describes how to install the VGA drivers of the Intel i82810 chipset.

Chapter 5 **LAN driver installation** describes how to install the Intel 82559 LAN driver.

Chapter 6 **Watchdog Programming** shows the functionality of the watchdog timer.

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NuPRO-770 Series Function List

Model	NuPRO-770	NuPRO-771
Processor	Celeron / Pentium III	Celeron / Pentium III
Processor Socket	Socket 370	Socket 370
Chipset	Intel i82810	Intel i82810
BIOS	Award	Award
L2 cache	CPU Integrated	CPU Integrated
Max. SDRAM	512MB un-buffered	512MB un-buffered
Memory Sockets	2 x DIMM	2 x DIMM
VGA CRT	Integrated in i82810	Integrated in i82810
Ethernet (10/100Mbps)	**Intel 82559**	**None**
Multi I/O Chip	Winbond 83627HF	Winbond 83627HF
Enhanced IDE	Yes	Yes
2S/1P	Yes	Yes
USB	Yes	Yes
IrDA	Yes	Yes
H/W Monitoring	Embedded in Winbond 83627HF	

1

Introduction

This manual is designed to give you information on the NuPRO-770 or NuPRO-771 CPU board. The information inside this user's manual can be applied to both NuPRO-770 and NuPRO-771 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 NuPRO-770 Industrial Computer Main Board
- This User's Manual
- 1 IDE Ribbon Cable (40 pin)
- 1 Floppy Ribbon Connector
- 2 Serial Port Ribbon Cable and 1 Parallel Port Attached to a Mounting Bracket
- 1 CD Containing hardware configuration file, VGA Driver, Intel 82559 LAN Driver and Hardware Monitor utility
- 2-port USB cable is optional

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1.2 Description

The NuPRO-770 is a Celeron / Pentium III based Industrial Computer Main board with the Intel i82810 chipset and is fully designed for harsh industrial environment. It features a Socket-370 processor connector that is compatible with Intel Celeron / Pentium III processors. This board accommodates up to 512MB SDRAM configuration.

The NuPRO-770 comes with Winbond's W83627HF Super I/O chip. The embedded hardware monitoring device monitors system and CPU temperature, system voltages, and CPU and chassis fan speeds to prevent system crashes by warning the user of adverse conditions. NuPRO-770 also has a case-open indicator for security.

1.3 Features

- Intel Socket 370 Celeron and Pentium III FC-PGA CPU processors
- Front Side Bus 66/100MHz
- Intel i82810 chipset (built-in VGA controller)
- Up to 512MB SDRAM system memory
- IDE support up to Ultra/DMA66
- ISA High Drive 64mA
- 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 (Intel 82559) (for NuPRO-770 only)
- Wake On LAN (for NuPRO-770 only)
- Alert On LAN II (for future version only)

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1.4 Specifications

- **Processor Socket:** Socket-370 connector
- **Processor:** Intel Celeron and Pentium III FC-PGA CPU
- **Secondary Cache:** built in CPU
- **Bus Speed:** 66/100MHz
- **Chipset:** Intel i82810
- **Memory Sockets:**

  Two 168-pin DIMM sockets
  Max. 512MB SDRAM
  Memory type: PC-100 un-buffered SDRAM
- **Integrated Graphics Controller:**

  3D Graphics Visual Enhancement
  24-bit 230 MHz RAMDAC
  DDC2B compliant
  Up to 1600x1200 in 8-bit color at 85Hz refresh
- **BIOS:** Award BIOS, support PnP

  Intel 82802AB Firmware Hub (512KB) for BIOS update
  DMI BIOS Support: Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, internal/external frequencies and memory size.
  Green Function: Power management via BIOS, activated through mouse/keyboard movement
- **PCI Compliance**: Fully compliant to PCI rev. 2.1 standards
- **CRT:**

  On-board VGA Controller Built-in AGP2X (3D hyper pipelined architecture)
  Video memory sharing from main memory
  Memory size is controlled by device driver from 1 MB up to 11 MB
- **PCI Bus Ethernet Interface**: (For NuPRO-770 only)

  Intel 82559 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

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IEEE802.3u auto-negotiation support for automatic speed selection
IEEE 802.3X (100base-TX Flow control support)
Wake on Lan support
Optional Alert on LAN II support

- **Enhanced IDE:**

  Bus Master IDE controller, two EIDE interfaces for up to four devices, support PIO Mode 3/4 or Ultra DMA/66 IDE devices, including Hard Disk Drive, ATAPI CD-ROM, LS120, and ZIP drives.

- **Super I/O Chipset:** Winbond W83627HF

- **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 pin-header connectors, compliant with USB Specification Rev. 1.1, Individual over-current protection

- **Watchdog Timer:**

  Programmable I/O port 2Eh and 2Fh to configure watchdog timer
  Time-out timing select 0~255 seconds or 0~255 minutes

- **Keyboard and Mouse Connectors:**

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

- **HISA:**

  ISA bus high driving capability up to 64mA on all data address and control lines

- **Power supply:** AT/ATX

- **Environmental:**

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

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- **Power Requirement:**

Configurations	+5V	+12V	-12V	+5VSB
Celeron 533 MHz / 64MB	6.8A	50 mA	20 mA	40mA
Celeron 533 MHz / 128MB x 2	7.2A	50 mA	20 mA	40mA
Pentium III 500 MHz / 64MB	4.7A	50 mA	20 mA	40mA
Pentium III 500 MHz / 128MB x 2	5.2A	50 mA	20 mA	40mA

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 p eripheral devices such as keyboard, mouse, add-on cards, HDD, or CD ROM is not included. The fan power, which uses +12V, is not included.

- **Dimension:** 338mm x 122mm(13.3" x 4.8")

1.5 Intelligence

- **System Health Monitoring:**

  A sensor for the CPU temperature on the NuPRO-770 monitors the CPU temperature, an external sensor for system temperature, case-opened indicator, fan-speed detection, system voltages monitoring

- **Windows 98 shut-off:**

  Allows shut-off control from within Windows 98 and through an ATX power supply.

- **Wake On LAN:**

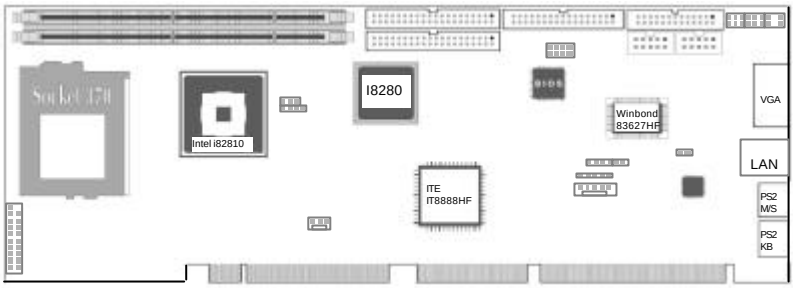
  Through an ATX power supply and network connection, systems can be turned on from the power-off state.

- **Alert on LAN II:** (Optional)

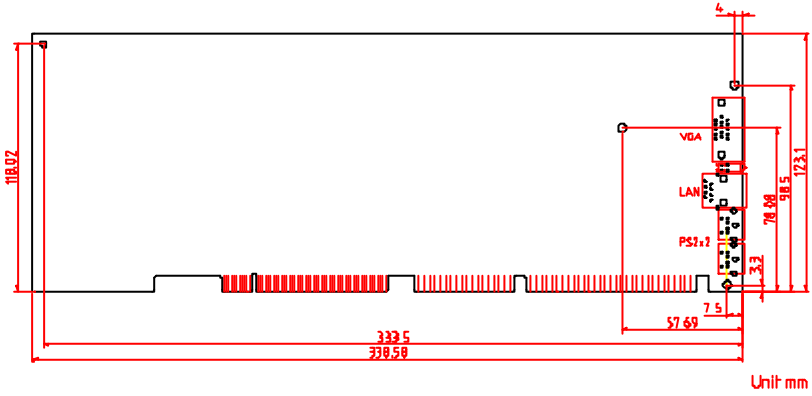
  This optional feature allows SOS hardware event alert, watchdog, and Advanced Power Management (APM) through Ethernet.

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1.6 PCB Layout Drawing



1.7 Mechanical Drawing



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2

Installation

This chapter provides information on how to use the jumpers and connectors on the NuPRO-770 in order to set up a workable system. The topics covered are:

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

2.1 CPU Installation

The NuPRO-770 industrial computer Main board supports a Socket-370 processor socket for Intel Celeron, Pentium III FC-PGA processors.

Before inserting the CPU, make sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket.

After you have installed the processor into place, check if the jumpers for the CPU type and speed are correct.

Note: Ensure that the CPU cooler does fully contact with the CPU top surface to avoid CPU overheating that would cause your system to hang or be unstable.

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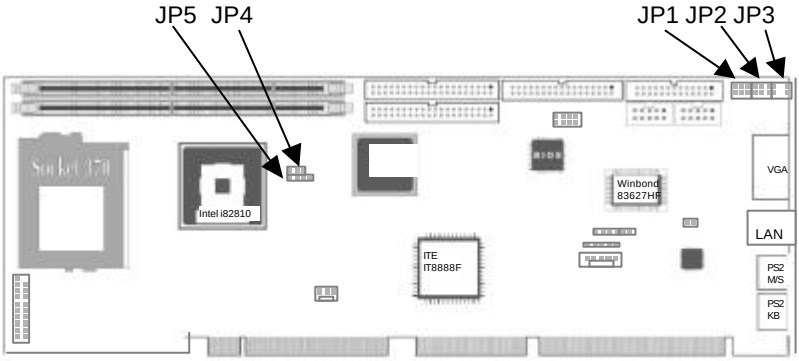
2.2 Memory Installation

The NuPRO-770 industrial computer main board supports one 168-pin DIMM socket for a maximum total memory of 512 MB. The memory modules can come in sizes of 32MB, 64MB, 128MB, and 256MB SDRAM.

2.3 Jumpers on the NuPRO-770

The jumpers on the NuPRO-770 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.

There are 5 jumpers, JP1~JP5 you have to set before installing the NuPRO-770.



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¨ **JP1, JP2 and JP3: set COM2 as RS-232/422/485**

Interface	JP1	JP2	JP3
RS-232	4 5 6 4-5 1-2 1 2 3	4 5 6 4-5 1-2 1 2 3	2 4 6 1-2 1 3 5
RS-422	5-6 2-3	5-6 2-3	3-4
RS-485	5-6 2-3	5-6 2-3	5-6

The default status sets COM2 as RS-232 port.

¨ **JP4 and JP5: CPU & SDRAM Frequency Setting**

CPU Frequency	SDRAM Frequency	JP5	JP4	Jumper Setting
66	100	1-2	2-3	3 2 1 JP4 JP5 4 3 2 1
100	100	2-3	2-3	
66/100 auto	100	3-4	2-3	
Reserved for future version			1-2	

The default status sets CPU Speed as Auto mode. Please note that Intel does not announce that the i82810 chipset can support the PC-133 SDRAM.

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2.4 Connectors Pin Assignments

The connectors on the NuPRO-770 allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following tables list the connectors on NuPRO-770 and their respective functions.

- CN1, CN4: EIDE Connectors (CN1: primary)
- CN2: Floppy Drive Connector
- CN3: Parallel Port Connector
- CN5, CN6: Serial Port (CN6 : COM1, CN5 : COM2)
- CN7: USB Ports
- CN8: VGA CRT Connector
- CN10: System temperature detection
- CN11: IrDA interface connector
- CN13: internal keyboard connector
- CN14: Ethernet RJ45 Connector
- CN15: General Purpose System Signals
- CN16: PS/2 Mouse Connector
- CN17: PS/2 Keyboard Connector
- FN1: CPU fan connector
- LED1: LAN Activity Indicators
- JP6: Case Open Connector

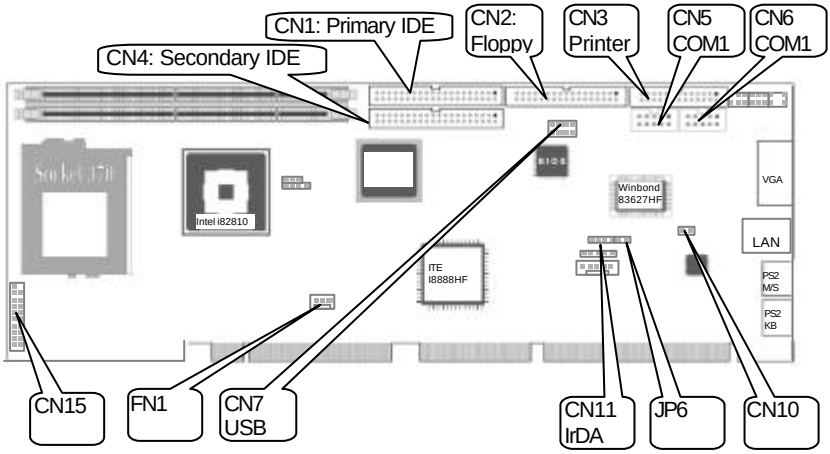
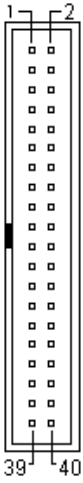


Figure 2.4 Connector location on the NuPRO-770

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¨ CN1, CN4: EIDE Connectors

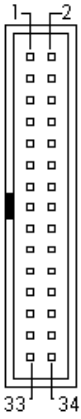
CN1: Primary IDE Connector, CN4: Secondary IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	+5V (2)
DRQ0 / DRQ1 (1)	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0 / DACK1 (1)	29	30	Ground
IRQ14 / IRQ 15 (1)	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

Note (1): The signals are with different definitions for primary or secondary IDE
Note (2): The pin #20 provide +5V power, which is used to support the direct plug-in DiskOnModule (DOM: IDE flash disk).

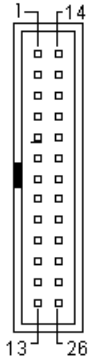
¨ CN2: Floppy Drive Connector



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

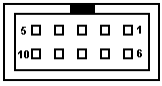
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¨ CN3: Parallel Port Connector



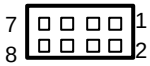
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
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

¨ CN5, CN6: Serial Port (CN6 : COM1, CN5 : COM2)



Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	NC

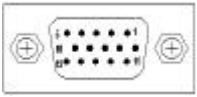
¨ CN7: USB Ports



Pin #	Pin #	Signal Name
1	2	VCC
3	4	USB0- / USB1-
5	6	USB0+ / USB1+
7	8	Ground

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¨ **CN8: 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		

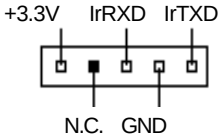
¨ **CN10: System temperature detection**

This connector is used to connect a cable to thermal sensor



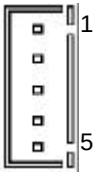
Pin #	Signal Name
1	Virtual GND
2	Thermistor

¨ **CN11: IrDA interface connector**



Pin #	Signal Name
1	+3.3V
2	No connect
3	IrRXD
4	Ground
5	IrTXD

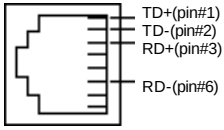
¨ **CN13: internal keyboard connector**



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

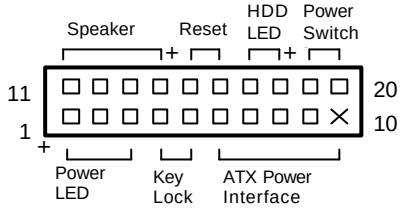
¨ **CN14: Ethernet RJ45 Connector**

This connector is for the 10/100Mbps Ethernet capability of the main board. The figure below shows the pin out assignments of this connector and its corresponding input jack. This connector is for NuPRO-770 only.



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¨ CN15: General Purpose System Signals



Pin #	ATX Power Interface Signals
6	GND
7	X
8	PS_ON
9	5V SB (standby +5V)
10	N.C

- **Power LED and Keylock: Pins 1 - 5**

  The power LED indicates the status of the main power switch. The Keylock# signal is used to disable the keyboard function when it is short to GND.

- **ATX Power Interface: Pins 6 -10**

  The +5V standby power input from pin #9 and #10. The Poweron# signal is connected to the ATX power supply to control the power On/Off.

- **Speaker: Pins 11 - 14**

  This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.

- **Reset Switch: Pins 15 and 16**

  The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

- **Hard Disk LED Connector: Pins 17 and 18**

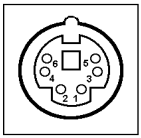
  This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

- **ATX Power ON Switch: Pins19 and 20**

  This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed it for 4 seconds, it will force the system to power off. FN1: Fan power connector.

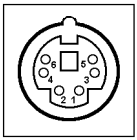
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¨ **CN16: PS/2 Mouse Connector**



Pin #	Signal Name
1	Mouse data
2	N.C.
3	N.C.
4	5V
5	Mouse Clock
6	N.C.

¨ **CN17: PS/2 Keyboard Connector**



Pin #	Signal Name
1	Keyboard data
2	N.C.
3	GND
4	5V
5	Keyboard clock
6	N.C.

¨ **FN1: CPU fan connector**

FN1 is a 3-pin header for the CPU fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Fan speed
2	+12V
3	GND

¨ **LED1: LAN Activity Indicators**



Location	LED Status	Description
Upper LED: Speed Status	ON	100 Mbps
	OFF	10 Mbps
Lower LED: Link Status	ON	Link
	OFF	Off line
	Blinking	Data transfer in progress

¨ **JP6: Case Open Connector**



Shorted	Open
Case Closed	Case Open

The signal is connected to the limit switch sensor of the chassis to detect the case open or closed.

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3

BIOS Configuration

On the NuPRO-770 BIOS, we provide the following key features:

- **PCI plug and play support**
- **DMI BIOS Support**: Desktop Management Interface (DMI) allows users to download system hardware-level information such as CPU type, CPU speed, internal/external frequencies and memory size.
- **Green Function**: Power management via BIOS, activated through selectable power manager events.
- **Write protection, provide anti-virus capability**

For detail BIOS setting table, please refer to the user's manual in the CD: ***NuPRO770_BIOS_Manual.PDF*** under ***X:\NuPRO\NuPRO770\.*** (X is where your CD-ROM drive located.)

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4

Intel 810 Chipset Hardware and VGA Driver

This chapter describes the installation procedure of Intel 810 chipset Device Driver for Windows 95/98/2000.

4.1 Hardware Configuration File Installation

This section describes system requirements of Intel 810 chipset Device Driver. This driver has been designed for and tested with Windows 98/95.

The system must contain a supported Intel processor and chipset configuration. Ensure that a mouse is connected to the system. One of the following versions of Windows 95/98/2000 must be installed on the system prior to running utility program.

- Windows 2000 5.00.2195 (Original release)
- Windows 98 Second Edition 4.10.2222 (Original Release)
- Windows 98 4.10.1998 (Original Release)
- Windows 95 4.00.950c (OSR 2.5 with or without USB Supplement)
- Windows 95 4.00.950b (OSR 2.1 with USB Supplement)
- Windows 95 4.00.950b (OSR 2.1 with USB Supplement)
- Windows 95 4.00.950a (OSR1)
- Windows 95 4.00.950 (Original Release)

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Installing Hardware Configuration File

This subsection describes how to install the hardware configuration file on a system where Windows 98/95 is installed.

> **Note:** Record the location of the Windows 95/98/2000 directory before installing the driver.

1. Check the System Requirements. Windows 95/98/2000 must be fully installed and running on the system prior to running this software.
2. Close any running applications.
3. The files are stored in an integrated application setup program. This program is designed for a Windows 95/98/2000 program that allows the INF files to be installed.
4. In ***X:NuPRO\Drivers\Chipset\Intel\Win9x2k\Disk1***, and then Run SETUP.EXE.
5. Click 'Next' on Welcome Screen to read and agree to the license agreement. Click ***Yes*** if you agree to continue. NOTE: If you click ***No***, the program will terminate.
6. Click '***Finish***' to restart the system when prompted to do so.
7. Follow the screen instructions and use default settings to complete the setup when Windows 95/98/2000 is re-started. Upon re-start, Windows 95/98/200 will display that it has found many hardware and is installing driver for them. If one **New Hardware Found** dialog box is displayed requesting the location of the drivers, use the mouse to click on the scrollbar and click on the <Windows 95/98/2000 directory>.
8. Select ***Yes***, when prompted to re-start Windows 95/98/2000.

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4.2 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 98/95 and Win 2000

The following section describes the normal display driver installation procedures for Windows 95/98/2000. Use the following procedures when installing the display drivers for Windows 98/95.

1. The driver is included in the ADLINK CD. Run the SETUP.EXE under the following directory: ***X:\NuPRO\Drivers\VGA\I810\Win9x\Graphics*** (or ***Win2k*** folder for Win 2000 installation).
2. Click ***Next*** on **Welcome Screen** to read and agree to the license agreement.
3. Click **Yes** if you agree to continue. NOTE: If you click **No**, 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 95/98/2000 is re-started.

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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.
2. The driver is included in the ADLINK CD. Run the SETUP.EXE under the following directory: ***X:\NuPRO\Drivers\VGA\I810\Nt40\Graphics***
3. Click ***Next*** on **Welcome Screen** to read and agree to the license
4. agreement.
5. Click ***Yes*** if you agree to continue. NOTE: If you click **No**, the program will terminate.
6. Windows NT 4.0 will prompt you to restart computer. Click **Yes** for the new settings to take effect.
7. Follow the screen instructions and use default settings to complete the setup when Windows NT 4.0 is re-started.

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5

LAN Driver Installation

This chapter describes LAN driver installation for the onboard Ethernet controller ***Intel 82559***. The relative drivers are under the following ADLINK CD directory: ***X:\NuPRO\Drivers\LAN\82559***, where X: is the location of the CD-ROM drive.

5.1 Software and Drivers Support

The 82559 drivers support the following OS or platforms:

Windows 98, Windows 95, Windows 2000, Windows NT

Novell Netware, DOS Setup for Novell NetWare DOS

UNIX, OS2, Linux

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.

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5.2 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 ***Intel 8255x-based PCI Ethernet Adapter (10/100)*** 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 8255P driver in the following path: ***X:\NuPRO\Drivers\LAN\82559***, highlight **oemsetup.inf**, click ***Open***, then click ***OK***.
9. Highlight the model: ***Intel 8255x- based PCI Ethernet Adapter (10/100),*** 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.

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5.3 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, select the Intel **8255x-based PCI Ethernet Adapter (10/100)** entry. Click the ***Properties*** button.
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.***
7. ***Browse*** the 82559 driver in the following path: ***X:\NuPRO\Drivers\LAN\82559***, highlight ***net82557.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.

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5.4 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:\WuPRO\Drivers\82559\Makedisk\Makedisk NT

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 98, please update the new driver by the following procedures.

1. From the ***Control Panel***, double-click the ***Netwrok*** icon, a Network Configuration window pop up, click ***Yes***.
2. In Netwrok Setup Wizard, click ***Next>***, click ***Select From List…*** button.
3. Insert LAN driver floppy diskette into A drive and click **Have Disk**.
4. In the dialog box of Insert Disk window, type in ***A:***, Click ***OK***.
5. A Select OEM Option window pop up, click ***OK***, then click ***Next>***.
6. Select necessary Network Protocols, click ***Next>***.
7. Select necessary Network Services, click ***Next>***.
8. 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, click ***Continue.***
9. Then click ***OK*** until the setup completed.
10. Restart the computer to reboot.

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6

Watchdog Programming

6.1 Watchdog Timer Configuration

The Watch Dog Timer (WDT) can monitor the system's status. Once you give a value to WDT, the timer will begin to count down. To re-program a new value to WDT, or move keyboard can restart the WDT. If the system is idle or hang, it will reboot when the timer timeout.

The function of the watchdog timer is to reset the system automatically. It contains a one-second (or one-minute) resolution down counter (in CRF6 of logical device 8 of super I/O chip) and two Watchdog control registers (CRF5 and CRF7 of logical device 8).

We provide the WTC function call for easy use under DOS, Windows 95/98/2000, and Windows NT, please refer the information under ***X:\NuPRO\Drivers\WDT.***

6.2 WDT Programming

In order to simplify the programming code, we provide a sub function for the programmers to implement their software. For DOS, Windows 95 or 98 and Window NT, the sub function format is as follow:

```
out_port (int IOport_number, int Counter_value)
   IOport_number:0x3F0 -->W83977EF's configuration port.
                 0x2   -->W83627HF's configuration port.
   Counter_value: 0 ~ 15300 (255 minutes)
                 (write a zero to disable the timer)
```


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Under DOS, Windows 95 or 98

Make a project program with `wdt.cpp` under Turbo C/C++.

Under Windows NT

The library installation procedure:
1. Run the setup program under NT environment.
2. Reboot the system.

You can also write your own DLL by referring the DOS source we provide.

6.3 How to Test the WDT?

Under DOS, Windows 95 or 98

Open a DOS command prompt and execute the following utility on the CD.

```
X: NuPRO\Drivers\WDT\test <n>
```

/* n = second value. This program can auto detect which Super I/O chip you use. */

Under Windows NT

Before you executing the program under NT, you must run the setup program under Windows NT in advance. Open a DOS command prompt window and execute the following command.

```
test627 <n> : n = second value. For W83627HF
```


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7

Hardware Doctor Utility

This chapter introduces Hardware Doctor Utility that comes with the CPU board in conjunction with the onboard hardware monitoring function (embedded in Winbond's Super I/O chip W83627HF). The sections in the following pages describe the functions of the utility.

Hardware Doctor is a self-diagnostic system for PC and must be used with Winbond's W83781D/W83782D IC series products. It will protect PC Hardware by monitoring several critical items including Power Supply Voltage, CPU Fan speed, and CPU & System temperature. These items are important to the operation of system; errors may result in permanent hurt of PC. Once any item is out of its normal range, an obvious warning message will pop up and remind user to make a proper treatment.

The Hardware Doctor utility supports the Windows 98 and Windows NT. The software is stored on the ADLINK CD under the following directory:

X:\NuPRO\Drivers\HWDoctor\WIN98

and

X:\NuPRO\HWDOCTOR\WINNT.

Please install the Hardware Doctor by executing the Hwm-98.exe or Hwm-nt.exe respectively under Windows 98 or Windows NT.

For detail user's manual, please refer the ***HWDoctor.PDF*** under the ***X:\NuPRO\Drivers\HWDoctor***

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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.

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