NuPRO-851

Full-Size PICMG 1.0

Single Board Computer

User's Manual

Manual Rev. 2.01

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Recycled Paper

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Company Information	
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Product Model	
Environment	OS: M/B: CPU: Chipset: BIOS: Video Card: NIC: Other:
Detailed Description	
Suggestions for ADLINK	

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1 Introduction

The NuPRO-851 is a Full-Size PICMG 1.0 Intel LGA-775 Pentium 4-based Single Board Computer (SBC) with Intel 915GV chipset. It supports both PCI and ISA buses.

The CPU module supports a front side bus (FSB) of 800MHz and a maximum CPU clock of 3.8 GHz featuring 32-bit/33MHz PCI/ISA bus with up to 2GB high performance DDR2 host SDRAM Memory support.

It provides standard I/Os, including RS-232, Printer Port, USB 2.0, EIDE, Ethernet and video interfaces. NuPRO-851 is designed to meet the needs of applications that require the highest computing performance and reliability. It is designed to run on Windows 2000/XP, Linux, etc. operating system, as well as embedded real time applications. It is the ideal solution for Telecommunications, Internet, and Industrial Networking Applications.

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1.1 NuPRO-851 Block Diagram

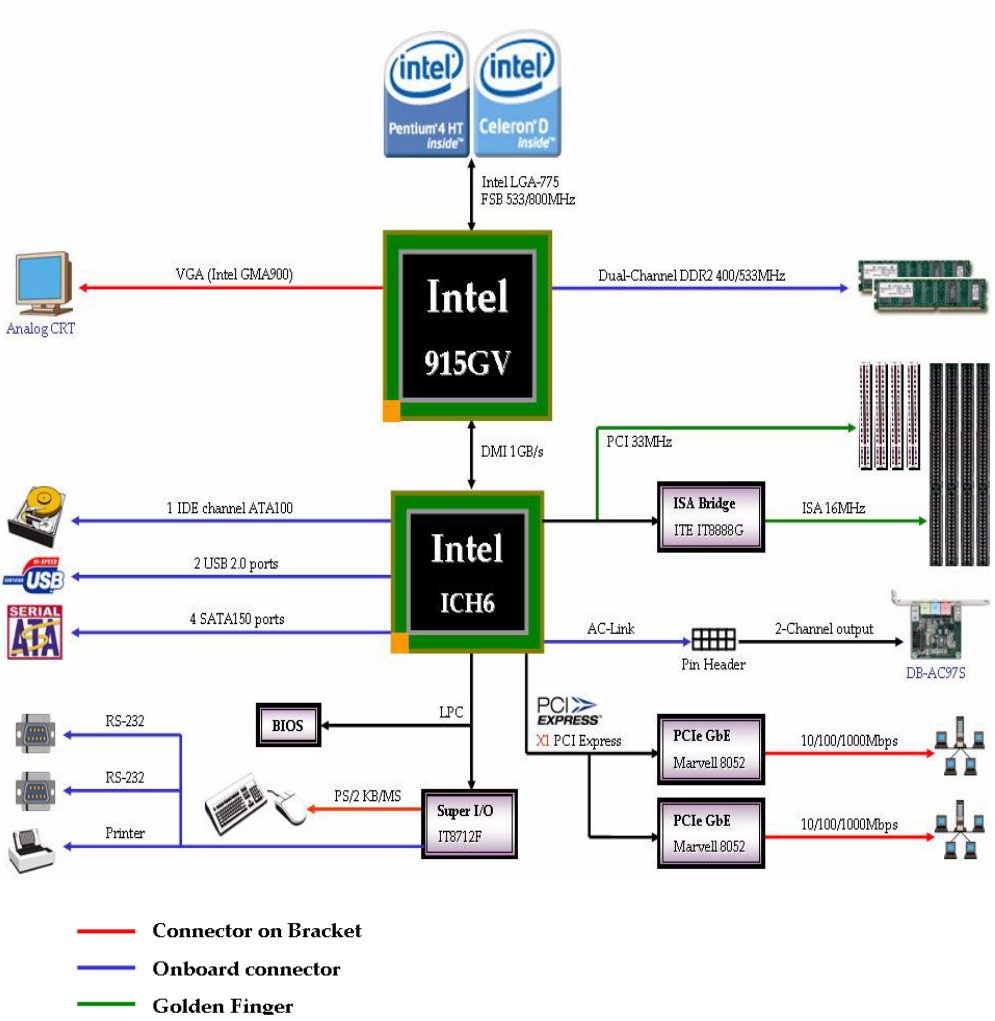


Figure 1-1: NuPRO-851 Block Diagram

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1.2 NuPRO-851 Features

Intel LGA-775 Pentium 4 Processor

The NuPRO-851 is a Full-Sized Single Board Computer (SBC) that supports a single LGA-775 (775 Land Grid Array) Intel® Pentium® 4 processor.

The Pentium 4 processor runs at a core speed of up to 3.8GHz. The Intel 915GV chipset keeps the FSB operation at 533/800MHz (auto-selected).

The design for using Pentium 4 processor required an upgraded Voltage Regulator Module circuit implementation (VRM 10.1) to handle tighter voltage tolerances.

Intel® 915GV Graphics & Memory Controller Hub (GMCH)

The central hub for all data passing through core system elements is through the Intel 915GV Graphics & Memory Controller Hub. To balance the performance offered by the processor and memory interfaces, the GMCH allows several high-bandwidth I/O configuration options. This chipset delivers balanced, high-throughput system performance for dual processor server platforms.

Intel® 82801FB I/O Controller Hub (ICH6)

Connection to the MCH is done through a point-to-point Hub Interface. The ICH6 provides legacy I/O interfaces through integrated features including a one-channel Ultra ATA100 bus master IDE controller, four-channel Serial ATA150 and an USB controller for two USB ports. The ICH6 also offers an integrated System Manageability Bus 2.0 (SMBus 2.0) controller, as well as a PCI 2.2-compliant interface.

Watchdog Timer

The watchdog timer optionally monitors system operations. It can be programmed for different timeout periods (from 1 to 255 seconds or 1 to 255 minutes). The watchdog is capable generating a Reset signal. Failure to strobe the watchdog timer within the programmed time period may result in a reset request. A register bit can be enabled to indicate if the watchdog timer caused the reset event. This watchdog timer register is cleared on power-up, enabling sys-

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tem software to take appropriate action if the watchdog generated the reboot.

Video

The NuPRO-851 provides one D-Sub VGA port for analog display output on the rear IO panel. The analog port uses an integrated 350 MHz RAMDAC of the 915GV GMCH that can directly drive a standard progressive scan monitor, which has a resolution of up to 2048x1536 pixels with 32-bit color at 85 Hz.

Ethernet

The NuPRO-851 provides two 10/100/1000Mbps Ethernet ports supplied via Marvell 88E8052 Ethernet Controllers. Each Ethernet interface is routed to an RJ45/LED all in one Connector on the rear panel. Each LAN chip will be assigned a unique static MAC Address. LED drive signals for Ethernet link status and activity are routed to the same connector. The onboard Ethernet is wired for Management 2.0 compliance. This port is available on the real panel.

Serial I/O

Two serial ports are supported by the NuPRO-851. The EIA232 drivers and receivers reside on board. COM1 and COM2 are available as a 10-pin header on the board. Both ports will be configured as DTE. Firmware will initialize the two serial ports as COM1 and COM2 with ISA I/O base addresses of 3F8h and 2F8h respectively. This default configuration also assigns COM1 to IRQ4 and COM2 to IRQ3. The NuPRO-851 serial controller resides in the IT8712F Super I/O device.

Parallel Port

The parallel I/O interface signals are routed to a 26-pin connector on the board. This port supports the full IEEE-1284 specifications and provides the basic printer interface.

Firmware will initialize the parallel port as LPT1 with ISA I/O base address of 378h. This default configuration also assigns the parallel port to IRQ7. The printer interface mode (Normal, Extended, EPP, or ECP) is selectable through the BIOS SETUP utility with the IT8712F Super I/O device managing the NuPRO-851's parallel port.

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Universal Serial Bus (USB)

NuPRO-851 supports 2 USB2.0 serial ports backward compatible to USB1.1. USB allows for the easy addition of peripherals such as mouse, keyboard, speakers, and etc. Transfer rates up to 480Mb/s are supported. Full-speed connections (480Mb/s) require shielded and tested cables. NuPRO-851 provides the standard 0.5A at 5V to the peripherals.

IDE and Floppy

The NuPRO-851 includes an IDE Controller (in the ICH6) and a Floppy Disk Controller (in the IT8712F). The IDE Controller provides support for internal or external IDE drives. Signals are available at the IDE connectors CN6 and are routed to a 40-pin header. The FDD Controller provides support for an external FDD drives. Signals are available at the FDD connector CN8 and are routed to a 34-pin header.

Keyboard/Mouse Controller

The NuPRO-851 includes an onboard PC/AT keyboard and mouse controller. The keyboard/mouse signals are available through the PS/2 circular DIN on the panel. Both the keyboard and mouse can be connected at the same time using ADLINK's Y cable. An extra pin header connector is available for connection of an external keyboard. The NuPRO-851 keyboard/mouse controller resides in the Winbond IT8712F Super I/O device

Software

The NuPRO-851 is compatible with all major PC operating systems. ADLINK provides support for many popular operating systems, including additional drivers for ADLINK peripherals. Software device drivers for the NuPRO-851 may be found on the ADLINK CD.

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1.3 NuPRO-851 Mechanical Drawing

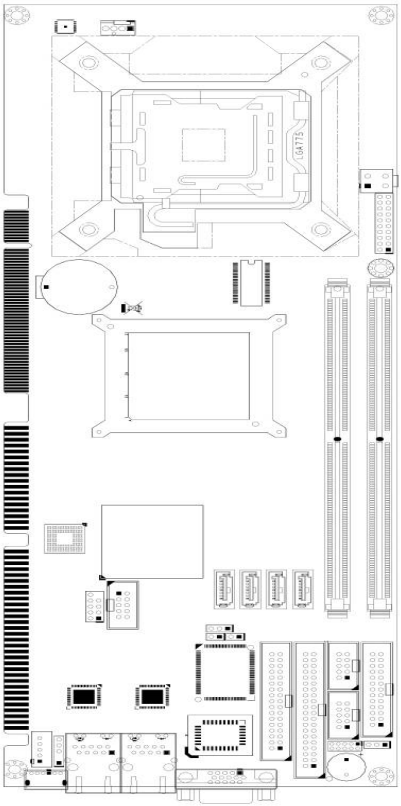
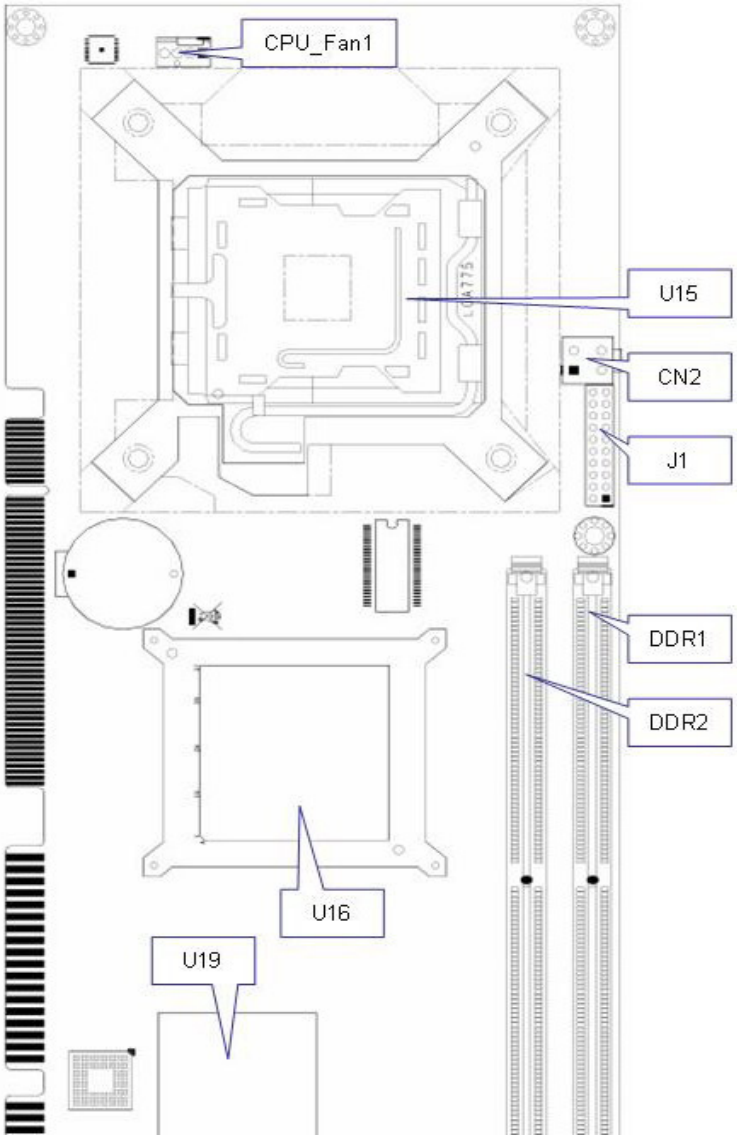


Figure 1-2: NuPRO-851 Mechanical Drawing

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1.4 NuPRO-851 Components and Connectors



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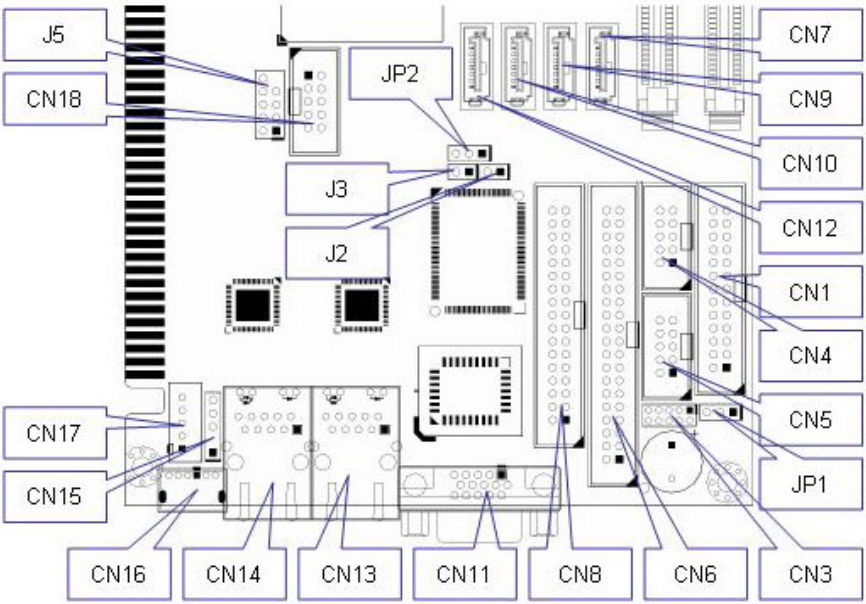


Figure 1-3: NuPRO-851 Layout

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NuPRO-851 Layout Legend

1	CPU_Fan1	CPU Fan connector
2	U15	LGA-775 CPU socket
3	CN2	ATX 12V Power connector
4	J1	Front Panel connector
5	DDR1	240 Pin DDR2 DIMM socket
6	DDR2	240 Pin DDR2 DIMM socket
7	U16	Intel 915GV Northbridge
8	U19	Intel ICH6 Southbridge
9	CN7	SATA connector 1
10	CN9	SATA connector 2
11	CN10	SATA connector 3
12	CN12	SATA connector 4
13	CN1	Printer Port header
14	CN4	COM 1 header
15	CN5	COM 2 header
16	JP1	BIOS Write Protection
17	CN3	Debug port
18	CN6	IDE connector
19	CN8	Floppy connector
20	CN11	VGA port
21	CN13	RJ45 connector (available for NuPRO-851DV)
22	CN14	RJ45 connector
23	CN16	PS/2 Keyboard/Mouse connector
24	CN15	External Mouse header
25	CN17	External Keyboard header
26	CN18	AC'97 Audio header for DB-AC97S
27	J5	USB header
28	JP2	Clear CMOS
29	J3	Case Open header
30	J2	Thermal Control header

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1.5 Specifications

NuPRO-851 Specifications	
Compliance	▶ PICMG 1.0 Rev. 1.0 PCI-ISA Specification compliant ▶ PCI Local Bus Specification, Rev 2.2 compliant
Form Factor	▶ Full-Size Single Board Computer, 388mm x 122mm (15.2”x4.8”)
CPU	▶ Intel Pentium 4 Socket-T (LGA-775) processor ▶ FSB 533/800MHz
Host Memory	▶ Two DIMM sockets support Dual-Channel DDR2 400/533MHz ▶ Unbuffered, unregistered 240-pin non-ECC DDR2 SDRAM ▶ Supports up to 2GB
Chipset	▶ Intel 915G/GV Graphics Memory Control Hub (GMCH) ▶ Intel 82801FB I/O Control Hub (ICH6)
Gigabit Ethernet	▶ Integrated Marvell 88E8052 Ethernet controller(s) support(s) single/dual 10/100/1000Base-T Ethernet port(s) via PCI Express x1 bus which provides 500MB/s data transfer rate ▶ Speed and Link LEDs on the RJ-45 connector
Graphics Display	▶ Intel GMA900 2D/3D Graphics Accelerator ▶ Dynamically shared system memory up to 128MB ▶ Resolution up To 2048 x 1536 @ 85Hz refresh
IDE Ports	▶ Bus master IDE controller supports two UltraATA-100 / 66 / 33 interfaces

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NuPRO-851 Specifications	
BIOS	▶ Phoenix-Award system BIOS supports PnP, APM, DMI, ACPI, & Multi-device booting features ▶ Write Protection and field upgradeable
USB Interface	▶ Two USB 2.0 ports supported with onboard pin header by USB cable kit included ▶ Data transfer rate up to 480Mbps
Super I/O and WDT	▶ Two 16C550 UART compatible RS-232 COM ports ▶ PS2 keyboard and mouse supported ▶ System monitoring for CPU/System temperature, fan speed and DC voltages ▶ Watchdog timer: Programmable I/O port on addresses 02Eh and 02FH. Programmable timer for 1-255 seconds or 1-255 minutes. Easy-programming libraries for DOS, Windows 95/98/NT are included
Environment	▶ Operating temperature: 0 - 60 °C (with proper airflow and active heatsink) ▶ Storage temperature: -40 - 85 °C ▶ Humidity: 5% - 95% non-condensed ▶ Shock: 30G peak-to-peak, 10 ms, non-operation ▶ Vibration: ▷ Non-operation: 6G, 10-1000 Hz, random ▷ Operation: 0.5G, 510-1000 Hz, random
Safety Certificates and Tests	▶ CE certified ▶ FCC Part 15 class ▶ UL-1950, CSA-950, and VDE EN 60 950/IE950

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1.6 Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the dealer for a replacement. Retain the shipping carton and packing materials for inspection by the dealer. Obtain authorization before returning any product to ADLINK.

Check the following items are included in the package, if there are any items missing, please contact your dealer:

Included Items
ADLINK All-in-One driver CD
NuPRO-851 module
COM port cable with bracket
USB cables with bracket
Floppy cable
ATA-100 cable (x1)
Y cable for PS/2 Keyboard and Mouse
Printer Port and COM Port cable with bracket
SATA cable kit (X2)
This User's Manual

Note: The NuPRO-851 OEM version package may contain a non-standard configuration, unique functionality, or different packaging according to configuration requests.

CAUTION: The NuPRO-851 single board computer must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a grounded wrist strap when servicing

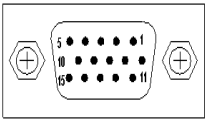
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2 Connectors and Jumpers

This chapter will familiarize the user with the connectors and jumpers on the NuPRO-851. Please refer to **Figure 1-3: NuPRO-851 Layout** for connector and jumper locations.

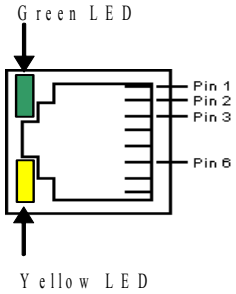
2.1 Connector Pin Assignments

2.1.1 VGA Connector (CN11)



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

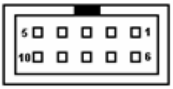
2.1.2 Gigabit Ethernet Connector (CN13, CN14)



Pin	LAN1 Signal	LAN2 Signal	Function
1	LAN1_TDP1	LAN2_TDP1	Transmit Data1 +
2	LAN1_TDN1	LAN2_TDN1	Transmit Data1 -
3	LAN1_RDP2	LAN2_RDP2	Receive Data2 +
4	LAN1_RDP3	LAN2_RDP3	Receive Data3 +
5	LAN1_RDN3	LAN2_RDN3	Receive Data3 -
6	LAN1_RDN2	LAN2_RDN2	Receive Data2 -
7	LAN1_TDP4	LAN2_TDP4	Transmit Data4 +
8	LAN1_TDN4	LAN2_TDN4	Transmit Data4 -

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2.1.3 COM1/COM2 Header (CN4, CN5)



Pin	Signal	Function
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 Indicate
10	NC	No Connect

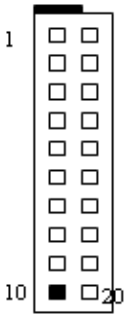
2.1.4 IDE Connector (CN6)



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	No connect
DRQ0/DRQ1	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0/DACK1	29	30	Ground
IRQ14/IRQ15	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

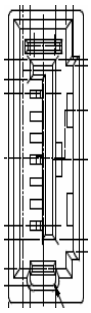
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2.1.5 Front Panel Header (J1)



Pin	Signal	Function	Pin Group
1	+5V	Power	Power LED
2	WDTLED#	Watch Dog LED Signal	
3	PLED	Power LED Signal	
4	KEYLOCK	Keyboard lock	Key Lock
5	GND	Ground	
6	GND	Ground	ATX Power Connector
7	NC	No connect	
8	PWRON	Power-on signal	
9	+5VSB	Standby Power	
10	PME#	Power Management Event	
11	WDSPK	Speaker signal	Chassis Speaker
12	NC	No connect	
13	NC	No connect	
14	+5V	Power	
15	RESETBT	RESET Button signal	RESET button
16	GND	Ground	
17	HDDLED	Hard Disk LED signal	Hard Disk LED
18	+5V	Power	
19	PWRBT	POWER signal	Power on button
20	GND	Ground	

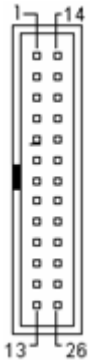
2.1.6 SATA Connector (CN7, CN9, CN10, CN12)



Pin	Signal	Function
1	GND	Ground
2	SATA_TXP	Serial ATA Transmit Pair
3	SATA_TXN	
4	GND	Ground
5	SATA_RXN	Serial ATA Receive Pair
6	SATA_RXP	
7	GND	Ground

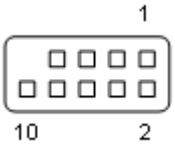
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2.1.7 Parallel Port Connector (CN1)



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

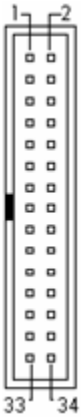
2.1.8 USB Header (J5)



Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	Data 1 -	4	Data 2 -
5	Data 1 +	6	Data 2 +
7	GND	8	GND
9	Key	10	NC

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2.1.9 Floppy Connector (CN8)



Pin	Signal Name	Pin	Signal Name
1	Ground	2	Extended Density
3	Ground	4	No Connect
5		6	Data Rate
7	Ground	8	Index
9	Ground	10	Motor A Select
11	Ground	12	Drive B Select
13	Ground	14	Drive A Select
15	Ground	16	Motor B Select
17	Ground	18	Step Direction
19	Ground	20	Step Pulse
21	Ground	22	Write data
23	Ground	24	Write gate
25	Ground	26	Track 0
27	Ground	28	Write protect
29	Ground	30	Read data
31	Ground	32	Side 1
33	Ground	34	Diskette change

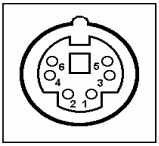
2.1.10 External Mouse Header (CN15)



Pin	Signal	Function	Comments
1	MSDATACN	Mouse Data	External Mouse Connector
2	CH_GND	Ground	
3	VCC_KBMS2	VCC	
4	MSCLKCN	Mouse Clock	

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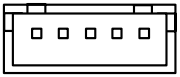
2.1.11 PS/2 Keyboard/Mouse Connector (CN16)



Pin	Signal	Function
1	KBDAT	Keyboard Data
2	MSDAT	Mouse Data
3	GND	Ground
4	KBMS5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

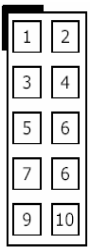
Both the keyboard and mouse can be connected at the same time by using an ADLINK Y cable.

2.1.12 External Keyboard Header (CN17)



Pin	Signal	Function	Comments
1	KBCLK	Keyboard Clock	External Keyboard Connector
2	KBDATA	Keyboard Data	
3	NC	Ground	
4	GND	Power	
5	+5V	Power	

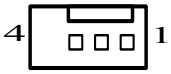
2.1.13 Audio Header (CN18)



Pin	Signal	Function	Pin	Signal	Function
1	GND	Ground	2	AC_BITCLK	Bit Clock
3	GND	Ground	4	AC_SDIN0	Data Input 0
5	+5V	Power	6	AC_SDOUT	Data Output
7	AC_SDIN2	Data Input	8	AC_SDIN1	Data Input 1
9	AC_SYNC	Synchro-	10	AC_RSTJ	Reset

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2.1.14 CPU Fan Connector (CPU_Fan1)



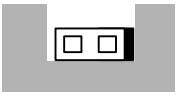
Pin	Signal Name
1	GND
2	+12V
3	Fan Speed
4	NC

2.1.15 Thermal Control Pin Header (J2)



Pin	Signal	Function
1	TGND	Thermal Ground
2	VTIN	Thermal Voltage Input

2.1.16 Case Open Pin Header (J3)



Pin	Signal	Function
1	CASEOPEN#	Case Open Signal
2	GND	Ground

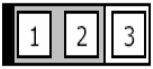
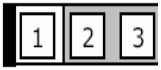
Note: Signal is connected to a limit switch sensor of the chassis to detect if the case is opened or closed.

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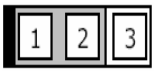
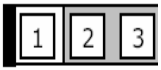
2.2 Jumper Settings

The NuPRO-851 is designed for maximum flexibility with as few jumpers as possible. Most of the configuration options can be selected through the BIOS menu. However, two options still need to be configured by jumpers.

2.2.1 BIOS Write Protection Jumper (JP1)

JP1	Protection status	Connection
	Enable	1-2
	Disable	2-3

2.2.2 Clear CMOS Jumper (JP2).

JP2	RTC Status	Connection
	Normal	1-2
	Clear CMOS	2-3

The CMOS RAM data for real time clock (RTC) contains the date / time and password information. The button cell battery powers the CMOS when the system is powered off.

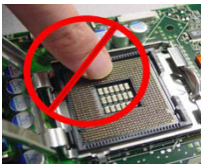
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3 Getting Started

This chapter gives a summary of what is required to setup an operational system using the NuPRO-851. Hardware installation and BIOS overview is discuss.

3.1 CPU Installation

CAUTION: Do not touch socket sensitive contacts. We assume no responsibility for the potential damages caused by this action and therefore the warranty we provide may be invalid.



- Disengage Load Lever by depressing down and out on the hook to clear retention tab. Rotate Load Lever to fully open position at approximately 135°
- Rotate Load Plate to fully open position at approximately 100°. Remove Socket Protective Cover. With left hand index finger and thumb to support the load plate edge, engage protective cover finger tab with right hand thumb and peel the cover from LGA775 Socket while pressing on center of protective cover to assist in removal.
- Locate two orientation key notches.
- Grape processor with thumb and index finger. (Grasp the edges without the orientation notches.) The socket has cut-outs for your fingers to fit into. Carefully pace the package into the socket body using a purely vertical motion. (Tilting the processor into place or shifting it into place on the socket can damage the sensitive socket contacts.)
- Verify that package is within the socket body and properly mated to the orientation keys
- Close the socket by:

1. Close the Load Plate.

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2. While pressing down lightly on Load Plate, engage the Load Lever.
3. Secure Load Lever with Load Plate tab under retention tab of Load Lever.

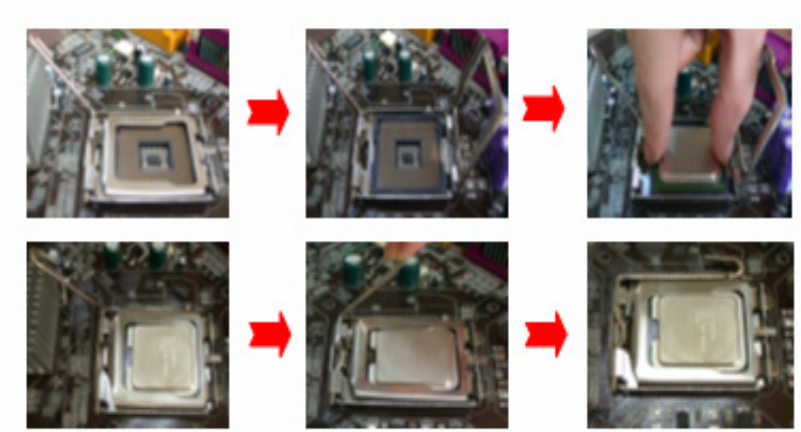


Figure 3-1: CPU Installation

Note: In order to boot up with a newly installed CP, AC Power must e switched off before installation.

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3.2 Cooling Fan Installation

CAUTION: This processor has to fit a special cool fan. When the processor runs, this will increase the internal ambient temperature. A chassis with a maximum internal ambient temperature of 38? at the processor fan inlet is a requirement. Failure to provide this could result could result in damage to the board. Please make sure the cooler fan has been recommended by Intel. For more detail on this, go to http://www.intel.com.

Smear thermal grease on the top of the CPU. Lower the CPU fan onto the CPU and socket, and secure it using the attachments or screws provided on the fan. Finally, attach the fan power cable to the CPU FAN adapter.

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3.3 Memory Installation

This section details the procedure for installing system memory on the NuPRO-851. Correct memory configuration is critical for proper system operation.

3.3.1 Memory Configuration Options

The NuPRO-851 has flexible memory configuration options, including support for 128MB, 256MB, 512MB, and 1GB DDR2 modules. Note that the modules must all be the same type and density and must be installed in pairs if enabling Dual-Channel support.



Figure 3-2: DIMM Sockets

3.3.2 Installing Memory Module

Installing DIMM modules is simple. The modules are inserted in the sockets and are held in place by the socket retaining arms. The edge connectors on the modules are of different widths and there are key notches in each module. This ensures that you cannot insert a module incorrectly.

Before you install any modules, you should choose a configuration. You should then prepare the required number and type of DDR2 modules.To install either type of module follow these procedure:

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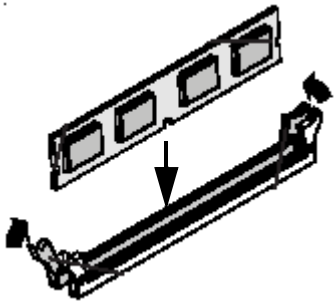


Figure 3-3: Inserting DIMM into Socket

1. Align the module to the socket so that the edge connectors on the module match the socket sections.
2. Hold the module perpendicular to the motherboard and press the edge connector into the socket.
3. Press the module fully into the socket so that the socket retaining arms swing up and engage the retention notches at each end of the module.
4. Following the configuration you have chosen, repeat this procedure if necessary so that all modules are installed.
5. Once the modules are installed, system memory installation is complete.

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3.4 Connecting IDE Devices to the NuPRO-851

The NuPRO-851 supports one IDE channel. It has one IDE device connector onboard which supports IDE devices running in any data transfer mode up to ATA-100. The IDE connector supports two drives, a Master and a Slave. The drives connect to the NuPRO-851 with an IDE ribbon cable.

To install an IDE drive, connect the drive to one of the drive connectors to a suitable ribbon cable. Plug the board end of the cable into one of the IDE connectors on the NuPRO-851. Make sure pin 1 of the ribbon cable connector is properly aligned with pin 1 of the IDE device connector.

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3.5 BIOS Configuration Overview

The BIOS has many separately configurable features. These features are selected by running the built-in Setup utility. System configuration settings are saved in a portion of the battery-backed RAM in the real-time clock device and are used by the BIOS to initialize the system at boot-up or reset. The configuration is protected by a checksum word for system integrity.

To access the Setup utility, press the "Del" key during the system RAM check at boot time. When Setup runs, an interactive configuration screen displays.

Setup parameters are divided into different categories. The available categories are listed in menus. The parameters within the highlighted (current) category are listed in the bottom portion of the Setup screen. Context sensitive help is displayed in the right portion of the screen for each parameter.

Use the arrow keys to select a category from the menu. To display a submenu, highlight the category and then press the "Enter" key.

For more detailed information about the BIOS and other utilities, see the BIOS Manual.

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3.6 Operating System Installation

For further information about your operating system, refer to the documentation provided by the operating system vendor.

Installing peripheral devices: NuPRO devices are automatically configured by the BIOS during the boot sequence.

Most operating systems require initial installation on a hard drive from a floppy or CDROM drive. These devices should be configured, installed, and tested with the supplied drivers before attempting to load the new operating system.

Read the release notes and installation documentation provided by the operating system vendor. Be sure to read any README files or documents provided on the distribution disks, as these typically note documentation discrepancies or compatibility problems.

Select the appropriate boot device order in the BIOS Setup Utility boot menu depending on the OS installation media used. For example, if the OS includes a bootable installation floppy, select Floppy as the first boot device and reboot the system with the installation floppy installed in the floppy drive. (Note that if the installation requires a non-bootable CD-ROM, it is necessary to boot an OS with the proper CD-ROM drivers in order to access the CD-ROM drive).

Proceed with the OS installation as directed. Be sure to select appropriate device types if prompted. Refer to the appropriate hardware manuals for specific device types and compatibility modes of ADLINK NuIPC products.

When installation is complete, reboot the system and set the boot device order in the Setup Utility boot menu appropriately.

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4 Device Driver Installation

To install drivers for the NuPRO-851, refer to the installation information in this chapter. Basic driver installation information for Windows 2000/XP are outlined in this section. For installation information for non-Windows Operating Systems, refer to the extensive explanation in the ADLINK CD. The drivers are located in the following directories of the CD-ROM:

Chipset driver	\NuPRO\NuPRO-851\Chipset\
LAN relative driver	\NuPRO\NuPRO-851\Ethernet\
VGA driver	\NuPRO\NuPRO-851\VGA\

4.1 Intel® 915GV Chipset

This section describes the installation procedure for the Intel® 915GV chipset device driver.

4.1.1 Hardware Configuration File Installation

This section describes how to install the hardware configuration files into a system operating Windows 2000/XP.

Note: Record the location of the Windows 2000/XP directory before installing the driver.

1. Check the System Requirements. Windows 2000/XP must be fully installed and running normally on the system prior to running this software.
2. Close all running applications.
3. Check that the files are stored in an integrated application setup program. This program is designed for a Windows 2000/XP program that allows the INF files to be installed.
4. Locate the directory **X:\NuPRO\NuPRO-851\Chipset** in the CD-ROM included, choose the operation system you wish to run, and then run the setup program: **`Setup.exe`**.

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5. Click **Next** on the 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 **Next** on the Readme Information screen to install INF files.
7. Click **Finish** and restart the system when prompted.
8. Follow the instructions on the screen and use the default settings to complete the setup when Windows restarts. Upon restarting, Windows will display that it has found new hardware and is installing the corresponding drivers. If the New Hardware Found dialog box is displayed and requests the location of the drivers, click on the scrollbar, then click on the <Windows directory>.
9. Select **Yes**, when prompted to restart Windows.

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4.2 VGA Driver Installation

This section provides information on how to install the VGA driver. Please follow the instructions carefully.

Installing Drivers for Windows 2000/XP

The following section describes the normal display driver installation procedures for Windows 2000/XP.

1. Boot Windows 2000/XP.
2. The driver is included in the ADLINK CD. Run **`win2k_xp1420.exe`** under the directory: **X:\NuPRO\NuPRO-851\VGA**
3. Click **Next>** on Welcome screen. And select **Typical** on Setup Type screen and click **Next>**.
4. Use default program folders on Select Program Folder screen. Click **Next>** to install driver. Finally, click **Finish** to restart.

4.2.1 LAN Driver Installation

This section describes the LAN driver installation for the onboard Ethernet controllers, the Marvell 88E8052. The relative drivers are located in the following directory of the ADLINK CD: **X:\NuPRO\NuPRO-851\Ethernet**

The Marvell LAN drivers support the following OS or platforms: Windows 98 SE, Windows ME, Windows NT 4.0, Windows 2000, Windows XP, and Linux

The Windows XP and Windows 2000 drivers are included in the ADLINK CD. Driver Installation information for Windows systems is included below.

Windows may automatically try to install a LAN driver within its directory. We recommend that users manually install the latest LAN driver, which comes with the ADLINK CD to guarantee compatibility. After installing Windows operation system, please update to the new drivers by following these procedures.

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1. On the desktop right click on **My Computer**.
2. Select **Manage**.
3. In the **Device Manager** select and double click the adapter you wish to update.
4. Select **Driver**.
5. Click **Update Driver**.
6. Follow the instructions given by the operating system to locate the driver.
7. Click **Next**.
8. Select the driver to be installed in the next list box.
9. Click **Next**.

   If a message is displayed saying that the driver is not digitally signed by Microsoft, click **Yes**.

10. The message "Windows has finished installing the software for this device" is displayed.
11. Click **Finish** to complete the installation.

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Important Safety Instructions

Please read and follow all instructions marked on the product and in the documentation before operating the system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User's Manual for future reference.
- The equipment should be operated in an ambient temperature between 0 to 50°C.
- The equipment should be operated only from the type of power source indicated on the rating label. Make sure the voltage of the power source is correct when connecting the equipment to the power outlet.
- If the user's equipment has a voltage selector switch, make sure that the switch is set to the proper position for the area. The voltage selector switch is set at the factory to the correct voltage.
- For pluggable equipment, ensure they are installed near a socket-outlet that is easily accessible.
- Secure the power cord to prevent unnecessary accidents. Do not place anything over the power cord.
- If the equipment will not be in use for long periods of time, disconnect the equipment from mains to avoid being damaged by transient overvoltage.
- All cautions and warnings on the equipment should be noted.
- Please keep this equipment away from humidity.
- Do not use this equipment near water or a heat source.
- Place this equipment on a reliable surface when installing. A drop or fall could cause injury.
- Never pour any liquid into the opening, this could cause fire or electrical shock.

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- Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure there is adequate space around the system for ventilation when setting up the work area. Never insert objects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power and modem cables from the wall outlets before removing covers.
- Lithium Battery provided (real time clock battery)

  “CAUTION - Risk of explosion if battery is replaced by an incorrect type. Dispose used batteries as instructed in the instructions”
- The equipment should be checked by service personnel if one of the following situation arises:
  - The power cord or plug is damaged.
  - Liquid has penetrated the equipment.
  - The equipment has been exposed to moisture.
  - The equipment is not functioning or does not function according to the user’s manual.
  - The equipment has been dropped and damaged.
  - If the equipment has obvious sign of breakage.
- Never open the equipment. For safety reasons, the equipment should only be opened by qualified service personnel.

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Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ADLINK's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: http://rma.adlinktech.com/policy/.
2. All ADLINK products come with a limited two-year guarantee, one year for products bought in China:
   - The warranty period starts on the day the product is shippped from ADLINK's factory.
   - Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty.
   - For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ADLINK is not responsible for loss of data.
   - Please ensure the use of properly licensed software with our systems. ADLINK does not condone the use of pirated software and will not service systems using such software. ADLINK will not be held legally responsible for products shipped with unlicensed software installed by the user.
   - For general repairs, please do not include peripheral accessories. If peripherals need to be included, be certain to specify which items you sent on the RMA Request & Confirmation Form. ADLINK is not responsible for items not listed on the RMA Request & Confirmation Form.

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3. Our repair service is not covered by ADLINK's guarantee in the following situations:
   - Damage caused by not following instructions in the User's Manual.
   - Damage caused by carelessness on the user's part during product transportation.
   - Damage caused by fire, earthquakes, floods, lightening, pollution, other acts of God, and/or incorrect usage of voltage transformers.
   - Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).
   - Damage caused by leakage of battery fluid during or after change of batteries by customer/user.
   - Damage from improper repair by unauthorized ADLINK technicians.
   - Products with altered and/or damaged serial numbers are not entitled to our service.
   - This warranty is not transferable or extendible.
   - Other categories not protected under our warranty.
4. Customers are responsible for shipping costs to transport damaged products to ADLINK.

If you have any further questions, please email our FAE staff: service@adlinktech.com.

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