



MS-6174 Micro-NLX WH3 Mainboard Specification & User's Guide

1. Introduction

The MSI Micro-NLX WH3 mainboard is a high-performance all-in-one computer mainboard based on the Intel® Celeron™ PPGA processor. This mainboard combines the leading edge Yamaha 744 PC-based AC'97 Digital Audio Processor and Intel® 82559 10/100M Ethernet for LAN. The Intel® Celeron™ PPGA 370 processor supports MMX (Multimedia Extension Technology).

The mainboard uses the highly integrated Intel® 82810 chipset to support 3D/2D graphics digital video out port, and high speed hub interface. The Intel® 82801AA chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). It also supports up to 6 PCI masters and improves the IDE transfer rate by supporting Ultra ATA/66 IDE that transfers data at the rate of 66MB/s.

The mainboard also supports the System Hardware Monitor Controller which is included on Winbond LPC I/O. Its functions include: CPU/power/system fan revolution detect, CPU/system voltage monitor, system temperature monitor, Top Tech and chassis intrusion detect.



2. Mainboard Specification

Processor

- Socket 370 for Intel® Celeron™ processor
- Supports 300MHz, 333MHz, 366MHz, 400MHz, 433MHz, 466MHz, and faster.
- Supports Core/Bus Ratios:x2, x2.5, x3, x3.5, x4, x4.5, x5, x5.5, x6, or higher

Chipset

- Intel® 82810/82801AA chipset.

FSB (Front Side Bus)

- 66.8/75/83.3/90/95/200.2/105/110/114/119/124/129/133.6/138/150 MHz clocks are supported.

Main Memory

- Supports four memory banks using two 168-pin unbuffered DIMM.
- Supports a maximum memory size of 512MB DIMM (128Mb SDRAM) only
- Supports 3.3v SDRAM DIMM.

Slots

- PCI Riser supports three 32-bit master PCI Bus slots and one 16-bit ISA bus slot (wherein one PCI/ISA slot is shared, optional).
- Supports 3.3v/5v PCI bus Interface.
- Compliant with *PCI Local Bus Specification Revision 2.2*.

On-Board IDE

- An IDE controller on the Intel® 82801AA Chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra ATA/66 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals

- On-Board Peripherals include:
 - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
 - 2 serial connectors (COM 1 + COM 2)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 2 USB ports
 - 1 IrDA connector for SIR.
 - 1 Audio port and 1 Midi/Game Port
 - 1 VGA Port
 - LCD panel link connector

Audio

- Yamaha 744
 - PCI 2.2 compliant
 - 64 voice wavetable
 - Support Direct Sound Acceleration
 - AC'97 2.1 Interface

Video

- Intel 82810 chipset.
- 3D graphics with texturing and visual enhancements up to 1024x768x16 at 85MHz refresh rate.
- 2D graphics up to 1600x1200x8 at 85 MHz refresh rate.
- Digital Video Out Port support.

Network

- Intel 82559 10/100M Ethernet
 - FFW baseline & NET PC specs compliant
 - Advanced Power Management (ACPI support)
 - Integrated Alert On LAN™
 - ARP & Flexible frame filtering
 - Software drivers are backwards compatible
 - IP checksumming in hardware

I/O Chip

- Winbond LPC I/O W83627HF
 - LPC Spec. 1.0
 - 8042-based keyboard controller (support PS/2 mouse)
 - Support Device Power Management, ACPI
 - Support game port/midi port
 - Hardware monitor function.

System Hardware Monitor

- CPU/Power Supply/Chassis Fan Revolution Detect
- CPU Fan Control (the fan will automatically stop when the system enters suspend mode)
- System Voltage Detect
- CPU Overheat Warning.
- Display Actual Current Voltage
- Chassis Intrusion



FWH

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface(DMI) function which records your mainboard specifications.
- ACPI(Advanced Configuration and Power Interface) feature.
- Register-based and Hardware-based locking.

Dimension

- Micro-NLX form factor : 25.4cm(L) x 20.3cm(W) x 4 layers PCB

Mounting

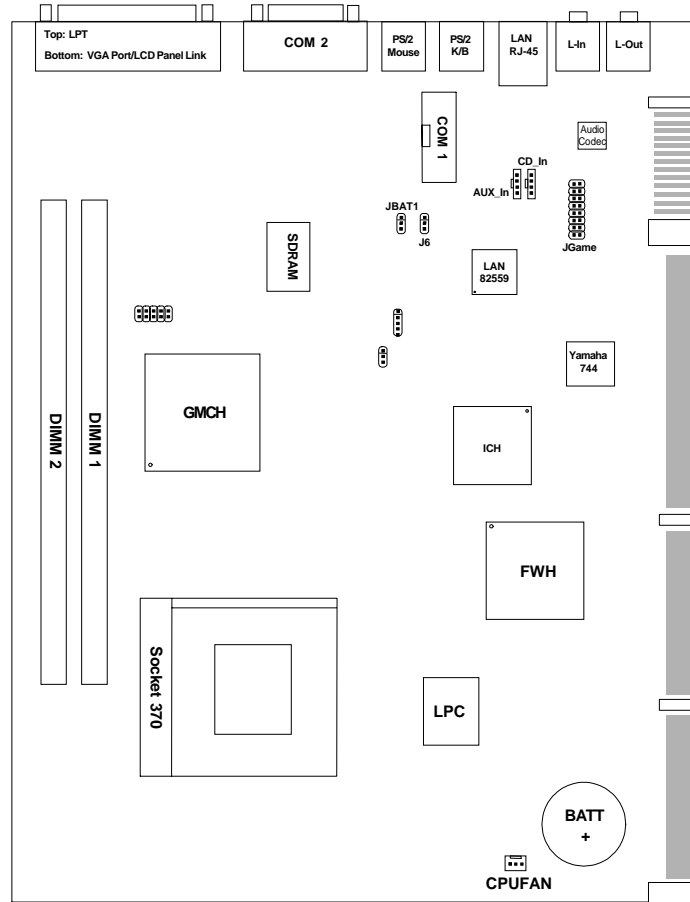
- 4 mounting holes.

Other Features

- Keyboard Password Wake-Up
- LAN Wake-Up

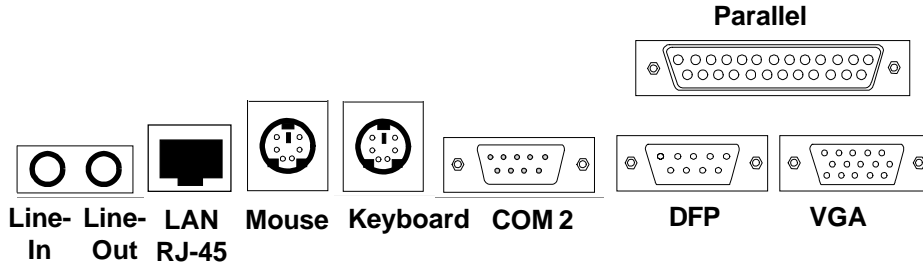


3. Mainboard Layout



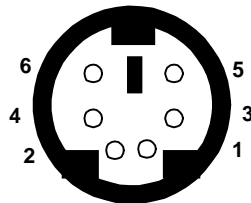
MS-6174 Micro-ATX WH3 Mainboard

4. Backpanel Layout



4.1 Connectors

4.1-1 Mouse Connector

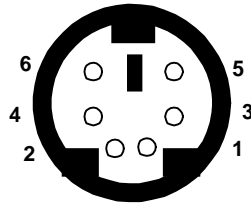


PS/2 Mouse (6-pin Female)

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

PS/2 Mouse Pin Definition

4.1-2 Keyboard Connector



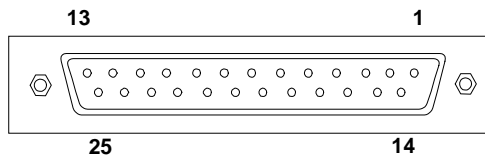
PS/2 Keyboard (6-pin Female)

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

PS/2 Keyboard Pin Definition



4.1-3 Parallel Port Connector

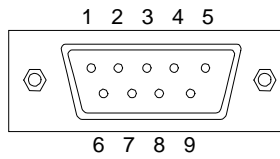


LPT 25-Pin Male Connectors

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground1



4.1-5 Serial Port Connectors

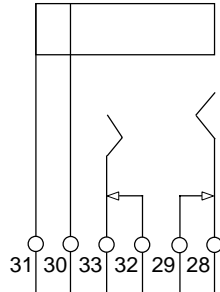


COM A / COMB 9-Pin male DIN connectors

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or 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



4.1-6 Speaker

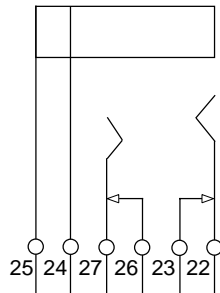


Standard Stereo Jack - Speaker Out

PIN	SIGNAL	DESCRIPTION
28	LINEOUTL	Line Out - Left
29	GND	Analog Ground
30	GND	Analog Ground
31	GND	Analog Ground
32	GND	Analog Ground
33	LINEOUTR	Line Out - Right

Speaker Jack

4.1-7 Line-In



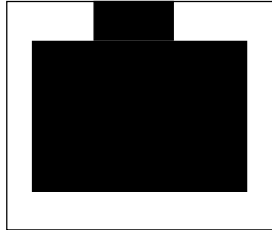
Standard Stereo Jack - Line In

PIN	SIGNAL	DESCRIPTION
22	LINEINL	Line In - Left
23	GND	Analog Ground
24	GND	Analog Ground
25	GND	Analog Ground
26	GND	Analog Ground
27	LINEINR	Line In - Right

Line In Jack

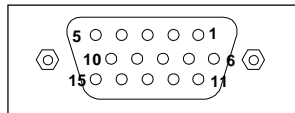


4.1-8 LAN Connector



**RJ-45
Connector**

4.1-9 VGA DB 15 Pin Connector



Analog Video Display Connector(DB15-S)	
Pin	Signal Description
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

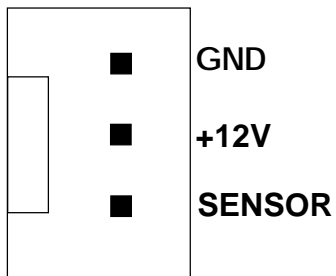


5. DIMM DRAM Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB



6. CPU1 Fan Power Connector





Appendix A

CPU Core Speed Derivation Procedure

1. This mainboard can auto-detect the Core/Bus (Fraction) ratio of the CPU

If	<u>CPU Clock</u>	=	66MHz
	<u>Core/Bus ratio</u>	=	3.5
then	<u>CPU core speed</u>	=	<u>Host Clock x Core/Bus ratio</u>
		=	66MHz x 3.5
		=	233MHz

CPU Speed Setting: SW1

Frequency	Pin 1-2	Pin 3-4	Pin 5-6	Pin 7-8
150	open	open	short	short
138	short	short	open	short
133.6	open	open	open	open
129	short	open	open	short
124	open	open	open	short
119	short	short	short	open
114	open	short	short	open
110	short	open	short	open
105	open	open	short	open
100.2	open	short	open	open
95	open	short	open	short
90	open	short	short	short
83.3	short	short	short	short
75	short	open	short	short
66.8	short	short	open	open



Jumpers

Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of this jumper to keep the CMOS data.



Note: You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

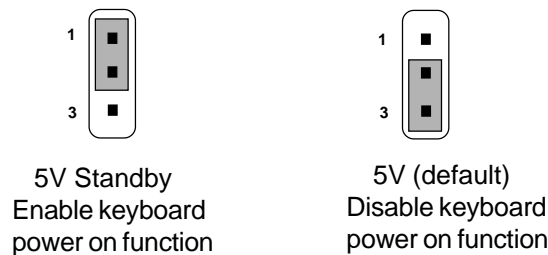
Overclocking Jumper: J9

This jumper is only used for overclocking.

J9	Bus Frequency
Short	Depends on CPU
Open	Overclocking

Keyboard Power: JKBV1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of this jumper to keep the CMOS data.



Note: To be able to use this function, you need a power supply that provide enough power for this feature. (750 ma power supply with 5V Stand-by)



FWH Top Block Jumper: J13

Open	FWH Top Block Locked
Short	FWH Top Block Unlocked

JP1

PIN	
1-2	Primary Codec Down Enabled
2-3	Primary Codec Down Disabled

Front Panel USB Jumper: SW1

PIN (Short)	Enabled
1-2	Front Panel USB Connector
4-5	Front Panel USB Connector
2-3	Back Top USB Connector
5-6	Back Top USB Connector

Keyboard Power On Jumper: JKBV1

PIN (Short)	
1-2	Keyboard Power On Enabled
2-3	Keyboard Power On Disabled



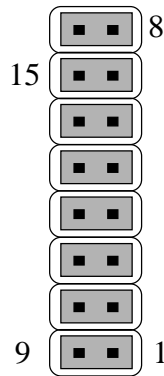
JSPKR1

PIN (Short)	
1-2	PC Beep through AC97 Codec
2-3	PC Beep through Buzzer

LAN Jumper: J6

Pin 1-2	LAN Enabled
Pin 2-3	LAN Disabled

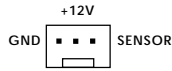
JGAME1



PIN	SIGNAL
1	+5v
2	Joystick But0
3	Joystick X1
4	GND
5	GND
6	Joystick Y1
7	Joystick But1
8	+5v
9	+5v
10	Joystick But2
11	Joystick X2
12	Midi Out
13	Joystick Y2
14	Joystick But3
15	Midi In

Fan Power Connectors: CPUFAN

The connector support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.



For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

- Note:**
1. Always consult vendor for proper CPU cooling fan.
 2. CPU FAN supports the FAN control, you can install PC Alert utility, this will automatically set the CPU FAN Speed by CPU temperature.



Appendix B - Schematics



Notes



Appendix C - Bill for Materials



Notes



Appendix D - Mechanical Drawings



Notes



Appendix E - Test Reports

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