ENDAT-370BL-A/370BL/370FL
All in One
Motherboard

User's Manual

Rev. 1B

(FOR PCB REV. 1B)

Copyright Notice

Installation Notice

The manufacturer recommends using a grounded plug to ensure proper motherboard operation. Care should be used in proper conjunction with a grounded power receptacle to avoid possible electrical shock. All integrated circuits on this motherboard are sensitive to static electricity. To avoid damaging components from electrostatic discharge, please DO NOT remove the board from the anti-static packing before discharging any static electricity to your body by wearing a wrist-grounding strap. The manufacturer is not responsible for any damage to the motherboard due to improper operation.

Manufacturer Notice (IMPORTANT)

This manual covers three different layout model of Socket 370 Pentium II with LAN adapter All-In-One motherboards that is manufactured currently offer to market. The respective board layout outlines are shown on Chapter 1-4/1-5/1-6. Please refer to the following description to make sure which model you have before using.

SOCKET 370 ALL-IN-ONE MOTHERBOARD SPECIFICATIONS

MODEL		ENDAT-370BL-A	ENDAT-70BL	ENDAT-370FL	
CPU		Support Socket 370 type CPU			
CPU Clock Base		Up to 133MHz CPU Clock Frequency			
System Chipset		VIA VT82C693A (NB) + VT82C686A (SB)			
System BIOS		AWARD (2Mbits Flash ROM)			
LCD/VGA Chipset		ATI Rage XL 2x AGP 3D Chipset, Support for Digital Flat Panel (DFP), 4MB SDRAM Video RAM on Board, Upto 16MB			
LAN Chipset		Intel 21143 (10/100) W/BOOT ROM	N/A	Realtek 8139A/B (10/100) W/BOOT ROM	
System Memory		Upto 512MB, 168pin DIMM x 2 (66/100 DIMMs)			
DiskOnChip		Socket for DiskOnChip			
IDE Interface		Yes, Ultra DMA33/66			
IrDA Port, USB Port		Yes			
Multi I/O Chipset		Winbond 83877TF Supports 4 Serial/1 Parallel Ports Supply +5V/+12V DC Power on Serial Ports			
Expansion Slot		Extension for PCI/ISA BUS (Max. PCI x 4)			
AD Selector	AD23	FREE (INT.A,B,C,D)	FREE (INT.A,B,C,D)	AD24	LAN (INT.A,B,C,D)
	AD22	FREE (INT.B,C,D,A)	FREE (INT.B,C,D,A)	AD23	FREE (INT.B,C,D,A)
	AD21	FREE (INT.C,D,A,B)	FREE (INT.C,D,A,B)	AD22	FREE (INT.C,D,A,B)
	AD24	LAN (INT.D,A,B,C)	FREE (INT.D,A,B,C)	AD21	FREE(INT.D,A,B,C)
K/B / Mouse Jack		Two Mini Din Jack			
PinHeader		For PS/2 Mouse and Keyboard			
Location of Exp. Slot		On the 7th slot of Standard AT M/B	On the 7th slot of Standard AT M/B	On the 6th slot of Standard AT M/B	
Format/Dimension		WD/LPX – 4 Layers 220x250mm	WD/LPX – 4 Layers 220x250mm	PC/AT-4 Layers 223x220mm	

TABLE OF CONTENTS

Chapter 1. Introduction

The ENDAT-370BL-A/370BL/370FL All-In-One motherboard use VIA VT82C693A and VT82C686A chipset. Built-in ATI Rage XL 2x AGP 3D chipset which supports Digital Flat Panel (DFP) and Intel 21143xx LAN chipset for 370BL-A/370BL and Realtek 8139A/B for 370FLwith RJ45 Jack for 10BaseT/100BaseT with BOOT-ROM support. Our boards offer the highest performance PC specification in the industry. The ENDAT-370BL-A/ ENDAT-370BL/ENDAT-370FL can run with the Intel socket 370 Celeron CPUs upto 500MHz or latest CPU.

The motherboard is fully compatible with industry standards adding many technical enhancements and also is fully compatible with thousands of software applications developed for IBM PC/AT compatible computers. The control logic provides high-speed performance for the most advanced multi-user, multitasking applications available today. "Tomorrow PC technology is here today".

1-1. Features

- Support for Socket 370 processors, Clock base on 66 /100/133 MHz CPU front side bus (FSB)
- Using VT82C693A single chip implementation for 64-bit Socket 370 CPU, 64-bit system memory and 32-bit PCI and 32-bit AGP interfaces
- Chipset includes UltraDMA-33/66 EIDE, USB and keyboard / PS2-mouse interfaces plus RTC/CMOS on chip
- Full Featured Accelerated Graphics Port (3D AGP) Controller, AGP x2.0 compliant
- On board built-in ATI 3D RAGE XL 2x AGP Bus VGA adapter with TMDS (DFP) connector
- Supports 4MB SDRAM, up to 16MB Supports 133MHz 2X mode for AD and SBA signaling
- 33MHz operation on the primary PCI Bus
- Supports up to five PCI masters
- PCI-2.1 compliant, 32 bit 3.3V PCI interface with 5V tolerant inputs

- DRAM interface synchronous with host CPU (66/100MHz) or AGP (66MHz) for most flexible configuration
- Supports up to 512MB memory with two 168pin DIMM Socket (PC-66/100 DIMM)
- Supports FP, EDO, SDRAM and VCM SDRAM memory types
- 3.3V DRAM interface with 5V-tolerant inputs
- Optional bank-by-bank ECC (single-bit error correction and multi-bit error detection) or EC (error checking only) for DRAM integrity
- Supports Plug and Play functions
- On board LAN adapter, support 10BaseT/100BaseT, (OnBoard) BOOT ROM optional
- Supports for 4 COM ports, STD. RI(RS-232) +12V/+5V DC Power selectable and one SPP/EPP/ECP Parallel port
- On board built-in USB functions
- 188pin expansion slot for both PCI and ISA Bus signal
- AWARD BIOS FLAH ROM (2Mbit)
- IR function can be Enabled/Disabled by BIOS
- On board LAN adapter, Video Adapter can be Enabled/Disabled by jumper settings

1-2. Unpacking

The motherboard comes securely packaged in a sturdy cardboard shipping carton. In addition to the User's Manual, the motherboard package includes the following items.

- ENDAT-370BL-A/ENDAT-370BL/ENDAT-370FLAll-In-One Motherboard
- HDC/FDC Cables, COM Ports Bracket
- IDE Driver includes: drivers for Windows 3.1, Windows NT 3.x/4.x, Windows 95, OS/2, Novell Netware and AWARD FLASH ROM utilities
- VGA utilities and software drivers
- Driver utilities for LAN adapter

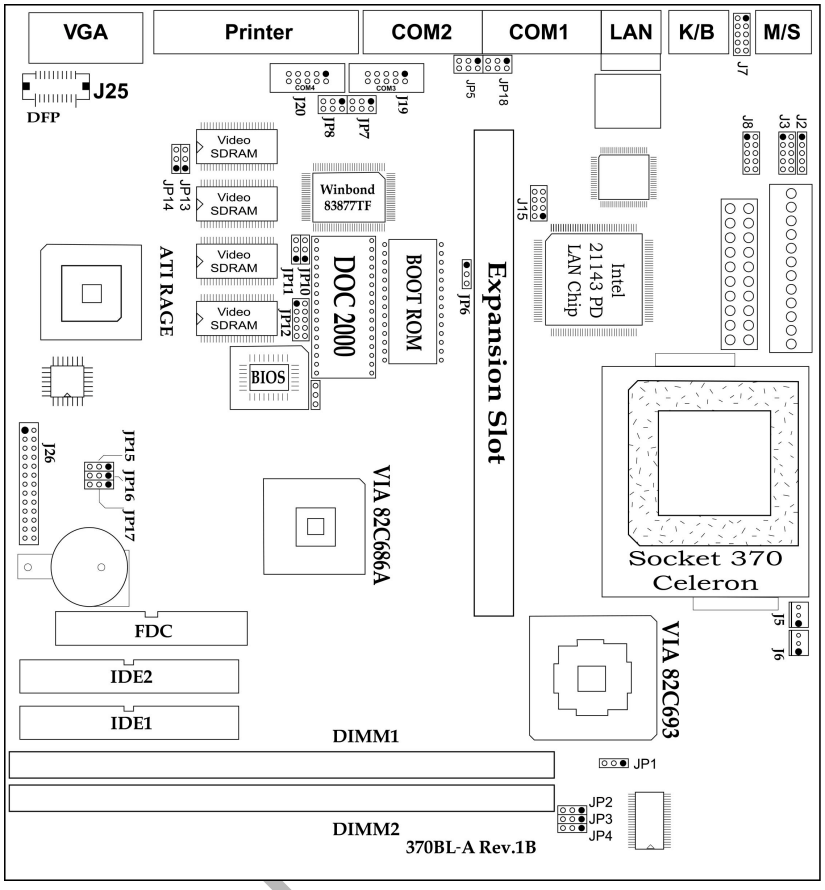
If any of these items are missed or damaged, please contact the dealer from whom you purchased the motherboard. Save the shipping materials and carton in the event that you want to ship or store the board in the future.

Note: Leave the motherboard in its original packing until you are ready to install it!

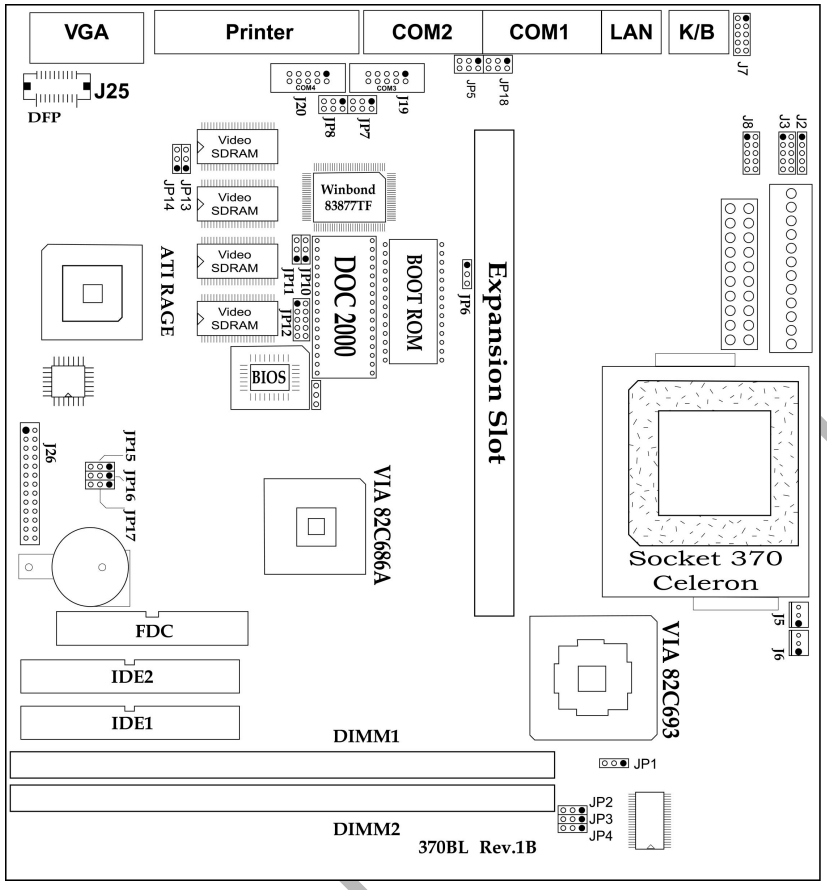
1-3. Electrostatic Discharge Precautions

Make sure you properly ground yourself before handling the motherboard or other system components. Electrostatic discharge can easily damage the components. Note: You must take special precaution when handling the motherboard in dry or air-conditioned environments.

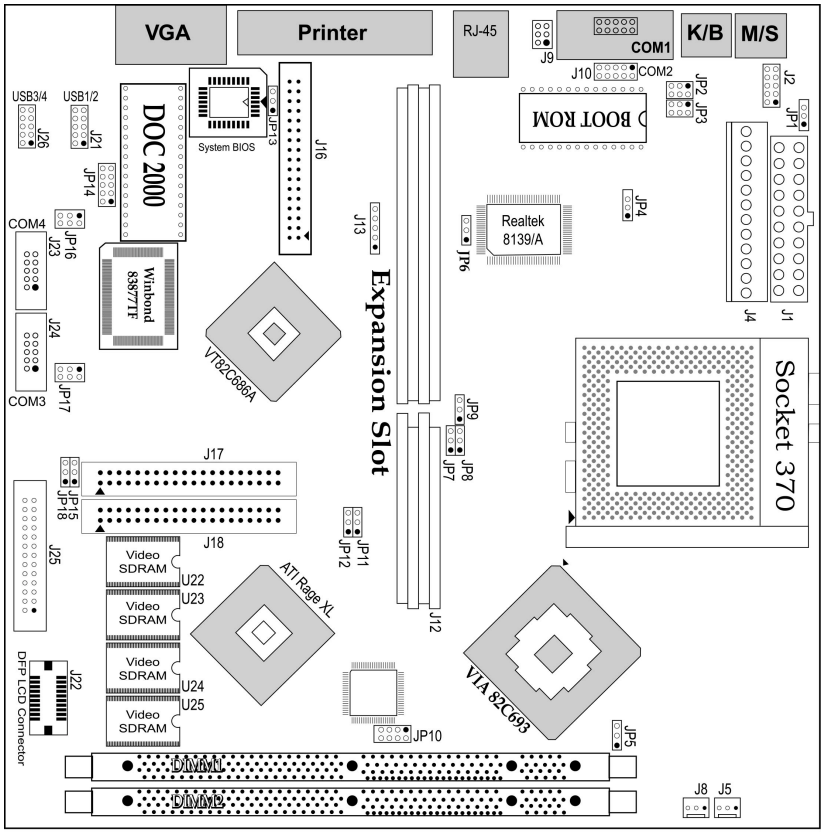
1-4. Motherboard Layout (ENDAT-370BL-A)



1-5 Motherboard Layout (ENDAT-370BL)



1-6 Motherboard Layout (ENDAT-370FL)



370 FL Rev: 1A

CHAPTER 2. Setting up the Motherboard

This chapter describes getting your motherboard ready for operations.

- Installing a CPU upgrade, make sure the correct CPU operating voltage, jumper settings and frequency.
- Installing DIMM memory.
- Double check the insertion and orientation of the CPU before applying power, improper installation will result in permanent damage to the CPU

2-1. Jumpers and Connectors - ENDAT-370BL-A/ENDAT-370BL

Jumpers and Connectors

Function	Jumpers/Connectors
CPU: CPU Clock Frequency	JP1, JP2, JP3, JP4 (Default Setting)
CPU Ratio	JP21 (Default Setting)
Power for CPU Cooling Fan	J5
Power for DC Fan	J6
Power Supply: Type (AT/ATX)	JP13
ATX Power on/off Switch	J26 Pin13, Pin15
VGA Adapter Disable/Enable	JP14
TV-OUT Pin Header	JP15
Digital Flat LCD Panel Connector	J25
LAN Adapter Disable/Enable	JP6
Wake on LAN	JP16
LAN LED Indicator	J15
COM Ports DC Power Selector	JP5, JP7, JP8, JP18
COM3/COM4 Port	J19, J20
COM3/COM4 IRQ Selector	JP10, JP11

Function	Jumpers/Connectors
DiskOnChip Memory Address	JP12
Clear CMOS	JP17
Pin Header for PS/2 Keyboard/Mouse	J7
PS/2 Mouse Connector	J1
PS/2 Keyboard Connector	J10
IR Connector	J2
USB Port Header Connector	J3, J8
IDE 2 Connector	J28
IDE 1 Connector	J29
FDD Connector	J27
Header for Panel	**J26**
Key Lock/Power LED	J26 Pin1, Pin3, Pin5, Pin7, Pin9
External Speaker	J26 Pin2, Pin4, Pin6, Pin8
HDD LED	J26 Pin12, Pin14
Suspend Mode	J26 Pin17, Pin19
Hardware Reset Switch	J26 Pin18, Pin20
Sleep Mode	J26 Pin21, Pin23
Turbo LED for Case Only	J26 Pin22, Pin24
Buzzer on/off	J26 pin25, Pin26

Note: It is no need to set the socket 370 CPU Voltage/Clock jumpers, it is Auto Detect.

Note: The cooling fan and heat sink are required for Pentium processors. Please use the qualified heat sink and cooling Fan to avoid any unpredicted result.

JP5, JP18, JP7, JP8: DC Power Selector for COM Port

	JP18 COM1	JP5 COM2	JP7 COM3	JP8 COM4
Pin 1-2	+12V			
Pin 3-4	STD. RI			
Pin 5-6	+5V			

JP10, JP11: COM3/COM4 IRQ Selector

JP10	COM3	JP11	COM4
1-2	IRQ3	1-2	IRQ4
2-3	IRQ5	2-3	IRQ10

JP12: DiskOnChip Memory Address Selector

JP12		Memory Address
1-2	7-8	0C800H-0C9FFH
1-2	9-10	0CC00H-0CDFFH
3-4	7-8	ODCCCH-0D1FFH
3-4	9-10	0D400H-0D5FFH
5-6	7-8	0D800H-0D9FFH
5-6	9-10	0DC00H-0DDFFH (Default)

JP13: Power Supply Type Selector

Pin 1-2	AT Power
Pin 2-3	ATX Power

JP14: VGA Disable/Enable

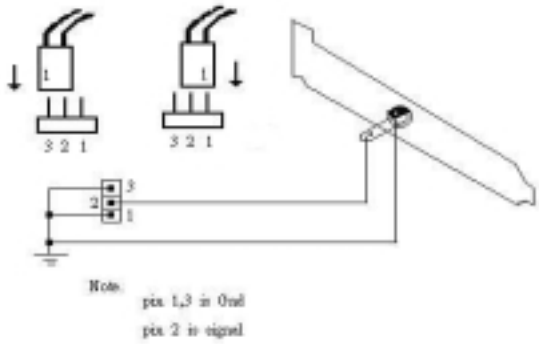
Pin 1-2	Enable
Pin 2-3	Disable

JP6: LAN Disable/Enable

Pin 1-2	Enable
Pin 2-3	Disable

JP15: TV-Out Pin Header

Pin 1-3	GND
Pin 2	Composite Output



JP16: Wake on LAN Selector

Pin 1-3	Enable
Pin 2-3	Disable

JP17: CMOS Data Clear

Pin 1-2	Normal
Pin 2-3	Clear CMOS Data

J3, J8: USB Port 1/2/3/4 Pin Header

	J3: USB1	J3: USB2	J8: USB3	J8: USB4
USB_VCC	1	2	1	2
USB_DATA-	3	4	3	4
USB_DATA+	5	6	5	6
USB_GND	7	8	7	8
USB_GND	9	10	9	10

J2: IR Connector

Pin No.	Description
1	Vcc
2	N.C.
3	IRRX
4	GND
5	IRTX

J5, J6: CPU / Case DC Fan Connector

Pin 1	Fan Speed Sensor
Pin 2	+12V
Pin 3	GND

J29, J28: IDE 1/2

IDE 1	J29
IDE 2	J28

J15: LAN LED Indicator

LED (+)	LED (-)	Function
Pin 2	Pin 1	Speed (100MbaseT=ON)
Pin 4	Pin 3	Link
Pin 6	Pin 5	Full Duplex
Pin 8	Pin 7	Active

J26: Header for Panel

PIN	Description
1,3,5,7,9	Power LED / Key Lock
2,4,6,8	External Speaker
12,14	HDD LED
13,15	ATX Power on/off
17,19	Suspend Mode
18,20	Hardware Reset Switch
21,23	Sleep Mode
22,24	Turbo LED (Case Only)
25,26	Buzzer on/off

2-2. Jumpers and Connectors - ENDAT-370FL

Jumpers and Connectors

Function	Jumpers/Connectors
CPU: CPU Clock Frequency	JP7, JP8, JP9(Default Setting)
100MHz/133MHz Selector	JP5(Default Setting)
Power for CPU Cooling Fan	J8
Power for DC Fan	J5
Power Supply: Type (AT/ATX)	JP1
ATX Power on/off Switch	J25 Pin13, Pin15
VGA Adapter Disable/Enable	JP18
TV-OUT Pin Header	JP10
Digital Flat LCD Panel Connector	J22
LAN Adapter Disable/Enable	JP6
Wake on LAN	JP4
LAN LED Indicator	J9
COM Ports DC Power Selector	JP2, JP3, JP16, JP17
COM3/COM4 Port	J23, J24
COM3/COM4 IRQ Selector	JP11, JP12
DiskOnChip Memory Address	JP14
Clear CMOS	JP15
Flash ROM Voltage Selector	JP13 (Default Setting)
Pin Header for PS/2 Keyboard/Mouse	J2
PS/2 Mouse Connector	J7
PS/2 Keyboard Connector	J3
IR Connector	J13
USB Port Header Connector	J21, J26
IDE 2 Connector	J17
IDE 1 Connector	J18
FDD Connector	J16
Header for Panel	J25
Key Lock/Power LED	J25 Pin1, Pin3, Pin5, Pin7, Pin9

Function	Jumpers/Connectors
External Speaker	J25 Pin2, Pin4, Pin6, Pin8
HDD LED	J25 Pin12, Pin14
Suspend Mode	J25 Pin17, Pin19
Hardware Reset Switch	J25 Pin18, Pin20
Sleep Mode	J25 Pin21, Pin23
Turbo LED for Case Only	J25 Pin22, Pin24
Buzzer on/off	J25 pin25, Pin26

Note: It is no need to set the socket 370 CPU Voltage/Clock jumpers, it is Auto Detect.

Note: The cooling fan and heat sink are required for Pentium processors. Please use the qualified heat sink and cooling Fan to avoid any unpredicted result.

JP2, JP3, JP17, JP16: DC Power Selector for COM Ports

	JP2 COM1	JP3 COM2	JP17 COM3	JP16 COM4
Pin 1-2	+12V			
Pin 3-4	STD. RI (Default)			
Pin 5-6	+5V			

JP11, JP12: COM3/COM4 IRQ Selector

JP11	COM3	JP12	COM4
Pin 1-2	IRQ5	Pin 1-2	IRQ10
Pin 2-3	IRQ4	Pin 2-3	IRQ3

JP14: DiskOnChip Memory Address Selector

JP14		Memory Address
1-2	7-8	0C800H-0C9FFH
1-2	9-10	0CC00H-0CDFFH
3-4	7-8	ODCCCH-0D1FFH
3-4	9-10	0D400H-0D5FFH
5-6	7-8	0D800H-0D9FFH
5-6	9-10	0DC00H-0DDFFH (Default)

JP1: Power Supply Type Selector

Pin 1-2	AT Power
Pin 2-3	ATX Power

JP18: VGA Disable/Enable

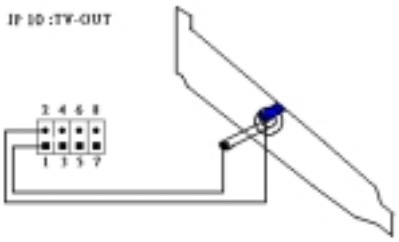
Pin 1-2	Enable
Pin 2-3	Disable

JP6: LAN Disable/Enable

Pin 1-2	Disable
Pin 2-3	Enable

JP10: TV-Out Pin Header

Pin 2, 4, 6, 8	GND
Pin 1	S-Video, Y Signal
Pin 3	S-Video, C Signal
Pin 5	S-Video, SYNC Signal
Pin 7	TV-Out Signal



JP15: CMOS Data Clear

Pin 1-2	Normal
Pin 2-3	Clear CMOS Data

JP13: FLASH ROM Voltage Selector (Default Setting)

Pin 1-2	5V FLASH ROM
Pin 2-3	12V FLASH ROM

J21, J26: USB Port 1/2/3/4 Pin Header

	J21: USB1	J21: USB2	J26: USB3	J26: USB4
USB_VCC	1	2	1	2
USB_DATA-	3	4	3	4
USB_DATA+	5	6	5	6
US B_GND	7	8	7	8
USB_GND	9	10	9	10

J13: IR Connector

Pin No.	Description
1	Vcc
2	N.C.
3	IRRX
4	GND
5	IRTX

J8, J5: CPU / Case DC Fan Connector

Pin 1	Fan Speed Sensor
Pin 2	+12V
Pin 3	GND

J17, J18: IDE 1/2

IDE 1	J18
IDE 2	J17

J25: Header for Panel

PIN	Description
1,3,5,7,9	Power LED / Key Lock
2,4,6,8	External Speaker
12,14	HDD LED
13,15	ATX Power on/off
17,19	Suspend Mode
18,20	Hardware Reset Switch
21,23	Sleep Mode
22,24	Turbo LED (Case Only)
25,26	Buzzer on/off

2-3. Installing Memory

The motherboard offers two 168pin DIMM sockets supporting up to 512MB of memory. The DIMM memory can be 66MHz or 100MHz (PC-100). Different DRAM types may be used in mixed combinations and different DRAM timing for each bank.

2-4. VGA SDRAM Supporting

The ENDAT-370BL-A/ENDAT-370BL/ENDAT-370FL supports 4MB upto 16MB SDRAM. The amount of video memory on your motherboard determines the numbers of color and the video graphic resolutions.

2-5. Installing Riser Card

ENDAT-370BL-A/370BL Installing Riser Card(Max.4 PCI Slot on Riser Card)

PCI Slot No.	ADSEL	INT	ENDAT-370BL-A	ENDAT-370BL
PCI 1	AD23	A,B,C,D	Free	Free
PCI 2	AD22	B,C,D,A	Free	Free
PCI 3	AD21	C,D,A,B	Free	Free
PCI 4	AD24	D,A,B,C	LAN	Free

ENDAT-370FL Installing Riser Card (Max. 4 PCI Slot on Riser Card)

PCI Slot No.	ADSEL	INT	ENDAT-370FL
PCI 1	AD24	A,B,C,D	LAN
PCI 2	AD23	B,C,D,A	Free
PCI 3	AD22	C,D,A,B	Free
PCI 4	AD21	D,A,B,C	Free

There are two different riser cards can be fitted to ENDAT-370BL-A/ 370BL/ 370FL All-In-One motherboard. The first one is a 98pin ISA Bus riser card (traditional ISA Bus riser card), the second one is a 188pin PCI/ISA riser card. Please note: The jumper settings of PCI/ISA riser cards have to be matched with the motherboard AD select. The correct AD select for ENDAT-370BL-A/ 370BL/ 370FL All-In-One motherboards are listed as above table.

Caution: Do not insert PCI Bus Add-On cards directly into the on-board expansion slot!

2-6. Assigning IRQs for Expansion Cards

Some expansion cards require IRQ(Interrupt Request Vector) to operate. Generally, an IRQ must be exclusively assigned to one use. In a standard design, there are 16 IRQs available and most of them already in used by other part of the system.

Both ISA and PCI expansion cards may need to use IRQs. System IRQs are available to cards installed in the ISA expansion Bus first. Any remaining IRQs then may be assigned to this PCI Bus. You can use Microsoft's Diagnostic (MSD.EXE) utility included in the Windows directory to see their map. Make sure that there are no two devices using the same IRQs in the system. Otherwise this will cause the system to hang up or give unexpected result. To simplify the process, this motherboard complies with the Plug and Play (PnP) specification, which was developed to allow automatic system configuration. Whenever a PnP-compliant card is added to the system, PnP cards and IRQs are automatically assigned if available. If the system has both Legacy and PnP ISA cards installed. IRQs are assigned to PnP cards from those not used by Legacy cards. The PCI and PnP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that do not work with the BIOS, you can contact your vendor for an ISA configuration utility.

An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PnP ISA cards. In the PCI Bus design, the BIOS is automatically assigned an IRQ to a PCI slot that has a card in it which requires an IRQ. To install a PCI card, you need to set the correct "ADSEL" and "INT" (interrupt) assignment. Please refer to "Chapter 2-5" Installing Riser Card for detail assignments.

IRQ	Status	Assignment
0	Used	Timer
1	Used	Keyboard
2	Used	Second 8259
3	Used	COM2
4	Used	COM1
5	Used	COM3 (Optional)
6	Used	Floppy Disk
7	Used	LPT1

IRQ	Status	Assignment
8	Used	RTC
9	Used	Redirected IRQ2
10	Used	COM4 (Optional)
11	Used	LAN Adapter (on board)
12	Used	PS/2 Mouse
13	Used	Coprocessor
14	Used	Hard Disk (IDE 1)
15	Used	Reserved (IDE 2)

2-7. Assigning DMA Channels for ISA Cards

Since ISA cards, both Legacy and PnP may also need to use a DMA (direct memory access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PCI and PnP configuration section of the BIOS setup utility. In the BIOS setup, you should choose "Yes" for those IRQ's and DMA's you wish to reserve for Legacy cards.

Chapter 3. AWARD BIOS Setup

Use the CMOS setup program to modify the system parameters to reflect the environment installed in your system and customize the system as desired. Press the <DEL> key to enter into the CMOS setup program when you turn on the power. Setting can be accessed via arrow keys and press <Enter> to choose an option to configure the system properly.

In the main menu, press F10 or "SAVE & EXIT SETUP" to save your changes and reboot the system. Choose "EXIT WITHOUT SAVING" to ignore the changes and exit the setup procedure. Pressing <ESC> at anywhere during the setup will return to the main menu.

"THE BIOS FEATURE SETUP", "CHIPSET FEATURE SETUP" and "PCI CONFIGURATION SETUP" require board knowledge on PC/AT system architecture and VIA VT82C693A and VT82C686A chipset specification. They are intended to be used by well-trained technicians and experienced user. Incorrect setup could cause system malfunction.

3-1. Quick Setup

In most cases, you can quickly configure the system by using the following procedure. The manufacturer highly recommends that you to use "Quick Setup" for setting CMOS to avoid any unpredictable results.

1. Choose "STANDARD CMOS SETUP" from the main menu to configure the date and time, hard disk type, floppy disk drive type etc.
2. Choose "LOAD SETUP DEFAULTS" from the main menu for loading the defaults from the "BIOS Feature Setup" and "Chipset Feature Setup" which is set by the manufacturer for the most stable normal configuration.
3. Press F10 or "SAVE & EXIT SETUP" to save the changes and reboot the system.

3-2. Description of the BIOS Setup Options

Please make clearly the means of those option parameters, improper setting will cause system to hang up or performance poorly. Most items are clearly understood from the screen prompt. The manufacturer highly recommends that you use the "Default" settings to avoid any unpredictable result.

ROM PCI/ISA BIOS(2A6LGU4A)(ENDAT-370BL-A/370BL)
ROM PCI/ISA BIOS (2A6LGU4E)(ENDAT-370FL)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Powr on Self Test	: Enabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up floppy Seek	: Disabled		
Boot Up NumLock Status	:ON		
IDE HDD Block Mode	: Enabled		
Gate A20 Option	: Fast		
Memory parity/ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate(Chars/Sec)	: 6		
Typematic Delay(Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		
OS Select for DRAM> 64MB	: Non-OS2		

3-3. Details of the Chipset Feature Setup

ROM PCI/ISA BIOS (2A6LGU4A)(ENDAT-370BL-A/370BL)
ROM PCI/ISA BIOS (2A6LGU4E)(ENDAT-370FL)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC

Bank 0/1 DRAM Timing	:SDRAM 8/10ns	
Bank 2/3 DRAM Timing	:SDRAM 8/10ns	
SDRAM Cycle Length	: 2	
DRAM Clock	: Host CLK	
Memory Hole	: Disabled	
Read Around Write	: Disabled	
Concurrent PCI/Host	: Disabled	
System BIOS Cacheable	: Enabled	
Video RAM Cacheable	: Enabled	
AGP Aperture Size	: 128M	
AGP-2X Mode	: Enabled	
OnChip USB	: Disabled	

This Section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM Setting

Chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings has been carefully chosen and should only be altered if data is being lost. Such a scenario might be occur if the system had mixed different speed DRAM chips .installed so the greater delays may be required to preserve the integrity of the data held in the slower memory chips.

BANK 0/1, 2/3 DRAM Timing

This item allows you to select the value in this filed, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

The Choice: EDO 50ns, EDO 60ns, Slow, Medium, Fast, Turbo.

SDRAM Cycle Length

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this filed from the default value specified by the system designer.

The Choice: 2, 3

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The Choice: 15M-16M, Disabled

Read Around Write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM.

The Choice: Enabled, Disabled.

Concurrent PCI/Host

When disabled, CPU bus will be occupied during the entire PCI operation period.

The Choice: Enabled, Disabled.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The Choice: Enabled, Disabled.

Video ROM Cacheable

Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The Choice: Enabled, Disabled

AGP Aperture Size

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The Choice: 4M, 8M,1 6M, 32M, 65M, 128M

AGP – 2X Mode

This item allows you to enable / disable the AGP-2X (Clock 133MHz) Mode.

The Choice: Enabled, Disabled.

OnChip USB

This should be enabled if your system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The Choice: Enabled, Disabled.

3-4. Details of Power Management Setup

The Power Management Setup allows you to configure your system to the most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS (2A6LGU4A)(ENDAT-370BL-A/370BL)
ROM PCI/ISA BIOS(2A6LGU4E)(ENDAT-370FL)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC

ACPI Function	: Disabled	Primary INTR.	: ON
Power Management	: User Define	IRQ3 (COM 2)	: Primary
PM Control by APM	: Yes	IRQ4 (COM 1)	: Primary
Video Off After	: Suspend	IRQ5 (LPT 2)	: Primary
Video Off Method	:V/H SYNC+Blank	IRQ6 (Floppy Disk)	: Primary
MODEM Use IRQ	: 3	IRQ7 (LPT 1)	: Primary
Soft-Off by PWRBTN	: Instant-Off	IRQ8 (RTC Alarm)	: Disabled
PWRON After PW-Fail	: Off	IRQ9 (IRQ2 Redir)	: Secondary
HDD Power Down	: Disable	IRQ10 (Reserved)	: Secondary
Doze Mode	: Disable	IRQ11 (Reserved)	: Secondary
Suspend Mode	: Disable	IRQ12 (PS/2 Mouse)	: Primary
** PM Events **		IRQ13 (Coprocessor)	: Primary
VGA	: OFF	IRQ14 (Hard Disk)	: Primary
LPT & COM	: LPT/COM	IRQ15 (Reserved)	: Disabled
HDD & FDD	: ON		
PCI Master	: OFF		
Modem Ring Resume	: Disabled		
RTC Alarm Resume	: Disabled		

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The Choice: Enabled, Disabled

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four elections for Power Management, three of which have fixed mode settings.

Disable (default)	No Power Management. Disables all four modes
Min. Power Saving	Minimum Power Management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum Power Management – **ONLY AVAILABLE FOR SL CPU'S**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defines	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 Min. to 15 min. and disable.

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance to Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting "YES" gives better power savings. If the Max. Power Saving is not enabled, this will be preset to "No".

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes
Suspend → Off	Monitor blanked when the systems enters the Suspend mode
Susp, Stby → Off	Monitor blanked when the system enters either Suspend or Standby modes
All Modes → Off	Monitor blanked when the system enters any power saving mode

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to return off the vertical and horizontal synchronization ports and write blanks to the

	video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

Modem Use IRQ

This determines the IRQ in which the MODEM can use.

The Choice: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWRBTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung". The Choice: Delay 4 Sec, Instant-OFF.

PWRON After PW-Fail

For using ATX Power Supply on the system only, please plug the power cord into the AC Inlet Socket directly

1. Off (Default) – always off
2. Former Sts – when power up the system again, it follows the last shut-down situation
3. On – always on

PM Timer

The following four modes are Green PC power saving functions, which are only user configurable when User Defined Power Management has been selected. See above for available selections.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

PM Events

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains anything, which occurs to a device, which is configured as ON, even when the system is in a power down mode. When set ON(default),any event occurring at a VGA/COM/LPT port or HDD/FDD device will awaken the system which has been powered down

Primary INTR

When set to “On”, any event occurring at will awaken a system, which has been powered down.

The following is a list of IRQ’s, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When set On, activity will neither prevent the system from going into a power management mode nor awaken it.

3-5. PnP/PCI Configuration Setup

This section describes configuration the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communication with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS (2A6LGU4A)(ENDAT-370BL-A/370BL)

ROM PCI/ISA BIOS(2A6LGU4E)(ENDAT-370FL)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: Yes	CPU to PCI Write Buffer	: Enabled
Resources Controlled By	: Manual	PCI Dynamic Bursting	: Enabled
Reset Configuration Data	: Disabled	PCI Master 0 WS Write	: Enabled
		PCI Delay Transaction	: Enabled
IRQ-3 assigned to	: Legacy ISA	PCI#2 Access #1 Retry	: Disabled
IRQ-4 assigned to	: Legacy ISA	AGP Master 1 WS Write	: Enabled
IRQ-5 assigned to	: PCI/ISA PnP	AGP Master 1 WS Read	: Disabled
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: PCI/ISA PnP	Assign IRQ for VGA	: Disabled
IRQ-10 assigned to	: PCI/ISA PnP		
IRQ-11 assigned to	: PCI/ISA PnP		
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP		
DMA-3 assigned to	: PCI/ISA PnP		
DMA-5 assigned to	: PCI/ISA PnP		
DMA-6 assigned to	: PCI/ISA PnP		
DMA-7 assigned to	: PCI/ISA PnP		

PnP OS Installed

Select "Yes" if the operating system environment is Plug-and-Play software (e.g. Windows95).

Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot with Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows95.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on device and system configuration has caused such a serious conflict that the operating system can not boot.

IRQ3/4/5/7/9/10/11/12/14/15 Assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

DMA0/1/3/5/6/7 Assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

CPU to PCI Write Buffer

When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle. The Choice: Enabled, Disabled

PCI Dynamic Bursting

When Enabled, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and non-burstable transactions don't.

The Choice: Enabled, Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus are executed with zero wait states.

The Choice: Enabled, Disabled.

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to compliance with PCI specification version 2.1.

The Choice: Enabled, Disabled.

PCI#2 Access #1 Retry

When PCI#2 (AGP bus) access to PCI#1 (PCI bus) has a error occurred.

The Choice: Enabled, Disabled.

AGP Master 1 WS Write

When Enabled, writes to the AGP (Accelerated Graphics Port) are executed with one wait states. The Choice: Enabled, Disabled.

AGP Master 1 WS Read

When Enabled, read to the AGP (Accelerated Graphics Port) are executed with one wait states. The Choice: Enabled, Disabled.

Assign IRQ for USB/VGA

Enable/Disable to assign IRQ for USB/VGA. The Choice: Enabled, Disabled

3-6. Integrated Peripherals

ROM PCI/ISA BIOS (2A6LGU4A)(ENDAT-370BL-A/370BL)

ROM PCI/ISA BIOS (2A6LGU4E)(ENDAT-370FL)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC

OnChip IDE Channel 0	: Enabled	Onboard Parallel Port	: 378/IRQ7
OnChip IDE Channel 1	: Enabled	Onboard Parallel Mode	: ECP
IDE Prefetch Mode	: Enabled	ECP Mode Use DMA	: 3
Primary master PIO	: Auto	Onboard Serial Port 3	: 3E8H/IRQ5
Primary Slave PIO	: Auto	Onboard Serial Port 4	: 2E8H/IRQ10
Secondary Master PIO	: Auto		
Secondary Slave PIO	: Auto		
Primary Master UDMA	: Auto		
Primary Slave UDMA	: Auto		
Secondary Master UDMA	: Auto		
Secondary Slave UDMA	: Auto		
Init Display First	: PCI Slot		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4		
Onboard Serial Port 2	: 2F8/IRQ3		
UART 2 Mode	: Standard		

OnChip IDE Channel 0 / 1

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface. The Choice: Enabled, Disabled

IDE Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching, for faster drive access. If you install a primary and/or secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

The Choice: Enabled, Disabled

Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Mode 0

though 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The Choice: Auto, Disabled

Init Display First

This item allows you to decide to active whether PCI Slot or AGP first.

The Choice: PCI Slot, AGP.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1/ Port 2

The Choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows you to determine which infra Red (IR) function of onboard I/O chip.

The Choice: IrDA 1.0, Standard, ASKIR, HPSIR.

Onboard Parallel Port

This item allows you to determine access onboard parallel port controller with which I/O address.

The Choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.

The Choice: ECP, SPP, ECPEPP1.7, EPP1.7 and Normal EPP1.9

3-7. System Environment

This section offers the system environment information such as the heating temperature of Processor / system and the working voltage of Processor for reference.

ROM PCI/ISA BIOS (2A6LGU4A)(ENDAT-370BL-A/370BL)

ROM PCI/ISA BIOS(2A6LGU4E(ENDAT-370FL)
CPU FEATURE SETUP
AWARD SOFTWARE, INC.

ENDAT-370BL-A/370BL Current CPU Temp. : Current System Temp. : Current CPU FAN1 Speed : Current CPU FAN2 Speed : ENDAT-370FL Current System Temp: Current CPU Temp : Current CPU FAN1 Speed: Current CPU FAN2 Speed: Vcore :2.03V 2.5V : 2.52V 3.3V :3.23V 5V : 4.92V 12V : 12.06V	

Chapter 4. VGA, LCD, DOC, IDE Feature

4-1. AGP-BUS VGA Feature

The on-board ATI Rage XL 2x AGP VGA adapter supports Desktop Digital Flat Panel LCD Monitors with the following key features. Support for Digital Flat Panel monitors through industry standard 20-pin connector, maintaining support for the existing VGA connector for legacy monitor support. The RAGE XL incorporated comprehensive support for Intel AGP including 2x mode, Sideband Addressing and AGP Texturing. ATI's integrated IDCT and Motion Compensation circuitry allow for Hardware DVD playback at full frame rates with no additional cost.

- Comprehensive AGP support, including 2x mode, Sideband Addressing and AGP Texturing
- PCI version 2.1 with full bus mastering and scatter / gather support
- Bi-edian support for compliance on a variety of processor platforms
- Fast response to host commands:
  - Deep command FIFO
  - 32-bit wide memory-mapped registers
  - Programmable flat or paged memory model with linear frame buffer access
- DDCI and DDC2B+ for plug and play monitors
- Power management for full VESA DPMS and EPA Energy Star compliance
- Integrated hardware diagnostic tests performed automatically upon initialization
- ACPI Power Management
  - Advanced Configuration and Power Interface (ACPI) with On, Standby, Suspend and Off.
  - Register and Timer modes for hardware and software power management
  - Dynamic clock switching
- AGP 2x Mode - the AGP 2x mode (133MHz) offers a peak bandwidth in excess of 500 MB/s, which is twice the throughput of the AGP 1x (66MHz) mode. The PCI graphics devices are limited to a 33MB/s bandwidth, which must be shared with other PCI devices.
- DVD and Video Support - DVD and video features included motion compensation acceleration and a 4-tap horizontal and 2-tap vertical high quality.

4-2. LCD Feature

The on-board ATI Rage XL 2x AGP VGA adapter support Digital Flat Panel LCD Monitors through the industry standard 20-pin (MDR 20Pin) connector (J25=DFP Port: ENDAT-370BL-A/370BL, J22=DFP Port: ENDAT-370FL) with the following key features.

The Digital Flat Panel Port (DFP) allows a host computer to connect directly to an external monitor over several meters of cable without the need for analog-to-digital conversion found in the most flat panel monitors today.

- Integrated TMDS
  - Integrated TMDS encoder complying to VESA Plug-and-Display (P&D) digital transmission standard
  - TMDS support for both direct-coupling and capacitor-coupling
- Digital Flat Panel LCD Monitor Support
  - Integrated TMDS transmitters
  - Glueless support for industry Digital Flat Panel Monitor.
  - Support for TFT panels at resolutions up to 1280 x 1024DDC and Hot Plug support for Digital Flat Panel.
- LCD Panel Control
  - Flat Panel Power Management
- Programmable internal timer for automatic power down of the panel
- Standby/Suspend registers for software Power Management support
  - -Power Up/Down Sequencer
- Power up/down sequencer built in to power up and power down the LCD panel in the correct sequence to avoid damaging of the panel. The delays in the power up/down sequence are programmable
- Flat Panel Support –including DSTN, and TFT using a 24-bit TFT interface
- Color TFT panel up to 1280 x 1024 resolution, up to 24-bit pixel, single pixel per clock
- 2/4 levels of frame modulation can be done on 18-bit TFT panels
- Hardware Z-buffer support with TFT panels
  - DDC support for LCD monitor, Dedicated I/O pins are available to support DDC on LCD monitor application.

4-3. AGP Bus VGA Driver and Utilities

All the AGP Bus Display Drivers are placed onto CD-ROM

Internet : www.atitech.com

4-4. PCI Bus IDE Driver and Utilities

The Utilities Installation Program is placed onto CD-ROM

4-5. DiskOnChip Feature

On board reserved a 32-pin Socket for DiskOnChip 2000, it is an unique data storage solution to offer a better, faster and more cost effective Flash Disk for applications.

The DiskOnChip 2000 provides a Flash Disk (as BIOS expansion) that does not require any additional bus, slot or connector. Simply insert the DiskOnChip 2000 into a 32-pin socket on your motherboard, with minimal installation cost, and have a bootable Flash Disk. DiskOnChip 2000 has built-in TrueFFS (True Flash File System) technology, which provides full Read/Write disk emulation.

TrueFFS provides hard disk compatibility at both the sector and file level. It works in a variety of operating system environments, such as DOS, Win95, WinCE, WinNT, Psos+ and QNX.

You have to set the correct memory address for DiskOnChip by JP12(ENDAT-370BL-A/370BL), JP14(ENDAT-370FL). The drivers utilities is placed onto CD-ROM

JP12(370BL)/JP14(370FL)		**Memory Address**
Pin 1-2	Pin 7-8	0C800H - 0C9FFH
Pin 1-2	Pin 9-10	0CC00H - 0CDFFH
Pin 3-4	Pin 7-8	0DCCCH - 0D1FFH
Pin 3-4	Pin 9-10	0D400H - 0D5FFH
Pin 5-6	Pin 7-8	0D800H - 0D9FFH
Pin 5-6	Pin 9-10	0DC00H - 0DDFFH(Default)

4-6. Driver Utility Installation Guide/Notice

1. First, please install the VGA driver
2. Second, please install the LAN driver
3. After completing the above installation, please install the VIA 4in1 Patch File, VIADRV\4in1\Setup.exe is placed onto the CD-ROM

Note: When system with AT Power Supply and running Windows 98 Second Edition, please remember to install the WIN98 Fixed Program or the system won't be shut-down normally.

Chapter 5. ENDAT-370BL-A/370BL LAN Adapter

The 21143 is an Ethernet LAN controller for both 100-Mb/s and 10Mb/s data rates, which provides a direct interface to the peripheral components interconnect (PCI) local Bus. The 21143 interfaces to the host processor by using onchip command and status registers (CSRs) and a shared host memory area, set up mainly during initialization. This minimizes processor involvement in the 21143 operation during normal reception and transmission.

The 21143 is optimized for low power PCI based systems and supports two types of power-management mechanisms. The main mechanism is based upon the OnNow architecture, which is required for PC 97 and PC 98. The alternative mechanism is based upon the older remote wake-up LAN mechanism.

Large FIFOs allow the 21143 to efficiently operate in systems with longer latency periods. Bus traffic is also minimized by filtering out received the frames and by automatically collied frame without a repeated fetch from the host memory. The 21143 provide an upgradable boot ROM interfaces.

5-1. Features

Power Management and Power Saving

- Fully compliant with Revision 1.0 of the Network Device Class Power Management Specification, under the OnNow Architecture for Microsoft's PC 97 Hardware Design Guide and PC 98 System Design Guide
- Supports all wake-up events define in Revision 1.0 of the Network Device Class Power Management Specification, including:
  - Pattern matching
  - Link change
  - Magic packet
- Fully compliant with Revision 1.0 of the Advanced Configuration and Power Interface (ACPI) Specification
- Fully compliant with Revision 1.0 of the PCI Bus Power Management Interface Specification
- Implements low-power management with two power-saving modes (sleep and snooze), with the device powering up in sleep mode
- Supports remote wake-up-LAN, which is a feature based upon Advanced Micro Device's Magic Packet technology

PCI Features:

- Supports PCI interfaces
- Supports PCI clock control through clkrun
- Supports the advanced PCI read multiple, read line, write and invalidate commands
- Supports an unlimited PCI burst
- Supports PCI clock speed frequency from dc to 33MHz, network operation with PCI clock from 20MHz to 33MHz

Host Interface Features:

- Includes a powerful onchip direct memory access(DMA) with programmable burst size, providing low CPU utilization
- Supports early interrupt on transmit and receive
- Supports interrupt mitigation on transmit and receive
- Supports big or little endian byte ordering for buffers and description
- Implements unique, patent-pending intelligent arbitration between DMA channels to minimize underflow and overflow
- Contains large independent receive and transmit FIFOs

Network Side Features:

- Support three network ports: 10BASE-T (10 Mb/s), AUI (10 Mb/s) and MII/SYM (100/100 Mb/s)
- Contains a variety of flexible address filtering modes
- Contains onchip PCS and scrambler/descrambler for 100BASE-TX
- Implements signal-detect filtering to avoid false detection of link with 100BASE-TX symbol interfaces
- Enables automatic detection and correction of 10BASE-T receive polarity
- Contains onchip integrated AUI port and a 10BASE-T transceiver
- Supports autodetection between 10BASE-T, AUI and MII/SYM ports
- Supports IEEE 802.3 Auto-negotiation algorithm of full-duplex and half-duplex operation for 10 Mb/s and 100 Mb/s (NWAY)
- Offers a unique, patented solution to Ethernet capture-effect problem
- Supports full-duplex operation on both MII/SYM and 10BASE-T ports
- Provides internal and external loopback capability on all network ports
- Supports IEEE 802.3 and ANSI 8802-3 Ethernet standards

Other Features:

- Provides Micro Wire interface for serial ROM (1K and 4K EEPROM)
- Provides an up-gradable boot ROM interface up to 256KB
- Provides LED indications for various network activity

5-2. UTP Cable / RJ-45 Jack Definition

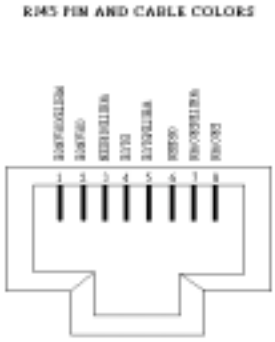
Straight-through twisted-pair cable is typically used to connect a hub to a server or workstation. In a straight-through connection, Pin 1 at the server, Pin2 at the hub connects to Pin 2 at the server, and so on. Table A-1 shows the locations of pins on a standard RJ-45 plugs on a twisted-pair cable.

Table A-1 shows the wiring in a straight-through twisted-pair cable.

Twisted Pair Number	Pin Number	Signal Description	To	Pin Number	Signal Description
1	1	TD+	→	1	TD+
	2	TD-		2	TD-
2	3	RD+	→	1	RD+
	6	RD-		2	RD-

Note: Pins 4, 5, 7 and 8 are not used

RJ-45 Connector Pin Assignments



5-3. Connecting 100Base Fast Ethernet Network

The motherboard provides a RJ-45 port for connecting to 100Base-TX Fast Ethernet or 10Base-T Ethernet network with a single connection over unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable.

The adapter automatically operates at 10Mbps or 100Mbps when the appropriate 10/100Base hub be connected. To connect the adapter to 100Base-TX Fast Ether network, you need a twisted-pair Category 5 or better cable with RJ-45 phone jacks at both ends. This cable can have a maximum length for 300 feet (100 meters).

5-4. Connecting 10Base-T Ethernet Network

To connect the adapter to a 10Base-T Ethernet network, you need a twisted-pair Category 3, 4 or 5 cable with RJ-45 phone jacks at both ends. This cable can have a maximum length for 300 feet (100 meters).

5-5. 10Mbase/100Mbase Installation Notice

- 100Mbps network must be shielded twisted-pair (STP) or Category 5 unshielded twisted-pair cable. Do not use Category 3, 4 cable for 100Mbps-network operation, it could cause data loss. Category 3 or 4 cable is good for 10Mbps network only
- Category 5 cable is also good for 10Mbps operation. If all network used UTP Category 5 cable, that you may have the versatility to operate the network at either 100Mbps or 10Mbps speed without changing cable due to cable category grade
- Two pairs of wiring are required
- Depending on building codes, different insulation materials may be required. Plenum Rated or TEFLON-coated wiring may be required in some areas

- The wire gauge should be between 18 and 26 AWG (Most telephone installations use 24-gauge wiring)
- UTP cable should meet the following requirements:
  1. Solid copper
  2. Nominal capacitance: less than 16pF/ft
  3. Nominal impedance: 100 Ohms
  4. Nominal attenuation: less than 11.5db

Automatic Selection of the Media Type

While the driver installs, it automatically detects the media type based on the type of cable connected. Once you change the cable type, you must reinstall the driver to execute auto-detect again.

If the driver cannot detect which cable is connected or whether a cable is connected, look at cabling network driver (Ex. Modify net.cfg file parameters - force line speed=10 or 100).

10/100 Auto-Negotiation (NWAY)

Depending on the hub or device connected, the on board LAN adapter can automatically run at the appropriate speed, by using NWAY, a feature that complies with the IEEE 802.3 standard. It also works with any of other IEEE-compliant products.

5-6. Remote Boot ROM Installation Guide

The 21143 support various size of boot ROM. When the address space of the boot ROM used is 512 bytes or smaller, the 21143 supports one latch on its boot ROM port.

Boot ROM Install Notice:

The Intel 21x4 family consists of a series of Ethernet controllers sharing a generic architecture and, a set of support software, mainly drivers, each supporting the whole family of hardware components that existed when the software was released. Below is the list of the current hardware and software components.

DC21X4 Software

The Intel 21X4 family software provides support for the following environments:

- 32bit NDIS 21X4 drivers for Windows NT4.0, Windows NT3.51, Windows 95, Window 95-OSR2 and Windows 98
- NDIS2 21X4 MAC Driver for DOS, WfW3.11, OS/2 and Windows 95
- Novell Netware ODI-32 bit 21X4 Server Driver
- Novell Netware 3.1x, 4.x ODI-16 bit DOS 21X4 Client Driver
- SCO UNIX LLI D21X Driver
- SCO UNIX MDI D21X Driver

Table 1. The Novell Netware ODI Client Directory Files

File	Additional Keyword Details
README.DOC	This File
RELEASE.TXT	Provides a description of updates to the new driver
DC21X4.COM	DC21X4 Novell Netware ODI 16bit Client driver. This file supports The Intel 2114x 10/100Mbps Ethernet Controller based PCI boards
DC21X4.INS	Text file for NetWare*4.x install
NET.CFG	Novell network configuration sample file for this driver

5-7. Software Revision Requirements

- MS-DOS version 3.31 or above

If you are running EMM386, make sure you are using v4.49 or later. It is the version that ships with DOS 6.22

- Novel LSL.COM version 2.16 or above
- Novell IPXODI.COM version 3.02 or above
- Novell NETX.COM version 1.11 or above
- Novell VLM files version 1.20B or above

For getting the most update revisions of Novell files, please contact Novell at:

Novell, Inc. Novell Labs Administration

MS E-13-1 122 East 1700 South Provo, UT 84606

Tel: 801-429 7000

Internet: http://www.novell.com/

5-8. Driver Installation

DC21X4.COM is a Novell NetWare ODI client driver supporting the Intel 21X4 family of PCI based Ethernet controllers.

Driver Installation for NetWare 3.11/3.12 clients

In order to install the driver from the DOS Command Line Prompt follow these steps:

- Insert a diskette containing the DC21X4 DOS ODI driver into the floppy drive
- If first time installation then Create a subdirectory in your client's hard drive to storing the Novell NetWare DOS ODI client files
- Copy the following files to the Novell Client subdirectory:
  - **LSL.COM** (Link Support Layer)
  - **DC21X4.COM** (Intel NetWare DOS ODI Client Driver)
  - **IPXODI.COM** (An IPX protocol stack file)
  - **NETX.EXE** (NetWare Shell, used with conventional memory workstations)
  - **NET.CFG** (Optional configuration file used for setting options different from the default Setting).

The **LSL.COM, IPXODI.COM** and **NETX.EXE** files can be obtained from the workstation Driver Diskette in the Novell Client Software Package.

**** Edit the NET.CFG file according to your needs**

Select the Frame type that you need , if you do not know which frame type to load, ask your system administrator or type CONFIG at your file server console to see which frame types your file server is using, then select one of these frame types on the workstation (NetWare default frame type is 802.3).

If you list two or more NetWare frame types in the NET.CFG, the first frame type will bind to the IPX protocol.

**** Reserve Logical Volumes for NetWare**

Edit your CONFIG.SYS and make sure that LASTDRIVE entry (if exists) is not "Z".

Usually it will be one letter pass the last volume, for instance if you have a Hard Disk © and an compact disk (D) then please write LASTDRIVE=E

**** Load the Novell NetWare client files**

***** To manually load these files from the DOS prompt, type the following commands in the given order to initialize DOS ODI driver support and the IPX protocol stack:

LSL Followed by <Enter>
DC21X4 Followed by <Enter>
IPXODI Followed by <Enter>
NETX Followed by <Enter>

***** To automatically load these files, add these lines to your C:\AUTOEXEC.BAT file (and in the following order):

<subdirectory>LSL
<subdirectory>DC21X4
<subdirectory>IPXODI
<subdirectory>NETX

Save the file and reboot the workstation. After the commands execute and if a server is present, the workstation will attach to the server and display the server's name.

**** Log onto the network**

The installation of the NetWare DOS ODI client driver is now complete

Driver Installation for NetWare 4.1/3.12 clients with VLMs

The NetWare DOS Requester (VLMs) is the requester component of the NetWare 16-bit Client for DOS and MS Windows. VLM is the primary technology that

provides access to NetWare 4.x servers from the DOS environment.

For a first time installation of a VLM NetWare client please use the Novell INSTALL.EXE utility.

INSTALL.EXE is located on NetWare "Workstation for DOS" disk.

Note: INSTALL.EXE must be version 1.21 or greater

First Installation of NetWare 4.1/3.12 clients with VLMs

Run the INSTALL.EXE program, NetWare Client Install program screen appears. Fill in the information requested by the program. You must complete each of the options, as they are specific to your needs.

Step 5 asks you to select a network driver and provide configuration options. It used the specifications you select to create the NET.CFG file. You may select the Intel DC21X4 driver from the list Novell provides, or if you have a more updated driver chooses OTHER DRIVER and insert the Intel Drivers diskette. Select the Intel 2104x/2114x 10/100Mbps Ethernet Controller Driver. These are several configurable settings, we will list he most common ones:

- Node Address: (optional) changes the Node Address to a local address
- Frame Type: Set the frame type to match the file server (NetWare default is the 802.2 frame type)

Connection Type: (optional) the type of connection to work with (autosense is recommended)

- Line Speed: (optional) sets the line speed to either 10 or 100 Mbps

Meaningful only when TP or TP_FULL_DUPLEX are selected (see driver keywords section for details)

In the next step the install program will copy the appropriate files to your hard drive.

This is the final step.

Note: Be sure to add LASTDRIVE=Z to your CONFIG.SYS file and, FIRST NETWORK DRIVE=<first available Driver Letter> in the NET.CFG file under the NetWare DOS Requester section.

Usually the <First available Drive Letter> is F

Driver Upgrade of NetWare 4.1/3.12 clients with VLMS

To manually install the DC21X4.COM driver or to upgrade the driver

- Insert a diskette containing the DC21X4 DOS ODI driver diskette into the floppy drive
- If first time installation then create a subdirectory in your client's hard drive

for storing the Novell NetWare DOS ODI client files and Copy the Novell NetWare files to the Novel Client subdirectory:

- copy the DC21X4.COM driver file to the Novell Client subdirectory
- Edit the NET.CFG file according to your needs

Note: Be sure to add, FIRST NETWORK DRIVE=<First available Driver Letter> in the NET.CFG file

Under the NetWare DOS Requester section usually the <First available Drive Letter> is F

NetWare client driver loading sequence

- Load the Novell NetWare client files
- To manually load these files from the DOS prompt, type the following commands in the given order to initialize DOS ODI driver support and the IPX protocol stack:

  LSL Followed by <Enter>
  DC21X4 Followed by <Enter>
  IPXODI Followed by <Enter>
  NETX Followed by <Enter>

- To automatically load these files, add these lines to your C:\AUTOEXEC.BAT file (and in the following order):

  <sub-directory>LSL
  <sub-directory>DC21X4
  <sub-directory>IPXODI
  <sub-directory>NETX

Save the file and reboot the workstation. After the commands execute and if a server is present, the workstation will attach to the server and display the server's name.

Note: *Be sure to add LASTDRIVE=Z to your CONFIG.SYS file*

The DC21X4.COM may be loaded high in order to free DOS conventional memory for other use (this is done by writing LH <subdirectory>DC21X4 in autoexec.bat) Log onto the network.

The installation of the NetWare DOS ODI client driver is now complete.

Driver Keywords

Novell NetWare DOS Client environment uses a configuration file called NET.CFG in order to control the various NetWare components of the system. This file usually resides in the Novell NetWare subdirectory. For each workstation driver being configured, if section headings and options deviate from the established defaults of the ODI software or, if multiple protocols are being used,

then select a set of supported values from the DC21X4 configuration options. These values should be written in the NET.CFG file and then load the driver. To change any default settings after the driver is loaded, the user must modify the current NET.CFG file (or create such a file if it does not exist), using any text editor, unload the Novell protocol files and driver, and reload them again.

To unload the Novell protocol to the following:

VLM U (or NETX U)	Followed by <Enter>
IPXODI U	Followed by <Enter>
DC21X4 U	Followed by <Enter>
LSL U	Followed by <Enter>

NET.CFG Conventions

The NET.CFG is a text file divided into sections shown in the following example:

Link Support

Max Boards 4
Max Stacks 8
Protocol <Protocol Name>
Bind <Driver Name>

Link Driver <Driver Name>

Frame ETHERNET_802.3
Frame ETHERNET_II
Frame ETHERNET_802.2
Frame ETHERNET_SNAP

NetWare DOS Requester

FIRST NETWORK DRIVE = F
NETWARE PROTOCOL = NDS BIND

Note: *Where <Driver Name> above is DC21X4 and <Protocol Name> is usually IPX.*

The NET.CFG file structure follows these guidelines:

- Main section headings must be left-justified and are not case sensitive
- Options are not case sensitive and must be preceded by a tab or spaces
- Options must follow the heading associated with them
- Comments are preceded by a semicolon (";") and, end each line with an <Enter>

Numbers are in decimal notation unless noted otherwise

For more detail information "NET.CFG", please refer to driver utility \586..L\DEC_21143\NWCLIENT\README.DOC for Windows WORD file

5-9. LED Indicators

The motherboard comes with four LED indicators with pin header at **J15** which beside the LAN chip that indicates the network status. If you experience any problems with the adapter, first make sure the appropriate driver is loaded, the proper cable is connected to the RJ-45 port, and the hub complies with the adapter specification, such as 10Mbps 10BASE-T or 100Mbps 100BASE-TX. Then recheck the LEDs

FUDUP (Full Duplex) Indicator

When indicator is ON, it indicates in Full-duplex mode; otherwise, it is OFF. The adapter supports full duplex at 10 or 100Mbps. If the switch supports the NWAY feature and full duplex, the adapter automatically runs in full duplex mode.

10/100 (Link) Indicator

This indicator will turn ON under two conditions: a good 10BASE-T between adapter and hub or a good 100BASE-TX connection between adapter and hub.

J15 : LAN LED Indicator

LED (+)	LED (-)	Function
Pin 2	Pin 1	Speed (100MbaseT=ON)
Pin 4	Pin 3	Link
Pin 6	Pin 5	Full Duplex
Pin 8	Pin 7	Active

Chapter 6. ENDAT-370FL LAN Adapter

The onboard LAN adapter use of Single Chip Fast Ethernet Controller, that is highly integrated and requires no "glue" logic external memory on board. It runs in the bus master mode and directly sending/receiving Ethernet packet to/from memory. The onboard LAN adapter can directly fetch the system CPU. Also, it can transfer data Directly between I/O devices and system memory in the 32-bit bus master mode that provides low CPU utilization.

It complies with the IEEE 802.3 standard, IEEE802.3 standard and PCI Local Bus version 2.1 and transmits data on the network at 100Mbps or 10Mbps. It also operates in full-duplex mode that **doubles the network speed up to 20/200 Mbps when working with Fast Switching Hub.** Built-in one RJ-45 port for connection of 100Base-TX Fast Ethernet or 10Base-T Ethernet network, and automatically senses the connection type,

6-1. Features

- Full compliance with PCI Rev.2.1
- Complies with the Ethernet/IEEE 802.3u 100Base-TX and 10 Base-T industry standard
- Supports full-duplex operations, thus doubling the network speed up to 20Mbps on 10Base-T Ethernet or 200Mbps on 100Base-TX Fast Ethernet when setting in full duplex mode
- Two LED indicators to report network status
- One RJ-45 connector with Auto-sense cable type of 10 or 100Mbps network operation
- Supports PCI clock speed up to 33MHz, capable of zero wait states
- Supports optional Remote Boot ROM socket
- Provides a comprehensive setup program for displaying the adapter configuration and includes diagnostic on board or network tests
- Complete drivers for Novell, ODI, SCO UNIX, LAN Manager, Windows NT and Windows 95/98 Packet driver etc

6-2. UTP Cable / RJ-45 Jack Definition

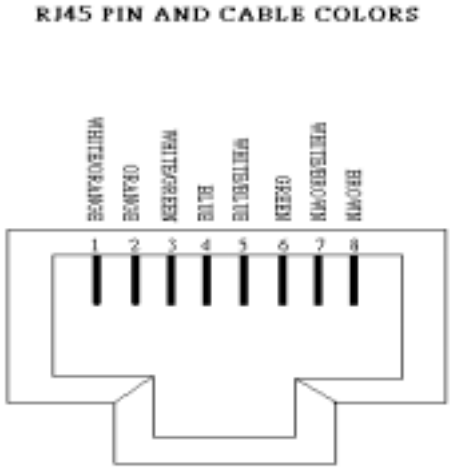
Straight through twisted pair cable is typically used to connect a hub to a server or workstation. In a straight through connection, Pin 1 at the server, Pin 2 at the hub connects to Pin 2 at the server, and so on. Figure A-1 shows the locations of pins on a standard RJ-45 plug on a twisted-pair cable.

Table A-1 shows the wiring in a straight-through twisted-pair cable(Pins 4,5,7 and 8 are not used).

Twisted Pair Number	Pin Number	Signal Description	TO	Pin Number	Signal Description
1	1 2	TD+ TD-	→	1 2	TD+ TD-
2	3 6	RD+ RD-	→	3 6	RD+ RD-

RJ-45 Connector Pin Assignments

Figure A-1 shows the RJ-45 Connector Pin Assignments



6-3. Connecting 100Base-TX Fast Ethernet Network

The system board provides an RJ-45 port for connection to 100Base-TX Fast Ethernet or 10Base-T Ethernet Network with a single connection over unshielded twisted-pair(UTP). The adapter automatically operates at 10Mbps or 100Mbps when the appropriate 10/100Base hub be connected.

To connect the adapter to 100Base-TX Fast Ethernet Network, you need a twisted-pair Category 5 cable with RJ-45 modular jacks at the both ends. The cable can have a maximum length for 300 feet (100 meters).

6-4. Connecting 10Base-T Ethernet Network

To connect the adapter to a 10Base-T Ethernet Network, you need a twisted-pair Category 3, 4 or 5 cable with RJ-45 modular jacks at both ends. The cable can have a maximum length of 300 feet (100 meters).

6-5. 10Mbase/100Mbase Installation Notice

- 100Mbps network must be shielded twisted-pair (STP) or Category 5 unshielded twisted-pair cable. Do not use a Category 3 or 4 cable for 100Mbps-network operation, it could cause data loss. Category 3 or 4 cable is good for 10Mbps network only.
- Category 5 cable is also good for 10Mbps operation. Use UTP Category 5 cable for the versatility to operate the network at either 100Mbps or 10Mbps speed without changing cable
- Two pairs of wiring are required
- Depending on building codes, different insulation materials may be required. Plenum-rated or TEFLON-coated wiring may be required in some areas where fire proofing is required

- The wire gauge should be between 18 and 26 AWG (Most telephone installation use 24-gauge wiring)
- UTP cable should meet the following requirements:
  1. Solid copper
  2. Nominal capacitance: less than 16pF/ft
  3. Nominal impedance: 100 ohms
  4. Nominal attenuation: less than 11.5db

Automatic Selection of the Media Type

While the driver installs, it automatically detects the media type based on the type of cable connected. Once you change the cable type, you must reinstall the driver to execute auto-detect again.

If the driver cannot detect which cable is connected or whether a cable is connected, look at cabling network driver (Ex. Modify net.cfg file parameters –force line speed=10 or 100).

10/100 Auto – Negotiation (N-Way)

Depending on the hub or connected device, the LAN adapter can automatically run at the appropriate speed, by using N-way, a feature that complies with the IEEE 802.3 standard. It also works with any of the other IEEE-compliant products.

6-6. Remote BOOT ROM Installation Guide

A BOOT ROM allows the computer to boot up over the network, instead of using the local operating system device. This enables the system to be a diskless workstation environment.

1. Make sure the BOOT ROM is properly oriented. Incorrect orientation may damage the chip!
2. Use the utility of RSET8139.exe to enable the BOOT ROM
3. Reboot the system to use the BOOT ROM function

BOOT ROM Type:

Once the PCI system detects the presence of a BOOT ROM chip on the adapter during boot-up, it will automatically set a working configuration. Supports 64K FLASH EPROMs for an upgrade BOOT ROM.

6-7. LED Indicators

The system board comes with two LED indicators on the edge of the motherboard that indicates the network system status. If you experience any problems with the adapter, first make sure the appropriate driver is loaded, the proper cable is connected to the RJ-45 port and the hub complies with the adapter specification, such as 10Mbps, 10Base-T or 100Mbps 100Base-TX. Finally, please recheck the LEDs.

FUDUP (Full Duplex) Indicator

When indicator is ON, it indicates Full-Duplex mode: otherwise, it is OFF. The adapter supports full duples at 10 or 100Mbps. If the switch-hub supports the N-way feature and full duplex, the system automatically runs in full duplex mode.

Tx/Rx (Transmit/Receiver) Indicator

This indicator flashes to display that there is network activity – indicating transmission or reception data from the network

6-8. The Setup Program

Tge package includes a diskette containing the setup program. This program allows you to verify the configuration and isolation of faults. The adapter's I/O port address and interrupt request levels (IRQ) are set by the BIOS. Other default settings can be changed for situations as shown below.

Problem (RESET8139.exe) provides the following function:

- Displays the current configuration of the adapter
- Performs network diagnostic tests to verify the operation of the adapter basic functions, and the adapter ability to communicate over the network with another adapter.
- Provides set up for new configuration to make a change specify settings: Remote BOOT ROM, Flow Control and Full-Duplex mode Enable/or Disable

Full duplex operation is set automatically if the Full-Duplex option is set to Disable. Please follow the prompt instructions to set-up or change the system configuration.

Note: Before running the setup program, ensure the adapter driver is not loaded, otherwise unpredictable results may arise!

The setup program can be set the on board configuration to provide diagnostic testing. It is for testing the basic function verification, EEPROM data Access, loopback

operation, and the ability to communicate over the network with another adapter.

To access this program, insert the Driver Diskette into floppy disk drive and then type the following at the DOS prompt:

A:\REST8139.EXE <ENTER>

1. View Current Configuration

This allows you to find the PCI Fast Ethernet adapter current configuraiton in your system.

2. Set Up New Configuration

Select New Set Up Configuration option from the main menu

The option settings can be changed, the table shown as below:

Option	Default Setting	Other Available Settings
Full-Duplex	Disabled → Auto Selection	Enabled – forces to full duplex operation
Flow Control	TX Enable, RX Enable	TX Disable, RX Disable

Note: Before setting the adapter for full duplex, make sure the hub switch is also set to full duplex. Before you activate the switching hub to server connection, make sure the hub switch and adapter are configured for full duplex.

3. Run Diagnostics

Running diagnostic tests perform basic function verification for on board LAN adapters. The basic Diagnostic tests includes:

- **EEPROM Test** **:** EEPROM data read/write test
- **Diagnostics On Board** **:** Performa on board basic function verification
- **Diagnostics On Network** **:** To run this test on the network, you will need another computer set up as a Responder to receive packets from the adapter being tested and echo them back to the adapter. This checks the adapter's ability for communication over the network with another adapter to receive and transmit network packets..

4. Software Installation

Installation Network Drivers

You must install a network driver to allow the adapter to work with your network operating system.

The system board provides various network drivers on the driver diskette. The following provides the installation procedures for different network drivers.

Note: Please install the "VIA PATCH FILE" first if you want to link your LAN with Windows 98.

For detailed information of each OS installation, please refer to the README (.TXT) file on the driver diskette.

Software Installation Examples

Before you start to install the driver programs, please refer to each directory that contains a README file, which provides you with detailed installation instructions, or to execute the HELP8139.EXE help file viewer in DOS. The utility will then present you with a screen showing the information about how to install the network driver. Driver needed for the adapter to work with your operating system.

6-9. The Realtek 8139 LAN Driver Installation Procedures

Please note: The LAN Driver installation has to be done after completing Win 95/98 installation.

When completed with the WIN 95/98 installation, please click "My Computer" to start your LAN Driver installation (procedure listed as below):

My Computer => Control Panel => System => Device Manager => ?Other Devices =>?

PCI Ethernet Controller => Properties => Driver => Update Driver => Yes (Recommended) => Next => Other Locations => Browse => A:\Rtsnt.100\Exe\Win95 => OK => Finish

After finishing the above procedures, the screen will show "copy the files from?"

Please type A:\Rtsnt.100\Exe\Win95=> OK and select "OK", the system will ask you to insert Win95 driver diskette to update new driver.

After finishing the above steps, please shut down your system and re-boot the system.

Appendix A: FLASH Memory Utility

Using this utility to update the system BIOS from a disk file to the on board Flash memory. Be aware the improperly changing the system BIOS will cause the system to malfunction.

Using utility as follows:

1. Insert the FLASH memory utility distribution floppy diskette in drive A:
2. At the DOS prompt, type A:>AWDFLASH and press <Enter>

FLASH MEMORY WRITE v7.57 © Award Software 2000 All Rights Reserved
For 693-686A-2A6LGU4AC-0(ENDAT-370BL-A/370BL) For 693-686A-2A6LGU4EC-0(ENDAT-370FL) Flash Type - SST 29EE020 / 5V File Name to Program:
Error Message: Do you want to save BIOS (Y/N)

3. Enter the name of the system BIOS disk file into the "File Name to Program" field
4. The following message appears in the "Error Message" field
5. Do you want to save BIOS (y/n)?
6. To update the FLASH memory from the system BIOS disk file, type Y
7. After complete updating, please re-boot the system
8. Please refer to the web site for upgrading BIOS procedure

   http://www.unicorn-computer.com.tw

Appendix B: Connector Pin Assignment

PS/2 Keyboard / Mouse Pin Header Connector

(ENDAT-370BL-A/370BL:J7)(ENDAT-370FL:J2)

Pin No.	PS/2 Keyboard Description	Pin No	PS/2 Mouse Description
1	K/B_Data	2	Mouse_Data
3	N.C	4	N.C
5	Grounded	6	Grounded
7	+5V DC	8	Mouse_VCC
9	K/B_Clock	10	Mouse_Clock

COM1 or COM3, COM2 or COM4

Pin No.	Description	Pin No.	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Printer (LPT) Port

Pin No.	Description	Pin No.	Description
1	STB#	10	ACK#
2	PD0	11	BUSY
3	PD1	12	PE
4	PD2	13	SLCT
5	PD3	14	AFD#
6	PD4	15	ERR#
7	PD5	16	INIT#
8	PD6	17	SLIN#
9	PD7	18-25	GND

VGA Connector

Pin No.	Description	Pin No.	Description
1	RED	9	GND
2	GREEN	10	GND
3	BLUE	11	N.C
4	N.C	12	DDC DAT
5	GND	13	H.Sync
6	GND	14	V.Sync
7	GND	15	DDC CLK
8	GND		

Digital Flat Panel Connector (370BL:J25)(370FL:J22)

Pin No.	Description	Pin No.	Description
1	TX1P	11	TX2P
2	TX1M	12	TX2M
3	D_GND	13	D_GND
4	D_GND	14	D_GND
5	TXCP	15	TX0P
6	TXCM	16	TX0M
7	D_GND	17	N.C.
8	D_VCC	18	MONI_DET
9	N.C.	19	DFP_DAT
10	N.C.	20	DFP_CLK

FDD Connector (370BL:J27) (370FL:J16)

Pin No.	Description	Pin No.	Description
1,3,5,7	GND	14	DSA#
9,11,13	GND	16	MOB#
15,17,19	GND	18	DIR
21,23,25	GND	20	STEP#
27,29,31	GND	22	WD#
33	GND	24	WE#
2	RWC#	26	TRAK0
4,6	N.C	28	WP#
8	INDEX#	30	RDATA#
10	MOA#	32	HEAD#
12	DSB#	34	DSKCHG#

IDE1, IDE2 Connector (370BL:J29, J28)(370FL:J18,J17)

Pin No.	Description	Pin No.	Description
2,19,22	GND	13	IDE data2
24.26.30	GND	14	IDE data13
40	GND	15	IDE data1
20,21,28	N.C	16	IDE data14
29,32,34	N.C	17	IDE data0
1	IDE reset	18	IDE data15
3	IDE data7	23	IDE Write
4	IDE data8	25	IDE Read
5	IDE data6	27	IDE Ready
6	IDE data9	31	IDE IRQ
7	IDE data5	33	IDE A1
8	IDE data10	35	IDE A0
9	IDE data4	36	IDE A2
10	IDE data11	37	IDECS1#
11	IDE data3	38	IDESC3#
12	IDE data12	39	HDLED0#

External Speaker Connector (370BL:J26)(370FL:J25)

Pin No.	Description
2	SPK
4	N.C
6	GND
8	Vcc

Keylock / Power – LED (370BL:J26)(370FL:J25)

Pin No.	Description
1	Power LED
3	Power LED
5	GND
7	Keylock
9	GND

HDD LED (370BL:J26)(370FL:J25)

Pin No.	Description
12	LED +
14	LED -

USB Port 1/2 Pin Header (370BL:J3,J8)(370FL:J21,J26)

Pin No.	Description
1/2	Vcc
3/4	USBDATA - (1/2)
5/6	USBDATA + (1/2)
7/8	GND
9/10	GND

IR Connector (370BL:J2)(370FL:J13)

Pin No.	Description
1	Vcc
2	N.C
3	IRRX
4	GND
5	IRTX

Expansion Slot to PCI/ISA Pin Assignment

Pin No.	Description	Pin No.	Description
A1	-IOCHK	B1	GND
A2	SD7	B2	RSTDRV
A3	SD6	B3	VCC
A4	SD5	B4	IRQ9
A5	SD4	B5	-5V
A6	SD3	B6	DRQ2
A7	SD2	B7	-12V
A8	SD1	B8	OWS
A9	SD0	B9	+12V
A10	IOCHRDY	B10	GND
A11	AEN	B11	-SMEMW
A12	SA19	B12	-SMEMR
A13	SA18	B13	-IOW
A14	SA17	B14	-IOR
A15	SA16	B15	-DACK3
A16	SA15	B16	DRQ3
A17	SA14	B17	-DACK1
A18	SA13	B18	DRQ1
A19	SA12	B19	REFLASH
A20	SA11	B20	SYSCLK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B24	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	-DACK2
A27	SA4	B27	TC
A28	SA3	B28	BALE
A29	SA2	B29	VCC
A30	SA1	B30	OSC
A31	SA0	B31	GND

Pin No.	Description	Pin No.	Description
C1	-SBHE	D1	-MEMCS16
C2	LA23	D2	-IOSC16
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ13
C7	LA18	D7	IRQ14
C8	LA17	D8	-DACK0
C9	-MEMR	D9	DRQ0
C10	-MEMW	D10	-DACK5
C11	SD8	D11	DRQ5
C12	SD9	D12	-DACK6
C13	SD10	D13	DRQ6
C14	SD11	D14	-DACK7
C15	SD12	D15	DRQ7
C16	SD13	D16	VCC
C17	SD14	D17	MASTER
C18	SD15	D18	GND

Pin No.	Description	Pin No.	Description
E1	GND	F1	GND
E2	GND	F2	GND
E3	-PCINT1	F3	-PCINT3
E4	-PCINT2	F4	-PCINT4
E5	VCC	F5	VCC
E6	KEY	F6	KEY
E7	VCC	F7	VCC
E8	-PCIRST	F8	PCLKF
E9	-GNT0	F9	GND
E10	-REQ0	F10	GNT1
E11	GND	F11	GND
E12	PCLKE	F12	-REQ1
E13	GND	F13	AD31
E14	AD30	F14	AD29
E15	PCLKG	F15	N.C
E16	KEY	F16	KEY
E17	-GNT2	F17	-REQ2
E18	AD28	F18	AD27
E19	AD26	F19	AD25
E20	AD24	F20	-CBE3
E21	AD22	F21	AD23
E22	AD20	F22	AD21
E23	AD18	F23	AD19
E24	N.C.	F24	N.C
E25	KEY	F25	KEY
E26	N.C	F26	N.C
E27	AD16	F27	AD17
E28	-FRAME	F28	-IRDY
E29	-CBE2	F29	-DEVSEL
E30	-TRDY	F30	-PLOCK
E31	-STOP	F31	-PERR

Pin No.	Description	Pin No.	Description
G1	SDONE	H1	-SERR
G2	-SBO	H2	AD15
G3	-CBE1	H3	AD14
G4	PAR	H4	AD12
G5	GND	H5	GND
G6	KEY	H6	KEY
G7	GND	H7	GND
G8	AD13	H8	AD10
G9	AD11	H9	AD8
G10	AD9	H10	AD7
G11	-CBE0	H11	AD5
G12	AD6	H12	AD3
G13	AD4	H13	AD1
G14	AD2	H14	AD0
G15	KEY	H15	KEY
G16	VCC	H16	VCC
G17	VCC	H17	VCC
G18	GND	H18	GND
G19	GND	H19	GND