

ENDAT-586EL

All-In-One motherboard

User's Manual

Rev. 1x/2x

(For PCB 1x/2x)

PCB 2x:

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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.

Specification:

MODEL	ENDAT-586EL-1x	ENDAT-586EL-2x
CPU	Pentium 75-500MHz, INTEL MMX, AMD K5/K6/K6-2/K6-3, IDT C6, Rise MP6, IBM Cyrix 6x86 CPU	
System Chipset	VIA MVP3 82C598MVP + 82C586B Chipset Support 100MHz Bus frequency	
System BIOS	Award (2Mbit Flash ROM)	
LCD/VGA Chipset	ATI Rage XL 2x AGP 3D Chipset, Support for Digital Flat Panel (DFP) 4MB / 8MB / 16MB SDRAM Video RAM	
LAN Chipset	Realtek 8139A/B 10BaseT/100 BaseT (Boot ROM Optional)	
FLASH Disk	Socket for DiskOnChip	
System Memory	Upto 256MB(PC66/PC100)	
IDE Interface	PCI IDE Support Ultra DMA33	
Multi I/O	Supports 4 Serial and 1 Parallel Ports Serial Port with +5V/+12V Power	
+5V/+12V for COM Ports	Yes	
External Cache	512KB Burst Cache	
IrDA Port, USB Port	Yes	
Expansion Slot	Extension for PCI/ISA Bus	
AD Selector	AD23 LAN (INT.A,B,C,D) AD22 FREE (INT.B,C,D,A) AD21 FREE (INT.C,D,A,B) AD24 FREE (INT.D,A,B,C)	AD24 LAN (INT.A,B,C,D) AD23 FREE (INT.B,C,D,A) AD22 FREE (INT.C,D,A,B) AD21 FREE (INT.D,A,B,C)
Location of Expansion Slot	On the 6 th slot of Standard MB	
Keyboard / Mouse Jack	Two Mini Din Jack	
Pin Header for	Keyboard / Mouse / VGA / Multi I/O ports	
ATX Power Connector	Yes	
Form Factor	PC/AT - 4 Layers	
Board Size	223x220mm (8.77"x 8.66")	

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Chapter 1. Introduction

The ENDAT-586EL All-In-One motherboard uses VIA VT82C598MVP and VT82C586B chipsets, built-in ATI Rage XL x2 AGP chipset which supports Digital Flat Panel (DFP) and Realtek 8139x LAN chipset with RJ45 Jack for 10BaseT/100BaseT. Our board offers the highest performance PC specifications in the industry. The ENDAT-586EL runs with the Intel Pentium P54C/P55C, AMD K5/K6, K6-2/K6-3, IDT C6, Rise MP6 or IBM/Cyrix 6x86 CPU upto 500MHz.

The motherboard is fully compatible with industry standards, adding many technical enhancements and 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. "Tomorrows PC technology is here today".

1-1. Features

- Support for P54/P55C CPUs, AMD K5/K6, K6-2, K6-3, IDT C6, Rise MP6 and IBM/Cyrix 6x86 CPUs Clock base on 60MHz ~ 100MHz supports 75MHz – 500MHz.
- Provides for separately powered 3.3V (5V tolerant) interfaces to system memory and PCI BUS
- PC-97 compatible, using VT82C598MVP single-chip socket-7 north bridge with AGP and PCI, plus Advanced ECC memory Controller and support for SDRAM, EDO and FPM.
- Maximum 512K pipeline burst SRAM cache
- Single chip implementation for 64bit Socket-7 CPU, 64bit system memory and 32bit AGP interfaces
- Supports up to 512MB memory with two 168 pin DIMM socket (PC-100/66 DIMM)

- Supports “Plug-Play” functions
- On board built-in PCI BUS master IDE control and floppy drive controller
- Onboard socket for DiskOnChip supports M-System products
- Onboard LAN Adapter supports 10BaseT/100BaseT, (On board) BOOT ROM optional
- Support for 4 COM ports, STD. RI(RS-232) +12V/+5V DC Power selectable and one SPP/EPP/ECP Parallel port.
- Supports Ultra DMA33 EIDE
- Supports up to Mode 4 hard disk drives
- Onboard support for 4 high-speed UARTS (W/16550 FIFO) and multi-mode
- Parallel port for standard, enhanced(EPP) and high-speed(ECP) mode
- Onboard built-in USB functions
- Onboard built-in 2x AGP BUS VGA adapter with ATI Rage XL chipset
- On board built-in TMDS(DFP) connector for Digital Flat Panel LCD.
- Support for 4MB/8MB/16MB SDRAM Video RAM
- 188pin expansion slot for both PCI and ISA BUS signals
- AWARD BIOS FLASH ROM (2Mbits)
- Hardware “Green” function support
- IR function can be Enabled/Disabled by BIOS
- Onboard 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-586EL All-In-One Motherboard
- HDC/FDC Cables
- LCD Panel Cable (Optional)
- Serial port kit for COM3 and COM4
- 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

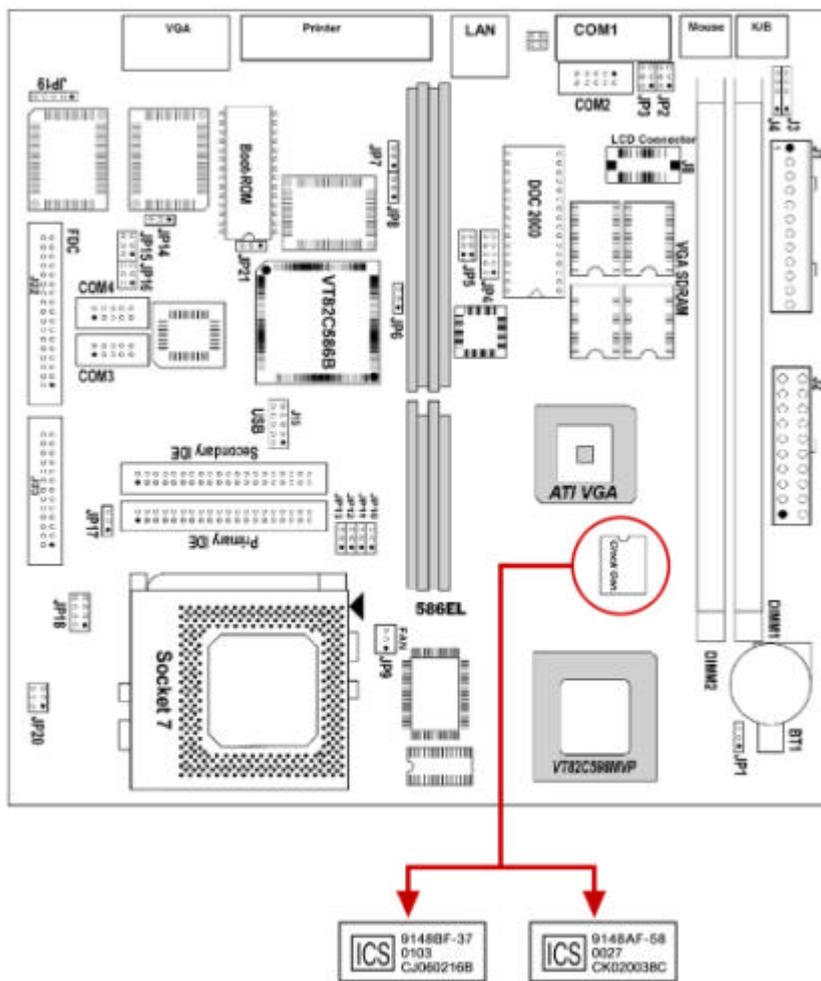
If any of these items are missed or damaged, please contact the dealer from whom you purchased the motherboard. Save the shipping materials and carton in the event that you want to ship or store the board in the future.

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



Please check the part number and refer to [Page.7\(JP13\)](#) frequency setting before Power-On the system.

CHAPTER 2. Setting up the Motherboard

This chapter describes getting your motherboard ready for operations.

- Installing the CPU upgrade
- Installing DIMM memory. Make sure the correct CPU operating voltage, jumper settings and frequency.
- 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

Jumpers/Connectors Overview:

Function	Jumpers/Connectors
CPU: CPU Clock Frequency	JP10, JP11, JP12
CPU Ratio	JP20
CPU Vcore Voltage	JP18
Power for CPU Cooling Fan	JP9
Power Supply: Type (AT/ATX)	JP7
Power Good	JP17
ATX Power on/off Switch	J23 Pin 13, Pin 15
SDRAM Sync./Async. Mode Selector	JP13
TV-OUT Pin Header	JP5(pin1, 2, 3)
S-Video Pin Header(For PCB 2x only)	JP5(pin4, 5, 6)
VGA/LCD Adapter Disable/Enable	JP8
LAN Adapter Disable/Enable	JP21

Function	Jumpers/Connectors
COM Ports Power Selector	JP2, JP3, JP15, JP16
COM3/COM4 IRQ	JP14, JP6
DiskOnChip Memory Address	JP4
DFP Port For LCD	J8
Clear CMOS	JP1
PS/2 Keyboard header	J4
PS/2 Mouse Header	J3
IR	JP19
USB Header	J15
Header for Panel	J23
Power LED / Keylock	J23 Pin 1, 3, 5, 7, 9
ATX Power On/Off	J23 Pin 13, Pin 15
Doze LED	J23 Pin 17, Pin 19
Ring-Detected	J23 Pin 21, Pin 23
External Speaker	J23 Pin 2, 4, 6, 8
Hard Disk LED	J23 Pin 12, Pin 14
Hardware Reset Switch	J23 Pin 18, Pin 20
Buzzer On/Off	J23 Pin 25, Pin 26
Turbo LED for Case Panel only	J23 Pin 22, Pin 24

Note: The cooling fan and heat sink are required for Pentium processors. Please pay close attention to the direction of the CPU and cooling fan during installation. Position the cooling ventilator directly facing the regulator heat sink, which is located beside the CPU socket. This will reduce the overheating of the regulator and increase the reliability of the system.

JP13: SDRAM Sync/Async. Mode Selector(U4=ICS"9148BF-37")

JP10	JP11	JP12	JP13 Close 2-3	JP13 Close 1-2	CPU Clock	AGP Clock	PCI Clock
2-3	1-2	2-3	68 MHz	68 MHz	68 MHz	68 MHz	33 MHz
2-3	2-3	2-3	60 MHz	60 MHz	60 MHz	60 MHz	30 MHz
1-2	2-3	2-3	66 MHz	66 MHz	66 MHz	66 MHz	33 MHz
2-3	2-3	1-2	60 MHz	75 MHz	75 MHz	60 MHz	30 MHz
1-2	2-3	1-2	66 MHz	83 MHz	83 MHz	66 MHz	33 MHz
2-3	1-2	1-2	63 MHz	95 MHz	95 MHz	63 MHz	31 MHz
1-2	1-2	1-2	66 MHz	100MHz	100MHz	66 MHz	33 MHz

Note: Please do not leave these jumpers at "OPEN" in any speed of CPU otherwise the system won't be boot-up.

JP13: 1-2 Memory = CPU Clock

JP13: 2-3 Memory = AGP Clock

DIMM Memory must be PC-100 type, if Memory Clock Setting = CPU Clock at JP13

JP13: SDRAM Sync/Async. Mode Selector(U4=ICS"9148AF-58")

JP10	JP11	JP12	JP13 Close 2-3	JP13 Close 1-2	CPU Clock	AGP Clock	PCI Clock
2-3	1-2	2-3	83 MHz	124 MHz	124 MHz	83 MHz	41 MHz
2-3	2-3	2-3	75 MHz	112 MHz	112 MHz	75 MHz	37 MHz
1-2	2-3	2-3	66 MHz	66 MHz	66 MHz	66 MHz	33 MHz
1-2	1-2	2-3	75 MHz	75 MHz	75 MHz	75 MHz	37 MHz
1-2	2-3	1-2	66 MHz	83 MHz	83 MHz	66 MHz	33 MHz
2-3	1-2	1-2	63 MHz	95 MHz	95 MHz	63 MHz	31 MHz
1-2	1-2	1-2	66 MHz	100 MHz	100 MHz	66 MHz	33 MHz
2-3	2-3	1-2	88 MHz	133 MHz	133 MHz	88 MHz	44 MHz

Note: Please do not leave these jumpers at "OPEN" in any speed of CPU otherwise the system won't be boot-up.

JP13: 1-2 Memory = CPU Clock

JP13: 2-3 Memory = AGP Clock

DIMM Memory must be PC-133 type, if Memory Clock Setting = CPU Clock at JP13

JP18: CPU Vcore Voltage Selector

Pin 1-2	Pin 3-4	Pin 5-6	Pin 7-8	Vcore
Close	Close	Close	Close	3.5V
Close	Close	Close	Open	3.4V
Close	Close	Open	Close	3.3V
Close	Close	Open	Open	3.2V
Close	Open	Close	Close	3.1V
Close	Open	Close	Open	3.0V
Close	Open	Open	Close	2.9V
Close	Open	Open	Open	2.8V
Open	Close	Close	Close	2.7V
Open	Close	Close	Open	2.6V
Open	Close	Open	Close	2.5V
Open	Close	Open	Open	2.4V
Open	Open	Close	Close	2.3V
Open	Open	Close	Open	2.2V
Open	Open	Open	Close	2.1V
Open	Open	Open	Open	2.0V

JP20: CPU Frequency Ratio Setting

Pin 1-2	Pin 3-4	Pin 5-6	CPU Ratio
Close	Close	Open	2.5x
Close	Open	Open	2.0x
Open	Close	Open	3.0x
Open	Open	Open	1.5x / 3.5x
Close	Close	Close	4.5x
Close	Open	Close	4.0x
Open	Close	Close	5.0x
Open	Open	Close	5.5x

JP9: CPU Cooling Fan Power Selector

Pin 1, 3	Ground
Pin 2	+12V

JP7: Power Supply Type Selector

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

JP17: Power Good Source Selector

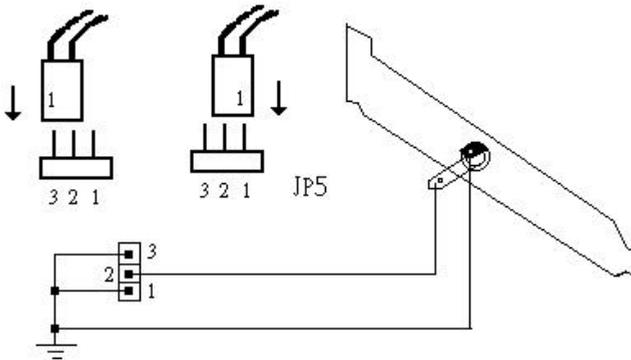
Pin 1-2	Internal Power Good
Pin 2-3	External Power Good

JP8: VGA/LCD Disable/Enable

Pin 1-2	VGA Disable
Pin 2-3	VGA Enable

JP5: TV-OUT Pin Header

Pin 1 / 3	GND
Pin 2	Composite Video out (NTSC/PAL)



Note.
 pin 1,3 is Gnd
 pin 2 is signal

JP5: S-Video (For PCB 2x only)

Pin 4	Y/RED
Pin 5	C/GREEN
Pin 6	SYNC

JP21: LAN Disable/Enable

Pin 1-2	Enabled
Pin 2-3	Disabled

JP2, JP3, JP16, JP15: DC Power Selector for COM Port

COM 1: JP2	Standard RI	+12V	+5V
COM 2: JP3			
COM 3: JP16	Close Pin 3-4	Close Pin 1-2	Close Pin 5-6
COM 4: JP15			

JP14, JP6: COM3/COM4 IRQ Selector

JP14	COM3	JP6	COM4
1-2	IRQ5 (Default)	1-2	IRQ4
2-3	IRQ3	2-3	IRQ10 (Default)

JP4: DiskOnChip Memory Address Selector

JP4		Memory Address
1-2	7-8	0C800H-0C9FFH
1-2	9-10	0CC00H-0CDFFH
3-4	7-8	0DCCCH-0D1FFH
3-4	9-10	0D400H-0D5FFH
5-6	7-8	0D800H-0D9FFH
5-6	9-10	0DC00H-0DDFFH(Default)

JP1: CMOS Data Clear

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

J15: USB Header (for USB1, USB2)

PIN		Description
1	2	USB VCC
3	4	USB DATA -(0,1)
5	6	USB DATA +(0,1)
7	8	USB_GND
9	10	USB_GND

2-2. 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).

2-3. VGA S-DRAM Supporting

The ENDAT-586EL supports 4MB/8MB/16MB SDRAM. The amount of video memory on your motherboard determines the number of colors and the video graphic resolution.

2-4. Installing Riser Card

Installing Riser Card (Max. 3 PCI Slot on Riser Card)

PCI Slot	INT	ADSEL	ENDAT-586EL-1x	ADSEL	ENDAT-586EL-2x
PCI 1	A,B,C,D	AD23	Onboard LAN	AD24	Onboard LAN
PCI 2	B,C,D,A	AD22	Free	AD23	Free
PCI 3	C,D,A,B	AD21	Free	AD22	Free
PCI 4	D,A,B,C	AD24	Free	AD21	Free

There are two different riser cards that can be fitted to ENDAT-586EL All-In-One motherboard. The first one is a 98pin ISA only Bus riser card (traditional ISA Bus riser card), the second one is a 188pin PCI/ISA riser card. **Please note: PCI/ISA riser cards jumper settings have to be matched with the motherboard**

AD select. The correct AD select for ENDAT-586EL All-In-One motherboard is listed on the above table.

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

2-5. Assigning IRQs for Expansion Cards

Some expansion cards require an IRQ (Interrupt request vector) to operate. Generally, an IRQ must be exclusively assigned to one use. In a standard design, there are 16 IRQ available with 11 of them already in used by other part of the system.

Both ISA and PCI expansion cards may need to use IRQ. System IRQs are available to cards installed in the ISA Expansion Bus first. Any remaining IRQ 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 IRQ in the system. Otherwise this will cause the system to hang up or give unexpected results. To simplify the process, this motherboard complies with the Plug and Play (PnP) specifications, 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 2-4" Installing a 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

IRQ	Status	Assignment
7	Used	LPT1
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)

2-6. 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 to customize the system as desired. Press the key to enter into the CMOS setup program when you turn on the power. Settings can be accessed via arrow keys. 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” requires board knowledge on PC/AT system architecture and VIA MVP3 chipset specification. They are intended to be used by well-trained technicians and experienced users. Incorrect setup could cause system malfunctions.

3-1. Quick Setup

In most cases, you can quickly configure the system by using the following procedure. The manufacturer highly recommends that you 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 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 Option

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

3-3. Details of the Chipset Feature Setup

ROM PCI/ISA BIOS (2A5LEU4B)
 CMOS SETUP UTILITY
 CHIPSET FEATURE SETUP

Bank 0/1 DRAM Timing	: Normal	OnChip USB	: Disabled
Bank 2/3 DRAM Timing	: Normal		
SDRAM Cycle Length	: 2		
DRAM Read Pipeline	: Enabled		
Cache Rd+ CPU Wt Pipeline	: Enabled		
Cache Timing	: Fast		
Video BIOS Cacheable	: Enabled		
System BIOS Cacheable	: Enabled		
Memory Hole At 15Mb Addr.	: Disabled		
AGP Aperture Size	: 128M		
ISA Bus CLK	: PCICLK/4		

DRAM Setting

Chipset settings associate CPU access to dynamic random access memory (DRAM). The default timing has been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if the system had mixed or different speed DRAM chips. 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 value in the field is set by the system board manufacturer, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

SDRAM Cycle Length

The file sets the CAS latency timing.

Cache Rd+CPU Wr Pipeline

This item allows you to enable or disable the cache timing.

Read Pipeline

You may select Enabled for this field when PDSRAMs are installed. Pipelining improves system performance.

Video BIOS Cacheable

When enabled, the Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

System BIOS Cacheable

Enabling this selection allows access to the system BIOS ROM addressed F0000H-FFFFFH to be cached, provided the cache controller is enabled.

Memory Hole At 15Mb Addr.

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.

AGP Aperture Size

Selecting 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. See www.apgforum.org for AGP information.

OnChip USB

Select “Enabled” if your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral. The “Assign IRQ for USB” has to be set to Enabled on “PnP/PCI Configuration” (when the USB be used.)

3-4. Details of Power Management Setup

ROM PCI/ISA BIOS (2A5LEU4B)
POWER MANAGEMENT SETUP

ACPI Function	: Disabled	Primary INTR	: ON
Power Management	: User Define	IRQ3 (COM2)	: Primary
PM Control by APM	: Yes	IRQ4 (COM1)	: Primary
Video Off Option	: Suspend → Off	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
** PM Timers **		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 (Coprocesor)	: Primary
VGA	: OFF	IRQ14 (Hard Disk)	: Primary
LPT & COM	: LPT/COM	IRQ15 (Reserved)	: Disabled
HDD & FDD	: ON		
DMA/Master	: OFF		

Power Management

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

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

There are four selections 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 Defined	Allows you to set each mode individually. When enabled, 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 APM

When enabled, an Advanced Power Management device will be activated to enhance the Maximum Power saving mode and to stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting “Yes” gives better power savings. If the Maximum 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 system enters the Suspend mode
Susp, Stby → Off	Monitor blanked when the system enters either Suspend or Stby mode
All Mode → 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 turn off the vertical and horizontal synchronization ports and to write blank to the video buffer
Blank Screen	This option only writes blank to the video buffer
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standard to select video power management values

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

Soft-Off by PWRBTN

When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

PM Timers

The following four modes are Green PC power saving functions which are only implemented when User Defined Power Management has been selected.

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 system inactivity”, the CPU clock will run at a slower speed while all other devices operate at full speed.

Suspend Mode

When enabled, 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 for anything, which occurs to a device that is configured as ON, even when the system is in a power down mode.

When set to ON(Default), any occurrence at a VGA/COM/LPT port or HDD/FDD device will awaken a system which has been powered down.

DMA/Master

When set to ON (Default), any event occurring to the DMA controller will awaken a system which has been powered down.

Primary INTR

When set to ON (Default), any event occurring will awaken a system which has been powered down.

3-5. PCI Configuration Setup

This section describes configuring the PCI bus system. PCI is a system that allows I/O device to operate at speeds nearing the speed of the CPU itself, when communicating with its own special components. This section covers some very technical items. It is strongly recommended that only experienced users make any changes to the default settings.

ROM PCI/ISA BIOS (2A5LEU4B)

PNP/PCI CONFIGURATION

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
IRQ-3 Assigned to	: Legacy ISA	PCI Delay Transaction	: Enabled
IRQ-4 Assigned to	: Legacy ISA	PCI Master Read Prefetch	: Enabled
IRQ-5 Assigned to	: PCI/ISA PnP	PCI #2 Access #1 Retry	: Disabled
IRQ-7 Assigned to	: Legacy ISA	AGP Master 1 WS Write	: Enabled
IRQ-9 Assigned to	: PCI/ISA PnP	AGP Master 1 WS Read	: Disabled
IRQ-10 Assigned to	: PCI/ISA PnP	PCI IRQ Activated By	: Level
IRQ-11 Assigned to	: PCI/ISA PnP	Assign IRQ for VGA	: Disabled
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 system operating environment is Plug-and-Play software (e.g. Windows95).

Resource Controlled By

The Award Plug and Play BIOS has the capability to automatically configuring 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, 98 or NT.

Reset Configuration Data

Normally, you can 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 cannot 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 enabled, up to four D words of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

PCI Dynamic Bursting

When enabled, data transfers on the PCI bus, where possible. Make sure of the high performance PCI bust protocol, in which greater amounts of data are transferred at a single command.

PCI Master 0 WS Write

When enabled, writes to the PCI bus are command with zero wait states.

PCI Delay Transaction

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

PCI IRQ Activated by

This sets the method by which the PCI bus recognizes that IRQ services are being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system' s manufacturer.

3-6. Integrated Peripherals

ROM PCI/KISA BIOS (2A5LEU4B)

INTEGRATED PERIPHERALS

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

OnChip First/Second Channel

This chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the first and/or second IDE interface. Select Disabled to deactivate this interface, if you install a first and/or second add-in IDE interface IDE interface.

IDE Prefetch Mode

Enable pre-fetch for IDE drive interface that supports its faster drive access. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and does not appear when the Internal PCI/IDE field, above, is Disabled.

IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD). Select Enabled only if your hard drives support block mode.

IDE Primary/Secondary Master/Slave PIO

The four IDE IPO (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. Modes 0 through 4 provide successively increased performance. In auto mode, the system automatically determines the best mode for each device.

IDE Primary/Secondary Master/Slaver UDMA

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

Onboard FDD Controller

This should be enabled if your system has a floppy disk drive (FDD) installed on the system.

Onboard Serial Port 1/ Port 2 / Port 3 / Port 4

This item allows you to determine the I/O address of the onboard serial port.

UART 2 Mode

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

Onboard Parallel Port

This item allows you to determine the I/O address of onboard parallel port.

Onboard Parallel Mode

Select an operating mode for the onboard parallel port. Normal EPP (Extended Parallel Port), ECP (Extended Capabilities Port) ECP+EPP PC AT parallel port Bi-directional port Fast, buffered port Fast, buffered and Bi-directional port. Select Normal, unless you are certain your hardware and software both support EPP or ECP mode.

Chapter 4. VGA, LCD, DOC, IDE Feature

4-1. AGP-BUS VGA Feature

The on-board ATI Rage XL 2x AGP 3DVGA 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 incorporates 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
- DDCI and DDC2B+ for plug and play monitors
- 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 graphic devices are limited to a 33MB/s bandwidth which must be shared with other PCI devices.
- DVD and Video Support - DVD and video features include 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 supports Digital Flat Panel LCD Monitors through the industry standard 20-pin (MDR 20Pin) connector (J8=DFP Port) 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 damage to 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 the CD-ROM

4-5. DiskOnChip Feature

On board reserved is a 32-pin Socket for DiskOnChip 2000, it is a 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 costs, you 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, Pdos+ and QNX.

You have to set the correct memory address for DiskOnChip by JP4. The drivers utilities are placed onto CD-ROM

JP4		Memory Address
Pin 1-2	Pin 7-8	0C800H - 0C9FFH
Pin 1-2	Pin 9-10	0CC00H - 0CDDFFH
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

After finished with the Windows platform (95/98/2000/NT) installation, please install the relative driver utilities for compliance of the compatibility with hardware environment.

Please follow the below procedure step by step.

1. Install PCI IRQ Routing driver
To fix all VIA South bridge compatibility with Windows
2. Install PCI Bridge driver
To enable VIA chipset to recognizing some legacy or PCI devices
3. Install the VGA driver for on-board AGP VGA adapter
4. Install the VIA AGPVxD driver to enable VIA chipset work with AGP bus function.
(This is an optional step)
5. Install the LAN driver for on-board LAN adapter. Please refer to Chapter 5.9 the Realtek 8139 LAN Driver Installation Procedure.

Chapter 5. LAN Adapter

The on-board 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 On-board 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 802.3u standard, IEEE802.3 standard and PCI Local Bus version 2.1 and transmits data on the network at 100 Mbps or 10 Mbps. 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.

5-1. Features

- Full compliancy 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 10 Base-T Ethernet or 200Mbps on 100 Base-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

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, 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.

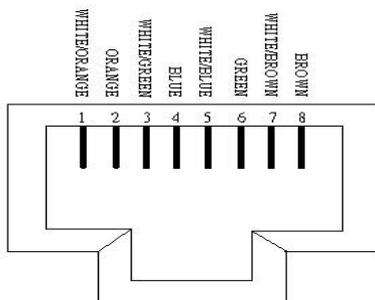
Table A-1 shows the wiring in a straight-through twisted-pair cable (Pins 4,5,7 and 8 are not used).

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

RJ-45 Connector Pin Assignments

Figure A-1 shows the RJ-45 Connector pin assignments

RJ45 PIN AND CABLE COLORS



5-3. 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 both ends. This cable can have a maximum length of 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 cables with RJ-45 modular jacks at both ends. This cable can have a maximum length of 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 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 maybe required in some areas where fire proofing is required.
- 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 (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 IEEE802.3 standard. It also works with any of the other IEEE-compliant products.

5-6. 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.

5-7. 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, recheck the LEDs.

FUDUP (Full Duplex) Indicator

When indicator is ON, it indicates Full-duplex mode; otherwise, it is OFF. The adapter supports full duplex 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.

5-8. The Setup Program

The 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 adapters basic functions, and the adapters 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 the 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 configuration 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	Enable – 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 a basic function verification for on board LAN adapters. The basic Diagnostic tests includes:

- **EEPROM Test:** EEPROM data read/write test
- **Diagnostics On Board:** Performs 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

Installing 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.

<p>Note: Please install the "VIA PATCH FILE" first if you want to link your LAN with Windows 98</p>
--

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.

5.9. The Realtek 8139 LAN Driver Installation Procedure:

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 Drive
→ Yes (Recommended) → Next → Other Locations → Browse
→ A:\Rtsnt.100\Exe\Win95 → OK → Finish***

After finishing the above procedure, 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 v7.21 Copyright 1993, Award Software, Inc
For VIA MVP3-W877TF-2A5LEU4BC-0 Flash Type – SST 29EE020 / 5V
File Name to Program:
Error Message: Do you want to save BIOS settings (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. For upgrade BIOS procedure, please refer to our web site:
<http://www.unicorn-computer.com.tw>

Appendix B: Connector Pin Assignment

PS/2 Keyboard / Mouse Pin Header Connector (J4, J3)

Pin No. (J4)	PS/2 Keyboard Description	Pin No (J3)	PS/2 Mouse Description
1	K/B_Data	1	Mouse_Data
3	N.C	2	N.C
5	Grounded	3	Grounded
7	+5V DC	4	Mouse_VCC
9	K/B_Clock	5	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: (J8)

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

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

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 (J23)

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

Keylock / Power – LED (J23)

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

HDD LED (J23)

Pin No.	Description
1	LED +
2	LED -

USB Port 1/2 Pin Header (J15)

Pin No.		Description
1	2	Vcc
3	4	USBDATA - (0/1)
5	6	USBDATA + (0/1)
7	8	GND
9	10	GND

IR Connector (JP19)

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

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	0WS
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	REFRESH
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	-IOCS16
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	1x: -GNT0	2x: -GNT3	F9	GND
E10	1x: -REQ0	2x: -REQ3	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

There is different on E9/E10 for PCB 1x and PCB 2x

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

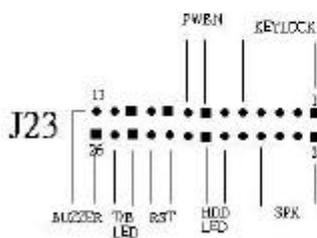
Appendix C. CPU Specification:

CPU Brand/Type	Frequency	Ratio	V-Core/V-I/O
AMD K6-166ALR	66MHz	2.5	2.9V / 3.3V
AMD K6-200ALYD	66MHz	3.0	2.9V / 3.3V
AMD K6-233ANR	66MHz	3.5	3.2V / 3.3V
AMD K6-266AFR	66MHz	4.0	2.2V / 3.3V
AMD K6-300AFR-66	66MHz	4.5	2.1V / 3.45V
AMD K6-2-300	100MHz	3.0	2.2V / 3.3V
AMD K6-2-350	100MHz	3.5	2.2V / 3.3V
AMD K6-2-333	95MHz	3.5	2.2V / 3.3V
AMD K6-2-380	95MHz	4.0	2.2V / 3.3V
AMD K6-2-400	100MHz	4.0	2.2V / 3.3V
AMD K6-3-400	100MHz	4.0	2.4V / 3.3V
AMD K6-3-450	100MHz	4.5	2.4V / 3.3V
INTEL-166	66MHz	2.5	3.3V
INTEL-200 MMX	66MHz	3.0	2.8V / 3.3V
INTEL-233 MMX	66MHz	3.5	2.8V / 3.3V
IDT-PSMF200GA	66MHz	3.0	3.3V
IDT-PSME200GA	66MHz	3.0	3.5V
IDT-PSME225GA	75MHz	3.0	3.5V
IDT-PSME240GA	60MHz	4.0	3.5V
IDT-PSME250GA	83MHz	3.0	3.5V
IDT-PSME266GA	66MHz	4.0	3.5V
IDT-PSME300GA	75MHz	4.0	3.5V
IDT W2A-3DFF200Gx	66MHz	3.0	3.3V
IDT W2A-3DEE200Gx	66MHz	3.0	3.5V
IDT W2A-3DEE225Gx	75MHz	3.0	3.5V
IDT W2A-3DFF233Gx	66MHz	3.5	3.5V
IDT W2A-3DEE233Gx	66MHz	3.5	3.5V
IDT W2A-3DEE240Gx	60MHz	4.0	3.5V

CPU Brand/Type	Frequency	Ratio	V-Core/V-I/O
IDE W2A-3DEE266Gx	100MHz	2.33	3.5V
IDT WinChip2-300	100MHz	2.5	3.5V
IBM 6X86-P166	66MHz	2.0	2.8V / 3.3V
IBM 6X86-P200	75MHz	2.0	2.8V / 3.3V
ST 6X86-P166	66MHz	2.0	3.5V / 3.3V
CYRIX 6X86-P166	66MHz	2.0	3.3V or 3.5V / 3.3V
CYRIX M2-266	83MHz	2.5	2.9V / 3.3V
CYRIX M2-300GP	66MHz	3.5	2.9V / 3.3V
CYRIX M2-333GP	83MHz	3.0	2.9V / 3.3V
CYRIX M2-366GP	100MHz	2.5	2.9V / 3.3V
CYRIX M2-400GP	95MHz	3.0	2.2V / 3.3V
CYRIX M2-433GP	100MHz	3.0	2.2V / 3.3V

JP18

3.5V		2.7V	
3.4V		2.6V	
3.3V		2.5V	
3.2V		2.4V	
3.1V		2.3V	
3.0V		2.2V	
2.9V		2.1V	
2.8V		2.0V	



JP20: CPU Frequency Ratio Setting

1.5X		2.0X		2.5X		3.0X	
3.5X							
6	••	5	6	••	5	6	••
4	••	3	4	••	3	4	••
2	••	1	2	••	1	2	••
4.0X		4.5X		5.0X		5.5X	
6	•••	5	6	•••	5	6	•••
4	••	3	4	••	3	4	••
2	••	1	2	••	1	2	••