Pentium All-In-One MainBoard

User's Manual

ENDAT-586KL / ENDAT-586KL-A SYSTEM

Rev. 2A

(for PCB Version 2A)

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 two different layout model of Pentium with Audio, LAN Adapter All-In-One motherboards that are manufactured currently offer to market. The respective board layout outlines are shown on Chapter 1-4/1-5. Please refer to the following description to make sure which model you have before using.

586 AGP-BUS/SOUND ALL-IN-ONE MOTHER BOARD SPECIFICATION

MODEL		ENDAT-586KL-A	ENDAT-586KL
CPU		Pentium 75-450, MMX, AMD K5/K6/K6-2/K6-3, IDT C6, RISE MP6, IBM Cyrix 6x86 CPU	
ZIF Socket		Yes	
System Chipset (100MHz)		VIA MVP3 598MVP + 596	
System BIOS		Award (2Mbits Flash ROM)	
VGA Chipset		Trident 9750 AGP1	
LAN Chipset		Intel 21143 10/100 BaseT	N/A
Sound Chipet		Yamaha 724	
System Memory		Upto 512MB	
Video RAM		4MB SGRAM on Board	
VGA Feature Connector		Yes	
IDE Interface		Ultra DMA33	
IrDA Port, USB Port		Yes	
Multi I/O Chipset		Winbond 83877TF Supports 2 Serial/1 Parallel Ports	
External Cache		512KB Pipelined-Burst CACHE on Board	
Expansion Slot		Extension for PCI/ISA Bus	
Max. PCI Slot on	PCI 1	AD23 (INT.A,B,C,D) AUDIO	AD23 (INT.A,B,C,D) AUDIO
Riser Card:	PCI 2	AD22 (INT.B,C,D,A) FREE	AD22 (INT.B,C,D,A) FREE
586KL-A: 2 PCI	PCI 3	AD21 (INT.C,D,A,B) FREE	AD21 (INT.C,D,A,B) FREE
586KL: 3 PCI	PCI 4	AD24 (INT.D,A,B,C) LAN	AD24 (INT.D,A,B,C) FREE
Location of Expansion Slot		On the 7th of Standard MB	
Keyboard Jack		Two Mini Din Jack	
PS/2 Mouse Pin Header		Yes	
VGA/Multi I/O Pin Header		Yes	
RAM Socket		168pin DIMM x 2 (66/100 DIMMs)	
Remote Ring Detect		Yes	
ATX Power Connector		Yes	
Form Factor		WD/LPX - 4 Layers	
Board Size		198x280mm(7.79”x11.02”)	

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Chapter 1. INTRODUCTION

The ENDAT-586KL All-In-One motherboard uses VIA Apollo MVP3 chipset, built-in Trident 3Dimage 9750 chipset, Yamaha YMF724 Sound chipset and Intel 21143 LAN chipset with RJ45 Jack for 10BaseT/100BaseT onboard. Our board offers the highest performance PC specifications in the industry. The ENDAT-586KL-A/ENDAT-586KL run with the Intel Pentium P54C/P55C, AMD K5/K6, K6-2/K6-3, IDT C6, Rise MP6 or IBM/Cyrix 6x86 CPU upto 450MHz.

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. "Tomorrow PC technology is here today".

1-1. Features

- Support for P54C/P55C, AMD K5/K6, K6-2/K6-3, IDT C6, Rise MP6 and IBM/Cyrix 6x86 CPUs Clock base on 60MHz ~ 100MHz supports 75MHz ~ 450MHz
- 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, supporting SDRAM, EDO and FPM
- PC-98 Compliant PCI-to-ISA bridge with ACPI. Enhanced power management, SMBus Distributed DMA, serial IRQ, PnP, UltraDMA33 master mode PCI-EIDE controller, USB Controller, Keyboard Controller and RTC in a PIIX4 pin compatible BGA package

- Maximum 512K pipeline burst SRAM cache
- Single chip implementation for 64bit Socket-7 CPU, 64bit system memory, 32bit AGP interfaces
- Supports up to 512MB memory with two 168pin DIMM Socket (PC-100 DIMM)
- Support Plug and Play functions
- Onboard built-in PCI BUS master IDE controller and floppy controller
- Onboard LAN Adapter supports 10BaseT/100BaseT, (On board) BOOT ROM optional
- Supports UltraDMA33 EIDE
- Supports up to Mode 4 hard disk drives
- Onboard support for 2 high-speed UARTS (W/16550 FIFO) and multi-mode parallel port for standards, enhanced(EPP) and high speed(ECP) mode
- Onboard built-in USB functions
- Onboard built-in AGP BUS VGA adapter with Trident 9750 chipset
- Supports 4MB SGRAM
- 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
- Support PCI Audio Controller

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-586KL-A/ENDAT-586KL All-In-One Motherboard
- HDC/FDC Cables, Audio Kit Bracket
- IDE Driver includes: Drivers for Windows 3.1, Windows NT3.x/4.x, Windows 95, OS/2, Novell Netware and AWARD FLAH ROM utilities
- VGA utilities and Software drivers
- Driver utilities for LAN Adapter and PCI Audio Controller

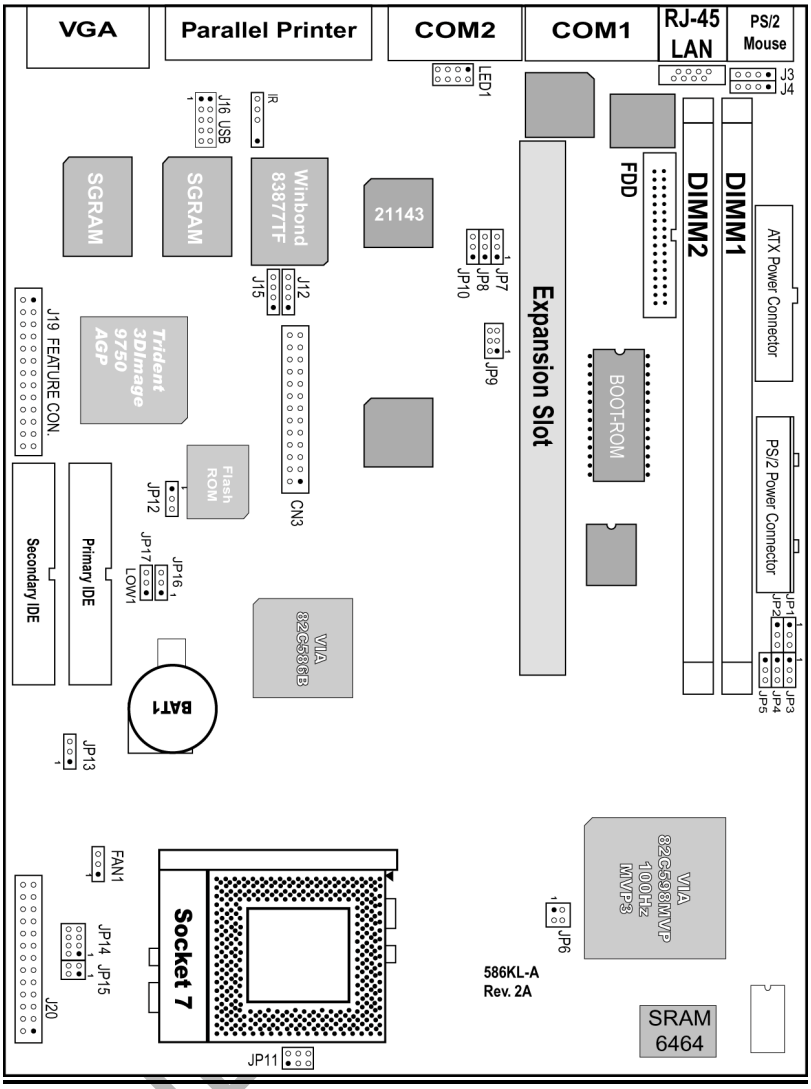
If any of these items are missed or damaged, contact the dealer from whom you purchased the motherboard. Save the shipping materials and carton in the even you want to ship or store the board in the future.

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

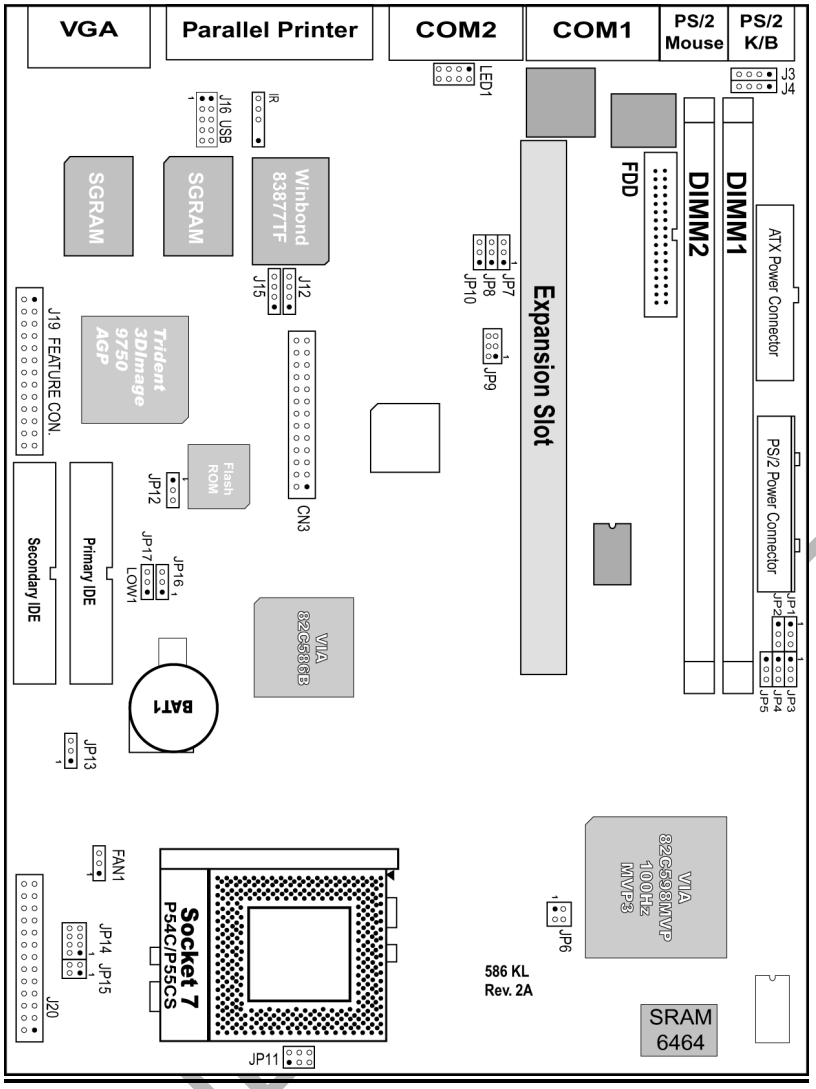
1-3. Electrostatic Discharge Precautions

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 (586KL-A)



1-5. Motherboard Layout (586KL)



Chapter 2. SETTING UP THE MOTHERBOARD

This chapter describes getting your motherboard ready for operation.

- 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

Jumpers/Connectors Overview:

Function	Jumpers
CPU: CPU Clock Frequency	JP3, JP4, JP5
CPU Ratio	JP11
CPU V-I/O Voltage	JP15
CPU Vcore Voltage	JP14
Power for CPU Cooling Fan	FAN 1
Power Supply: ATX Power on/off Switch	J20 Pin13, Pin15
Power Good	JP13
SDRAM Sync. Mode Selector	JP2
VGA Adapter Disable/Enable	JP7
LAN Adapter Disable/Enable	JP10
Audio/Game Output Port Connector	CN3
Audio Adapter Disable/Enable	JP8

Function	Jumpers
Clear CMOS	JP16
FLASH ROM Voltage Selector	J12
PS/2 Keyboard Header	J3
PS/2 Mouse Header	J4
IR	IR1
USB Header	J16
Header for Panel	J20
Modem Ring Detect	J20 Pin21, Pin23
HDD LED	J20 Pin12, Pin14
Hardware Reset Switch	J20 Pin18, Pin20
External Speaker	J20 Pin2, Pin8
Key Lock/Power LED	J20 Pin1, 3, 5, 7, 9
Doze-LED	J20 Pin17, Pin19
Buzzer on/off	J20 Pin25, Pin26
Turbo LED for Case Panel only	J20 Pin22, Pin24

NOTE: The cooling fan and heat sink are required for Pentium processors. Please pay vattention 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.

JP2: SDRAM Sync. Mode Selector

Pin 1-2	PC-100
Pin 2-3	66MHz

JP3, JP4, JP5: CPU Clock Frequency Selector

JP3	JP4	JP5	CPU Clock	AGP Clock	PCI Clock
2-3	2-3	2-3	60.0MHz	60.0MHz	30.0MHz
1-2	2-3	2-3	66.8MHz	66.8MHz	33.4MHz
2-3	1-2	2-3	68.5MHz	68.5MHz	34.2MHz
2-3	2-3	1-2	75.0MHz	60.0MHz	30.0MHz
1-2	2-3	1-2	83.3MHz	66.6MHz	33.3MHz
2-3	1-2	1-2	95.2MHz	63.5MHz	31.8MHz
1-2	1-2	1-2	100.0MHz	66.6MHz	33.3MHz

JP14: CPU Vcore Voltage Selector

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

JP15: CPU V-I/O Voltage Selector

JP15	V-I/O
Open All	3.3V
Close 1-3/2-4	3.45V

JP11: CPU Frequency Ratio Setting

Pin 1-2 (BF0)	Pin 3-4 (BF1)	Pin 5-6 (BF2)	RATIO
Short	Short	Open	2.5x
Open	Short	Open	3.0x
Short	Open	Open	2.0x
Open	Open	Open	1.5/3.5x
Short	Short	Short	4.5x
Open	Short	Short	5.0x
Short	Open	Short	4.0x
Open	Open	Short	5.5x

AMD

PROCESSOR	F/R	VC	Frequency			JP11 CPU Ratio			JP14 Vcore Voltage			
			JP3	JP4	JP5	1-2	3-4	5-6	1-2	3-4	5-6	7-8
K5-133	66*2.0	2.8	1-2	2-3	2-3	S	O	O	S	O	O	O
K5-166	66*2.5	2.8	1-2	2-3	2-3	S	S	O	S	O	O	O
K6-166	66*2.5	2.9	1-2	2-3	2-3	S	S	O	S	O	O	S
K6-200	66*3.0	2.9	1-2	2-3	2-3	O	S	O	S	O	O	S
K6-233	66*3.5	3.2	1-2	2-3	2-3	O	O	O	S	S	O	O
K6-266	66*4.0	2.2	1-2	2-3	2-3	S	O	S	O	O	S	O
K6-300	66*4.5	2.1	1-2	2-3	2-3	S	S	S	O	O	O	S
K6-300	66*4.5	2.2	1-2	2-3	2-3	S	S	S	O	O	S	O
K6-2-300	66*4.5	2.2	1-2	2-3	2-3	S	S	S	O	O	S	O
K6-2-300	100*3.0	2.2	1-2	1-2	1-2	O	S	O	O	O	S	O
K6-2-350	100*3.5	2.2	1-2	1-2	1-2	O	O	O	O	O	S	O
K6-2-380	95*4.0	2.2	2-3	1-2	1-2	S	O	S	O	O	S	O
K6-2-400	100*4	2.2	1-2	1-2	1-2	S	O	S	O	O	S	O
K6-2-450	100*4.5	2.2	1-2	1-2	1-2	S	S	S	O	O	S	O

Intel

PROCESSOR	F/R	VC	Frequency			JP11 CPU Ratio			JP14 Vcore Voltage			
			JP3	JP4	JP5	1-2	3-4	5-6	1-2	3-4	5-6	7-8
Pentinm-133	66*2.0	2.8	1-2	2-3	2-3	S	O	O	S	O	O	O
Pentinm-150	60*2.5	2.8	2-3	2-3	2-3	S	S	O	S	O	O	O
Pentinm-166	66*2.5	2.7	1-2	2-3	2-3	S	S	O	O	S	S	S
Pentinm-180	60*3.0	2.8	2-3	2-3	2-3	O	S	O	S	O	O	O
Pentinm-200	66*3.0	2.7	1-2	2-3	2-3	O	S	O	O	S	S	S
Pentinm-166MMX	66*2.5	2.8	1-2	2-3	2-3	S	S	O	S	O	O	O
Pentinm-200MMX	66*3.0	2.8	1-2	2-3	2-3	O	S	O	S	O	O	O
Pentinm-233MMX	66*3.5	2.8	1-2	2-3	2-3	O	O	O	S	O	O	O

IBM/Cyrix

PROCESSOR	F/R	VC	Frequency			JP11 CPU Ratio			JP14 Vcore Voltage			
			JP3	JP4	JP5	1-2	3-4	5-6	1-2	3-4	5-6	7-8
6x86L-P166	66*2.0	2.82	1-2	2-3	2-3	S	O	O	S	O	O	O
6x86M-PR200	66*2.5	2.9	1-2	2-3	2-3	S	S	O	S	O	O	S
6x86M-PR233	75*2.5	2.9	2-3	2-3	1-2	S	S	O	S	O	O	S
6x86M-PR266	83*2.5	2.9	1-2	2-3	1-2	S	S	O	S	O	O	S
6x86M-PR300	75*3.0	2.9	2-3	2-3	1-2	O	S	O	S	O	O	S
ST 6x86-P166	66*2.0	3.52	1-2	2-3	2-3	S	O	O	S	S	S	S
6x86-P166	66*2.0	3.52	1-2	2-3	2-3	S	O	O	S	S	S	S
6x86L-PR166	66*2.0	3.52	1-2	2-3	2-3	S	O	O	S	S	S	S
6x86-PR200	66*2.5	2.9	1-2	2-3	2-3	S	S	O	S	O	O	S
6x86MX-PR233	75*2.5	2.9	2-3	2-3	1-2	S	S	O	S	O	O	S
6x86MX-PR266	83*2.5	2.9	1-2	2-3	1-2	S	S	O	S	O	O	S
M2-233	75*2.5	2.9	2-3	2-3	1-2	S	S	O	S	O	O	S
M2-300	75*3.0	2.9	2-3	2-3	1-2	O	S	O	S	O	O	S

Win Chip

PROCESSOR	F/R	VC	Frequency			JP11 CPU Ratio			JP14 Vcore Voltage			
			JP3	JP4	JP5	1-2	3-4	5-6	1-2	3-4	5-6	7-8
IDT-200	66*3.0	3.52	1-2	2-3	2-3	O	S	O	S	S	S	S
IDT-225	75*3.0	3.52	2-3	2-3	1-2	O	S	O	S	S	S	S
IDT-240	60*4.0	3.52	2-3	2-3	2-3	S	O	S	S	S	S	S

JP10: LAN Disable/Disable

Pin 1-2	Enabled
Pin 2-3	Disabled

JP12: Flash ROM Voltage Selector

Pin 1-2	5V 2MB Flash ROM
Pin 2-3	12V 2MB Flash ROM

FAN 1: CPU Cooling Fan Power Connector

Pin 1, 3	Ground
Pin 2	+12V

JP7: VGA Disable/Enable

Pin 1-2	Enabled
Pin 2-3	Disabled

JP16: CMOS Data Clear

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

JP8: Audio Disable/Enable

Pin 1-2	Enabled
Pin 2-3	Disabled

JP13: Power Good Source Selector

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

J16: 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

J20: Header for Panel

PIN	Description
1,3,5,7,9	Power LED / Key – Lock
13,15	ATX-Power on/off Switch
17,19	Doze-LED
21,23	Modem Ring-Detect
2,8	External Speaker
12,14	Harddisk Active LED
18,20	Hardware Reset Switch
22,24	Turbo-LED(for case panel only, no function)
25,26	On-board Buzzer on/off Switch (Default: on)

2-2. Installing Memory

The motherboard offers two 168pin DIMM sockets supporting up to 512MB memory. The DIMM Memory can be 66MHz or 100MHz (PC-100).

2-3. VGA SG-RAM Supporting

The 586KL supports 4MB SG-RAM, the amount of video memory on your motherboard determines the numbers of color and the video graphic resolutions

2-4. Installing Riser Card

Installing Riser Card (Max. 2 PCI Slot on Riser Card)

PCI Slot No.	ADSEL	INT#	ENDAT-586KL-A	ENDAT-586KL
PCI 1	AD23	A, B, C, D	Audio	Audio
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

There are two different riser cards can be fitted to ENDAT-586KL-A/ENDAT-586KL All-In-One motherboard. The first one is 98pin ISA BUS riser card (traditional ISA BUS riser card); the second one is 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-586KL-A /ENDAT-586KL All-In-One motherboard is listed as 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 IRQs available and most of them already in used by parts 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 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 details assignments.

IRQ	Status	Assignment
0	Used	Timer
1	Used	Keyboard
2	Used	Second 8259
3	Used	OCM2
4	Used	COM1

IRQ	Status	Assignment
5	Free	Reserved
6	Used	Floppy Disk
7	Used	LPT1
8	Used	RTC
9	Used	Redirected IRQ2
10	Free	Reserved
11	Used	LAN Adapter (Onboard)
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 <DEL> 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 the 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 malfunction.

3-1. Quick Setup

In most cases, you can quickly configure the system by 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 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 very 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 (2A5LEU4C)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing	: Normal	OnChip USB	: Disabled
Bank 2/3 DRAM Timing	: Normal		
SDRAM Cycle Length	: 3		
DRAM Read Pipeline	: Enabled		
Sustaned 3T Wrtite	: Enabled		
Chache 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	: 64M		

DRAM Setting

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if the system had mixed different speed DRAM chips, so that 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 filed 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 filed sets the CAS latency timing.

Sustained 3T Write

This item allows you to enable or disable direct map write back/write through secondary cache.

Cache Rd+CPU Wt Pipeline

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

Read Pipeline

You may select Enabled for this field when PBSRAMs 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 accesses to the system BIOS ROM addressed F0000H-FFFFFH to be cached, provided that 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

Select the size of Accelerated Graphics Port (AGP) aperture. The Aperture is a portion of 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 USB peripheral. The "Assign IRQ for USB" has to be set to Enabled on "PnP/PCI Configuration" when the USB be used.

3-4. Integrated Peripherals

ROM PCI/KISA BIOS (2A5LEU4C)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC

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		
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Atuo		
IDE Secondary Master PIO	: Auto		
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 Prefetech Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. 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 it does not appear when the Internal PCI/IDE field, above, is Disabled.

IDE HDD Block Mode

This item 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 supports 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 to enable BIOS support.

Onboard FDD Controller

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

Onboard Serial Port 1/ Port 2

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

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 access onboard parallel port controller with which I/O address.

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, Bi-directional port. Select Normal unless you are certain your hardware and software both support EPP or ECP mode.

3-5. Details of Power Management Setup

ROM PCI/ISA BIOS (2A5LEU4C)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI Function	: Enabled	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 (Coprocessor)	: Primary
VGA	: OFF	IRQ14 (Hard Disk)	: Primary
LPT & COM	: LPT/COM	IRQ15 (Reserved)	: Disabled
HDD & FDD	: ON		
DMA/Master	: OFF		
Modem Ring Resume	: Disabled		
RTC Alarm Resume	: Disabled		

Power Management

This category allows you to select the type (or degree) of power saving and is directly relate 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 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 APM

When enabled, an Advanced Power Management device will be activated to enhance the 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 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 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 that are only 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 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 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 even occurring 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 at will awaken a system, which has been powered down.

3-6. PCI Configuration Setup

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 CPU itself, when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users could make any changes to the default settings.

ROM PCI/ISA BIOS (2A5LEU4C)
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		
IRQ-4 Assigned to	: Legacy ISA	PCI #2 Access #1 Retry	: Disabled
IRQ-5 Assigned to	: PCI/ISA PnP	AGP Master 1 WS Write	: Enabled
IRQ-7 Assigned to	: Legacy ISA	AGP Master 2 WS Read	: Disabled
IRQ-9 Assigned to	: PCI/ISA PnP	PCI IRQ Activated by	: Level
IRQ-10 Assigned to	: PCI/ISA PnP	Assign IRQ for VGA	: Disabled
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 system operating 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 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 an **IRQ** services is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Chapter 4. VGA, Audio, IDE Adapter

4-1. AGP-Bus VGA Feature

The 3Dimage product line brings together "best of breed" features in every category of VGA, 3D, 2D, MPEG I/II acceleration, Video Conferencing. It establishes the highest level of 3D performance in the PC market, creates a new bar to beat in 2D benchmark performance and produces sharp smooth dual video windows using Trident's famed TrueVideo® technology.

4-2. AGP-Bus VGA Driver and Utilities

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

4-3. PCI-Bus Audio Adapter Features

The onboard Audio chipset is a high performance audio controller for the PCI-BUS, it consists of two separated functional blocks. One is the PCI Audio Block and the other one is the Legacy Audio Block. PCI Audio Block allows Software Driver to handle maximum of 41 concurrent audio streams with the Bus Master DMA engine. The PCI Audio Engine converts the sampling rate of each audio stream and the streams are mixed without utilizing the CPU or causing system latency. By using the Software Driver from Yamaha, PCI Audio provides 64-voice XG wavetable synthesizer with Reverb and variation. It also supports DirectSound hardware accelerator. Legacy Audio block supports OPL3, Sound Blaster Pro, MPU401 UART mode and Joystick function in order to provide hardware compatibility for numerous PC games on real DOS without any software driver. To achieve legacy DMAAC compatibility on the PCI, DS-IL supports PC/PCI protocol.

4-4. PCI Bus Audio Driver and Utilities

The Utilities Installation Program is placed onto CD-ROM

4-5. PCI-UBS IDE Driver and Utilities

The Utilities Installation Program is placed onto CD-ROM.

Chapter 5. LAN Adapter

The 21143 is an Ethernet LAN controller for both 100-Mb/s and 10-Mb/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 31143 operations 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 allows the 21143 to efficiently operate in systems with longer latency periods. Bus traffic is also minimized by filtering out received runt frames and by automatically collided frames without a repeated fetch from the host memory. The 21143 provide and upgradeable boot ROM interfaces.

5-1. Feature

Power Management and Power Saving:

- Full compliance 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 defined 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 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.
- Implements low-power, 3.3-V CMOS technology.

PCI Features:

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

Host Interface Features:

- Includes a powerful onchip direct memory access (DMA) with programmable burst size, providing low CPU utilization.
- Supports interrupt mitigation on transmmit 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 transmmit FIFOs.

Network Side Features:

- Supports 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.
- Contain 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 auto detection 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 loop back 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 upgradeable boot ROM interface up to 256KB.
- Provides LED indications for various network activity.

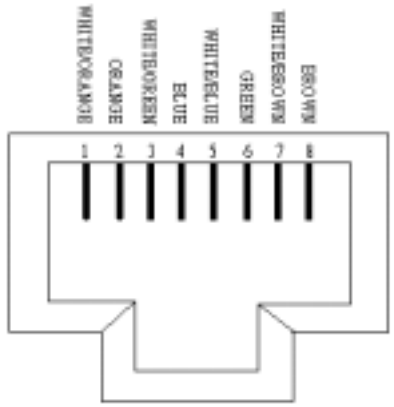
5-2. UTP Cable / RJ-45 Jack Definition

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, 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 plugs 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



5-3. Connecting 100Base-TX Fast Ethernet Network

The system board provides a RJ-45 port for connection to 100Bast-TX Fast Ethernet or 10Bast-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 is connected. To connect the adapter to 100Bast-TX Fast Ethernet 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 of 100 meters.

5-4. Connecting 10Base-T Ethernet Network

To connect the adapter to a 10Bast-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 of 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

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 2. 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 follows 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 Settings).

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(C) and a 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 uses 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 "NEG.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 LED1, which beside the COM2 Port 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 100Mbps 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.

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 v7.03 Copyright 1993, Award Software, Inc
For VIA MVP3-W877TF-2A5LEU4CC-0 Date: 12/14/1998 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. For upgrade BIOS procedure, please refer to our web site
   http://www.unicorn-computer.com.tw

Appendix B: Connector Pin Assignment

PS/2 Keyboard Connector

Pin No.	Description
1	Keyboard Data
2	N.C
3	Ground
4	+5V DC
5	Keyboard Clock

PS/2 Mouse Connector

Pin No.	Description
1	Mouse Data
2	N.C
3	Ground
4	+5V DC
5	Mouse Clock

COM1, COM2

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#

Pin No.	Description	Pin No.	Description
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		

Feature Connector

Pin No.	Description	Pin No.	Description
1	PXD0	10	BLANK#
2	PXD1	11	H.Sync
3	PXD2	12	V.Sync
4	PXD3	13-16	GND
5	PXD4	22-24	GND
6	PXD5	17	EXENPD
7	PXD6	18	EXSYNC
8	PXD7	19	ECTCLK
9	PCLK	20-21	N.C.
		25-26	N.C.

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#

HDD LED

Pin No.	Description
1	LED +
2	LED -

External Speaker Connector

Pin No.	Description
1	SPK
2	N.C
3	GND
4	Vcc

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

Pin No.	Description	Pin No.	Description
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#

Keylock / Power - LED

Pin No.	Description
1	Power LED
2	Power LED
3	GND
4	Keylock
5	GND

USB Port 1/2 Pin Header

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

IR Connector

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	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
10	-REQ0	10	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

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 K6-3-450	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
IDT-W2A-3AEE266Gx	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

CPU Brand/Type	Frequency	Ratio	V-Core/V-I/O
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
RISE MP6-266	100MHz	2.2	2.8V / 3.3V
RISE MP6-333	95MHz	2.5	2.0V / 3.3V
RISE MP6-366	100MHz	2.5	2.0V / 3.3V

The manufacturer reserves the right to make the improvement for this table at any time without pre-notice