
ENDAT-3405M

User's Manual

For ENDAT-3405M PCB Rev: 1B

09/29/2006

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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-3405M
Form Factor	Mini-ITX 170 mm x 170 mm (6.69"x6.69") with 6 layers PCB
System Chipset	VIA LUKE (NB+CPU) + VIA VT8237R Plus (SB)
CPU Supporting	Supports 133MHz FSB by VIA Luke integrated Eden-N 533MHz/800MHz/1.0GHz
Memory	1 x 184 pin DDR socket support DDR 400/333/266 up to 1GB
Ethernet	VT8237R Plus integrated 10/100 Fast Ethernet w/ VT6103 (PHY)
VGA	Integrated VIA UniChrome™ Pro 3D/2D Graphics with SMA 16/32/64MB
LCD interface	24+24 (Option 18+18) bits w/ VT1631L (dual channel LVDS Transmitter) (Optional w/ TTL LCD)
Duo View	CRT+LCD
Video Interface	MPEG-4 & MPEG-2 Hardware decoding (MPEG-4 only available on LUKE) Hardware Rotation engine
Serial / Parallel RS-422/485	4 Serial Port w/+5V, +12V Power Selector / 2 Parallel port Via COM2 (Optional)
Watchdog Timer	Programmable WDT from 1 to 255 seconds / minutes by Winbond W83697HF
IDE Connector	2 x 40pin IDE connector support UDMA 33/66/100/133, 1 x 44pin connector support Slim type HDD (share to IDE2)
SATA Connector	2 x 150MB/s SATA device support Raid 0, 1, JBOD
AUDIO	Integrated VT8237R Plus Audio controller w/ VT1612A Audio Codec for 2 Channel output
Expansion Slot	1x slim PCI slot up to 3 PCI slots via riser card with PCI 2.2 compliance PS/2 Keyboard / Mouse Connector 2 x USB (2.0) + RJ-45 Connector w/LED indicator
I/O Port	D-sub Connector for COM 1, 2, 3 (internal box header for COM4) with POWER
	1 x 25 Pins D-Sub Connector (LPT1)
	1 D-Sub Connector and 1 internal box header (VGA)
	1 IrDA TX/RX port with pin header
	Box Header for COM4, TTL LCD, LVDS, CRT, LPT2 Pin Header for KB/MS, 4 x USB, CD-in, SPDIF-out, Mic-in, Line-in, Line-out, SM Bus, KB/MS for external device
Digital IO	16-bits Digital I/O with CMOS/TTL level (8 bit input / 8 bit output)
USB Port	6 x USB2.0 onboard
Power Supply	ATX power supply

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Chapter 1. Introduction

ENDAT-3405M supports high performance processor of VIA Luke CoreFusion. It also supports high speed DDR memory with 64-bit wide interfaces with non-ECC DIMM (up to 1GB). Only Double Data Rate (DDR) SDRAM memory is supported and the speed of memory can be 200, 266, 333 and 400 MHz.

ENDAT-3405M provides an integrated graphics (S3 Graphics UniChrome™ Pro IGP) accelerator delivering cost competitive 3D, 2D, and video capabilities.

In addition to the integrated S3 Graphics UniChrome™ Pro IGP, featuring a 2D/3D AGP8X graphics core with integrated MPEG-2 decoding and MPEG-4 acceleration for smooth DVD and digital video playback, the VIA 'Luke' CoreFusion processing platform also features support for high bandwidth DDR 333/400 memory, motion compensation and DuoView for the latest multiple format flat panel display devices.

ENDAT-3405M with native dual channel Serial ATA/RAID controller provides direct support for two 150MB/s Serial ATA devices. The V-RAID controller features native RAID 0, RAID 1 and JBOD support, ensuring optimum data integrity and system performance. The user-friendly V-RAID software interface enables easy disk array configuration and management.

ENDAT-3405M supports IEEE 802.3 compliant 10 / 100 Mbps PCI bus master Ethernet MAC with standard MII interface to external PHYceiver.

The ideal solution of ENDAT-3405M

- POS system
- KIOSK
- Interactive system
- Airport Terminal Controller
- Industrial controller
- Digital entertainment
- Embedded system equipment

1-1. Features

Basic Feature:

- Board format: Mini-ITX (170mm x 170 mm)
- Supports 133/100 MHz FSB by VIA Luke integrated Eden-N 533MHz/800MHz/1.0GHz
- Digital I/O: 8 bits input and 8 bits output (3.3V)
- Supports DDR 200/266/333/400 SDRAM up to 1GB
- Serial ATA connector x 2
- Enhance IDE connector x 2
- Multiple I/O ports: COM port x 4; LPT port x 2; USB (2.0) x 6
- All COM ports with +5V, +12V power selector
- Watchdog Timer
- VIA 10/100 LAN and Audio function onboard
- With Intel embedded ATX PCI expansion design
- On board chip provides LVDS interface (18/24/36/48 bit, single/dual channels)
- Support ATX Power Supply.

Optional features:

- 18 + 18 bits LVDS Transmitter
- RS 422/485 via COM 2
- Barebones system: niche into Unicorn U-6000 and U-8000 Chassis

Full Software Support:

- Drivers for major operating systems and APIs: Windows 9x / ME, Windows 2000, Windows XP, Direct3D, DirectDraw and DirectShow, OpenGL ICD for Windows 9x, and 2000, and DXVA for Windows 2000 and Windows XP

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-3405M System Board

HDD / IO Cables

CDROM Driver includes: Drivers for Windows 98, ME, 2000, XP and AMI/AWARD FLASH ROM utilities.

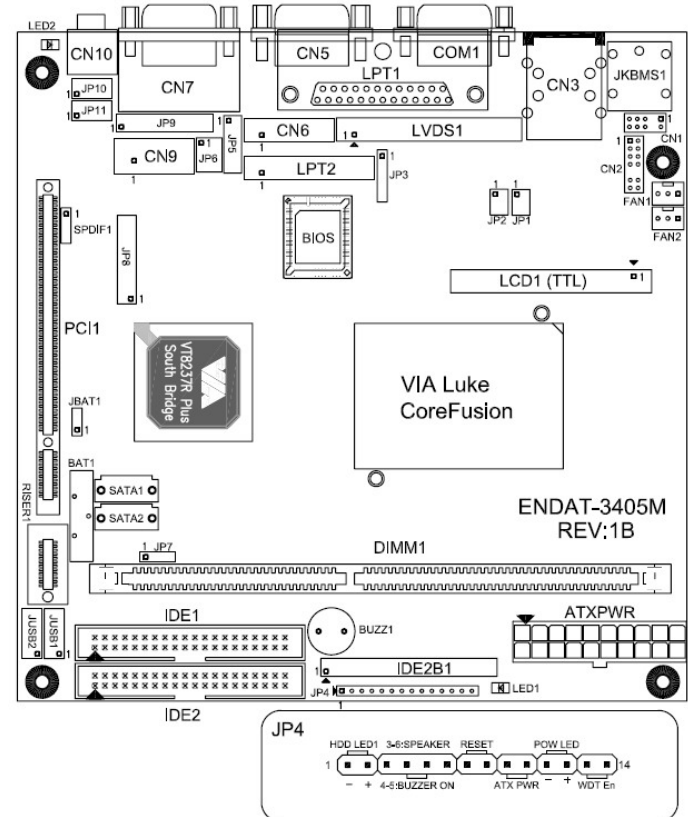
If any of these items are missing or damage, please contact the dealer from whom you purchase the motherboard. Save the shipping material and carton in the event that you want to ship or store the board in the future.

Note: Please leave the motherboard in its original package 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



Chapter 2. Setting up the Motherboard

2-1. Jumpers and Connectors

Jumpers/Connectors Overview:

Function	Jumpers/Connectors
ATX Power Connector	ATXPWR
Cooling Fan Connector	FAN1, FAN2
Buzzer	BUZZ1
Battery	BAT1
Clear CMOS	JBAT1
LCD Panel Connector	LCD1
LVDS Panel Connector	LVDS1
LVDS Clock Selector	JP1
LVDS Voltage Selector	JP2
PS/2 MS/KB Box Header	CN1
PS/2 MS/KB Connector	JKBMS1
OEM MS/KB Header	CN2
USB Port	CN3, JUSB1, JUSB2
Header for Case Panel	JP4
HDD active LED	JP4: Pin 1(-), Pin 2(+)
External Speaker	JP4: Pin 3, Pin 6
Buzzer On/Off	JP4: Pin 4, Pin 5
Hardware Reset Switch	JP4: Pin 7, Pin 8
ATX Power Supply On/Off Switch	JP4: Pin 9, Pin 10
Power LED	JP4: Pin 11(-), Pin 12(+)
WDT Function Enable/Disable	JP4: Pin 13, Pin 14
DDR SDRAM socket	DIMM1
LAN Connector	CN3
CRT Output	CN5
CRT Box Header	CN6
IR Box Header	JP3
COM1	COM1
COM2, COM3	CN7
COM4 Box Header	CN9
COM Port Voltage Selector	JP9
RS232 / 422/ 485 Selector for COM2	JP5 & JP6

Function	Jumpers/Connectors
IDE 1, IDE 2	IDE1, IDE2, IDE2B1
SATA 1, SATA 2	SATA1, SATA2
SMBus	JP7
DIGITAL I/O Box Header	JP8
LPT1, LPT2	LPT1, LPT2
LINE OUT Connector	CN10
CD In Box Header	JP10
MIC IN / LINE IN Box Header	JP11
SPDIF Box Header	SPDIF1
DIMM Power LED	LED1
System Power LED	LED2

Please double-check the insertion and orientation of the LCD cable before applying power. Improper installation will result in permanent damage LCD panel.

Part 1: Onboard Jumpers

JBAT1: CMOS Data Clear (2.0mm)

Pin 1-2	Normal (Default)
Pin 2-3	Close for clear CMOS

JP1: LVDS Clock Selector (2.0mm)

Pin 1-3 *	Single-ended (Default)
Pin 2-4 *	Falling edge clock
Pin 3-5	Differential clock
Pin 4-6	Rising edge clock

JP2: LVDS Voltage Selector (2.0mm)

Pin-1, 2 *	+3.3V
Pin-3, 4	+5V
Pin-5, 6	+12V

Caution: Improper setting will damage LCD panel.

JP4: Box Header for Case Panel (2.54mm)

Pin No.	Function
1(-), 2(+)	HDD active LED
3,6	External Speaker
4,5	Buzzer On/Off
7,8	Hardware Reset Switch
9,10	ATX Power On/Off
11(-),12(+)	Power LED
13,14	Close: Enable WDT function

JP5, JP6: RS232 / 422 / 485 Selector for COM2 (2.0mm)

TYPE	JP6 (3x4/2mm)	JP5 (2x7/2mm)
RS-232 *	1-2, 4-5, 7-8, 10-11	1-2
RS-422	2-3, 5-6, 8-9, 11-12	3-4
RS-485	2-3, 5-6, 8-9, 11-12	5-6

JP9: COM Port Voltage Selector (2.0mm)

Voltage	+12V(DC)	R.I. *	+5V(DC)
COM1 (JP9)	1-2	3-4	5-6
COM2 (JP9)	7-8	9-10	11-12
COM3 (JP9)	13-14	15-16	17-18
COM4 (JP9)	19-20	21-22	23-24

Part 2: Onboard Connectors**JP3: IR Box Header Connector (2.54mm)**

Pin No.	Function	Pin No.	Function
1	VCC	4	GND
2	N.C	5	IRTX
3	IRRX		

JP7: SM Bus

Pin No.	Function	Pin No.	Function
1	SMBCK	3	+3.3V
2	SMBDT	4	GND

JP8: DIGITAL I/O Box Header Connector (2.0mm)

Pin No.	Function	Pin No.	Function
1	+5V	2	+5V
3	DIO-O0	4	DIO-I0
5	DIO-O1	6	DIO-I1
7	DIO-O2	8	DIO-I2
9	DIO-O3	10	DIO-I3
11	DIO-O4	12	DIO-I4
13	DIO-O5	14	DIO-I5
15	GND	16	GND
17	DIO-O6	18	DIO-I6
19	DIO-O7	20	DIO-I7
21	+12V	22	+12V

JP10: CD IN Box Header Connector (2.54mm)

Pin No.	Function	Pin No.	Function
1	LO_J_R	2	CDL
3	GND_AUD	4	CDGND
5	GND_AUD	6	CDGND
7	LO_J_L	8	CDR

JP11: Microphone IN & LINE IN (2.54mm)

Pin No.	Function	Pin No.	Function
1	LINE_R	2	MIC POWER
3	GND	4	GND
5	GND	6	GND
7	LINE_L	8	MIC IN

SPDIF1: SPDIF Box Header Connector (2.0mm)

Pin No.	Function
1	+5V
2	N.C.
3	SPDIFOUT
4	GND

CN1: PS/2 Keyboard / Mouse Box Header Connector (2.0mm)

Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	KB Data	2	MS Data
3	KEY	4	KEY
5	GND	6	GND
7	+5V(DC)	8	+5V(DC)
9	KB_CLK	10	MS_CLK

CN2: Pin Header for external device (2.0mm)

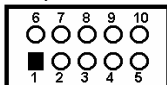
Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	KB Data Out	2	MS Data Out
3	KB Data In	4	MS Data In
5	KB CK Out	6	MS Data Out
7	KB CK In	8	MS CK In
9	KEY	10	KEY
11	+5V(DC)	12	+5V(DC)
13	GND	14	GND

CN6: CRT Box Header Connector (2.0mm)

Pin No.	Description	Pin No.	Description
1	RED	9	N.C / +5V
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		

CN9: Box Header Type Connector for COM4 port (RS-232)

Pin No.	Function	Pin No.	Function
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	N.C.

**D-SUB Type Connector for COM2 port (RS-232)**

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

D-SUB Type Connector for COM2 port (RS-422→ 4 Wire)

Pin No.	Function	Pin No.	Function
1	-TXD	6	NA
2	+RXD	7	NA
3	+TXD	8	NA
4	NA	9	-RXD
5	NA		

D-SUB Type Connector for COM2 port (RS-485→ 2 Wire)

Pin No.	Function	Pin No.	Function
1	Data -	6	NA
2	NA	7	NA
3	Data +	8	NA
4	NA	9	NA
5	NA		

ATXPWR: ATX Power connector

ATX		
3.3V	11 1	3.3V
-12V	12 2	3.3V
GND	13 3	GND
PS ON	14 4	+5V
GND	15 5	GND
GND	16 6	+5V
GND	17 7	GND
-5V	18 8	POWER OK
+5V	19 9	5V SB
+5V	20 10	+12V

LPT2: Printer (LPT2) Port Box Header (2.0mm)

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

JUSB1 JUSB2: Box Header Type Connector for USB port (2.54mm)

Pin No.	Function	Pin No.	Function
1	USB_VCC	2	USB_VCC
3	USBD2-/4-	4	USBD3-/5-
5	USBD2+/4+	6	USBD3+/5+
7	USB_GND	8	USB_GND
9	USB_GND	10	USB_GND

FAN1, FAN2: CPU / 2nd Cooling Fan Connector

Pin No.	Function
1	GND
2	+12V
3	Sensor Pin

IDE1, IDE2: IDE1, IDE2 Connector

Pin No.	Description	Pin No.	Description
1	IDE Reset#	2	GND
3	IDE data7	4	IDE data8
5	IDE data6	6	IDE data9
7	IDE data5	8	IDE data10
9	IDE data4	10	IDE data11
11	IDE data3	12	IDE data12
13	IDE data2	14	IDE data13
15	IDE data1	16	IDE data14
17	IDE data0	18	IDE data15
19	GND	20	N.C.
21	IDE REQ	22	GND
23	IDE IOW#	24	GND
25	IDE IOR#	26	GND
27	IDE Ready	28	GND
29	IDE ACK#	30	GND
31	IDE IRQ	32	N.C.
33	IDE A1	34	P66DET
35	IDE A0	36	IDE A2
37	IDECS1#	38	IDESC3#
39	HDLED#	40	GND

IDE2B1: Slim IDE2 Connector (44Pins with 2.0mm)

Pin No.	Description	Pin No.	Description
1	IDE Reset#	2	GND
3	IDE data7	4	IDE data8
5	IDE data6	6	IDE data9
7	IDE data5	8	IDE data10
9	IDE data4	10	IDE data11
11	IDE data3	12	IDE data12
13	IDE data2	14	IDE data13
15	IDE data1	16	IDE data14
17	IDE data0	18	IDE data15
19	GND	20	N.C.
21	IDE REQ	22	GND
23	IDE IOW#	24	GND
25	IDE IOR#	26	GND
27	IDE Ready	28	GND
29	IDE ACK#	30	GND
31	IDE IRQ	32	N.C.
33	IDE A1	34	P66DET
35	IDE A0	36	IDE A2
37	IDECS1#	38	IDES3#
39	HDLED#	40	GND
41	VCC(+5V)	42	VCC(+5V)
43	GND	44	N.C.

LCD1: LCD Panel Connector (2.0mm)

Pin No.	Signal	Pin No.	Signal
1	VBL	2	VBL
3	GND	4	GND
5	LCD-PWR	6	LCD-PWR
7	ENBKLT	8	GND
9	B0	10	B1
11	B2	12	B3
13	B4	14	B5
15	B6	16	B7
17	G0	18	G1
19	G2	20	G3
21	G4	22	G5
23	G6	24	G7
25	R0	26	R1
27	R2	28	R3
29	R4	30	R5
31	R6	32	R7
33	GND	34	GND
35	PCLK	36	PVS
37	PDE	38	PHS
39	GND	40	LCD-PWR
41	LCD-PWR	42	KEY
43	LCD-PWR	44	LCD-PWR

Please make sure the Pin 1 location before inserting the LCD connector.

LVDS1: Dual LVDS Channel (2.0mm)

Pin No.	Signal	Pin No.	Signal
1	VBL (+12V)	2	VBL (+12V)
3	GND	4	GND
5	DISP_ON/OFF	6	GND
7	LCD Power	8	LCD Power
9	GND	10	GND
11	TxO0+	12	TxO0-
13	TxO1+	14	TxO1-
15	TxO2+	16	TxO2-
17	TxO3+	18	TxO3-
19	TxOC+	20	TxOC-
21	GND	22	KEY
23	TxE0+	24	TxE0-
25	TxE1+	26	TxE1-
27	TxE2+	28	TxE2-
29	TxE3+	30	TxE3-
31	TxEC+	32	TxEC-
33	LCD Power	34	LCD Power
35	GND	36	GND
37	GND	38	GND
39	VBL (+12V)	40	VBL (+12V)

Please make sure the Pin 1 location before inserting the LVDS connector.

LVDS Panel ID:

ID No.	Resolution	Channel
0	640 x 480	1
1	800 x 600	1
2	1024 x 768	1
3	1280 x 768	1
4	1280 x 1024	2
5	1400 x 1050	2
6	1600 x 1200	2
7	1366 x 768<Optional>	1

2-2. Installing Memory

ENDAT-3405M system board offers one 184pin DDR SDRAM socket supports up to 1GB memory and the speed can be 200/266/333/400 MHz.

2-3. Shared VGA Memory

ENDAT-3405M is using built-in AGP VGA controller with S3 Graphics UniChrome Pro IGP graphics core **up to 64MB** of system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

2-4. Installing Riser Card

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

PCI Slot	INT	ADSEL
PCI 1	A,B,C,D	AD24
PCI 2	B,C,D,A	AD23
PCI 3	C,D,A,B	AD22
PCI 4	D,A,B,C	AD21

The default INT/AD-select for ENDAT-3405M All-In-One motherboard is listed in the above table.

2-5. Assigning IRQs for Expansion Cards

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

Some PCI expansion cards need IRQ; any remaining IRQ could be assigned to PCI Bus. Microsoft's Diagnostic (MSD.EXE) utility included in the Windows directory can be used to see their map. Clients can not have more than one device apply the same IRQ in the system or it will cause the system hang up, crash, and 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 card and IRQs will automatically assigned if available. The PCI and PnP configuration in the BIOS setup utility can indicate which IRQs have being used by Legacy 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 PCI cards via riser card, you need to set the correct "ADSEL" and "INT" (interrupt) assignment on the jumper of riser card.

IRQ	Status	Assignment
0	Used	Timer
1	Used	Keyboard
2	Used	Second 8259
3	Used	COM 2
4	Used	COM 1
5	Used	LPT 2
6	Used	Floppy Disk
7	Used	LPT 1
8	Used	RTC Alarm
9	Used	IRQ2 Redir
10	Used	Reserved
11	Used	Reserved
12	Used	PS/2 Mouse
13	Used	Coprocessor
14	Used	Hard Disk (IDE 1)
15	Used	Reserved (IDE 2)

2-6. Watchdog Timer

Watchdog Timer (WDT) is a special design for system monitoring to secure the system work normally. WDT has an independent clock from the oscillator and could set time and clear/refresh WDT counter function. When time is up, WDT will send hardware RESET signal to reset system.

Timeout Value Range

-1 to 255

-Second or Minute

Program Sample

```
#include <stdio.h>
#include <dos.h>
#include <dir.h>
void show_ver();
void main()
{
    unsigned int tt;
    clrscr();
    show_ver();
    tt=0;
    while((tt==0)||((tt>255))
    {
        printf("\n\nPlease key in how many seconds you want to reset system
(1~255):");
        scanf("%d",&tt);
    }
    outportb(0x2e,0x87); //Unlock register
    outportb(0x2e,0x87); //Unlock register
    outportb(0x2e,0x07); //Set Logic Device number pointer
    outportb(0x2f,0x08); //Set Logic Device number
    outportb(0x2e,0x29); //set active reg is cr29
    outportb(0x2f,0x20); //set reg value Pin119 Fun (bit5:6=01 WDTO)
    outportb(0x2e,0x30); //set active reg is CR30
    outportb(0x2f,0x01); //set reg value MIDI & GP5 active (bit0 =1 active,0
inactive )
    outportb(0x2e,0xf3); //Set active register is CRF3
    outportb(0x2f,0x00); //Set register value (bit2=1: minute. =0: second)
    outportb(0x2e,0xf4); //Set active register is CRF4
    outportb(0x2f,tt); //Set time out value of WDT
}

void show_ver()
{
    unsigned char tmp0;
    printf("Designed by ROBERT LIU of UNICORN computer corp.
\n2005/10/07 release version:1.0a\n");
    printf("This program is design for test Watch Dog Timer for
ENADT-3405M(W83697HF).\n");
}
```

2-7. Digital I/O

1) Pin out of digital I/O header (JP8):

Pin No.	Function	Pin No.	Function
1	+5V	2	+5V
3	DIO-O0	4	DIO-I0
5	DIO-O1	6	DIO-I1
7	DIO-O2	8	DIO-I2
9	DIO-O3	10	DIO-I3
11	DIO-O4	12	DIO-I4
13	DIO-O5	14	DIO-I5
15	GND	16	GND
17	DIO-O6	18	DIO-I6
19	DIO-O7	20	DIO-I7
21	+12V	22	+12V

2) Digital I/O port address:

This function is support by onboard super I/O chip; it can be control easily by change the register of super I/O chip via I/O port "4Eh" and "4Fh". Please see the sample code of below for implement.

Voltage tolerance: +/- 5% with 0V to +5V.

Register configuration (input):

Bit No	7	6	5	4	3	2	1	0
Map	IN7	IN6	IN5	IN4	IN3	IN2	IN1	IN0

Register configuration (output):

Bit No	7	6	5	4	3	2	1	0
Map	OUT7	OUT6	OUT5	OUT4	OUT3	OUT2	OUT1	OUT0

Sample code for input (using Turbo C/C++ 3.0):

```
#define input_port 0x2f
outputb(0x4e,0x87); //Unlock register
outputb(0x4e,0x87); //Unlock register
outputb(0x4e,0x07); //Set Logic Device number pointer
outputb(0x4f,0x09); //Set Logic Device number
outputb(0x4e,0xF1); //Set active register is CRF1
read_data=inputb(input_port); // Read digital input data
printf("DIO-Input=%02X\n",read_data); //Show digital input data on screen
```

Sample code for Output (using Turbo C/C++ 3.0):

```
outputb(0x4e,0x87); //Unlock register
outputb(0x4e,0x87); //Unlock register
outputb(0x4e,0x07); //Set Logic Device number pointer
outputb(0x4f,0x09); //Set Logic Device number
outputb(0x4e,0xF4); //Set active register is CRF4
outputb(0x4f,0xFF); // Write data to digital output
```

Chapter 3. AWARD BIOS SETUP

Phoenix – Award BIOS CMOS Setup Utility

> Standard CMOS Features	> Frequency/Voltage Control
> Advanced BIOS Features	Load Optimized Defaults
> Advanced Chipset Features	Set Supervisor Password
> Integrated Peripherals	Set User Password
> Power Management Setup	Save & Exit Setup
> PnP/PCI Configurations	Exit Without Saving
> PC Health Status	

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.

"Advanced BIOS Features", "Advanced Chipset Features" and "PnP/PCI Configurations" requires board knowledge on PC/AT system architecture and Intel chipset specification. Incorrect setup could cause system malfunctions.

3-1. Standard CMOS Features

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Hard Disk Drive settings.

Item	Available Options:
Date (mm:dd:yy)	
Time (hh:mm:ss)	
IDE Channel 0 Master:	Auto
IDE Channel 0 Slave :	Auto
IDE Channel 1 Master:	Auto
IDE Channel 1 Slave :	Auto
IDE Channel 2 Master :	Auto
IDE Channel 3 Master :	Auto
Video	EGA/VGA
Halt On	All , But Keyboard

• Video

Select the type of primary video subsystem.

<Choice: EGA / VGA, CGA 40, CGA 80, MONO>

• Halt On

Set the system's response to specific boot errors.

<Choice: All Errors, No Errors, All, But Keyboard>

IDE Drives

Item	Available Options:
IDE HDD Auto-Detection	Press Enter
IDE Channel	Auto
Access Mode	Auto

The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select "Auto" whenever possible. If you select "Manual", make sure the information is from your hard disk vendor or system manufacturer.

3-2. Advanced BIOS Features

This section allows you configuring your system for basic operation. You have the opportunity to select the system's default speed, boot-up priority, keyboard operation and security.

Item	Available Options:
Hard Disk Boot Priority	Press Enter
Virus Warning	Disabled
CPU Internal Cache	Enabled
External Cache	Enabled
CPU L2 Cache ECC Checking	Enabled
Processor Number Feature	Enabled
Quick Power On Self Test	Enabled
First Boot Device	CDROM
Second Boot Device	Hard Disk
Third Boot Device	LS120
Boot Other Device	Enabled
Boot Up NumLock Status	On
Typematic Rate Setting	Disabled
Typematic Rate (Chars/Sec)	6
Typematic Delay (Msec)	250
Security Option	Setup
MPS Version Control For OS	1.4
OS Select For DRAM > 64MB	Non-OS2
Video BIOS Shadow	Enabled
Small Logo(EPA) Show	Enabled

• MPS Version Control For OS

This item allows you selecting which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version that is supported by your operating system. To find out which version to use, consult the vendor of your operating system.

3-3. Advanced Chipset Features

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

Item	Available Options:
DRAM Clock/Drive Control	Press Enter
AGP & P2P Bridge Control	Press Enter
CPU & PCI Bus Control	Press Enter
Memory Hole	Disabled
System BIOS Cacheable	Enabled
Video RAM Cacheable	Disabled
Init Display First	PCI Slot

DRAM Clock/Drive Control

Item	Available Options:
Current FSB Frequency	133MHz
Current DRAM Frequency	166MHz
DRAM Clock	By SPD
DRAM Timing	Auto By SPD
SDRAM CAS Latency	2.5
Bank Interleave	Disabled
Precharge to Active(Trp)	4T
Active to Precharge(Tras)	9T
Active to CMD(Tred)	4T
REF to ACT/REF to REF(Trfc)	15T
ACT(0) to ACT(1) (TRRD)	3T
DRAM Command Rate	2T Command

• DRAM Clock

This item allows you to set the speed of Direct Memory Access (DMA) at either equal to or one-half of the SYSCLK (system clock signal) speed.

<Choice: By SPD, 100MHz, 133MHz, 166MHz, 200MHz>

• DRAM Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

<Choice: Manual, Auto By SPD, Turbo, Ultra>

AGP & P2P Bridge Control

Item	Available Options:
AGP Aperture Size	128M
AGP 3.0 Mode	8X
AGP Driving Control	Auto
AGP Driving Value	DA
AGP Fast Write	Enabled
AGP Master 1 WS Write	Disabled
AGP Master 1 WS Read	Disabled
AGP 3.0 Calibration Cycle	Disabled
VGA Share Memory Size	64M
Direct Frame Buffer	Enabled
Select Display Device	CRT
Panel Type	07

• AGP Aperture Size (MB)

This function determines the amount of system memory that is given to the AGP card. This is a dynamic memory allotment in that the AGP card will only use the amount of memory that it needs. The remaining memory, which is not in use, will be available for the system.

<Choice: 32MB, 64MB, 128MB, 256MB, 512MB, 1G>

• VGA Share Memory Size

This field is used to select the onboard VGA's frame buffer size that is shared from the system memory.

<Choice: Disabled, 16M, 32M, 64M>

• Select Display Device

This field is used to select the type of display to use when the system boots.

<Choice: CRT, LCD, CRT + LCD>

• Panel Type

ID No.	Resolution	Channel
0	640 x 480	1
1	800 x 600	1
2	1024 x 768	1
3	1280 x 768	1
4	1280 x 1024	2
5	1400 x 1050	2
6	1600 x 1200	2
7	1366 x 768<Optional>	1

If you apply one of the standard panels shown above, select the appropriate option according to the type of panel that you apply. Or, please contact your dealer or sales representative for custom-made BIOS that will suit the panel that you apply.

CPU & PCI Bus Control

Item	Available Options:
PCI Master 0 WS Write	Enabled
PCI Delay Transaction	Enabled
VLink mode selection	Mode 1
VLink 8X Support	Enabled

• PCI Master 0 WS Write

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 is ready to receive the data.

• 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 2.2.

• V-Link mode selection

This menu item controls the data transfer speed between the north and south bridge.

<Choice: By Auto, Mode 0~4>

• V-Link 8X Support

This setting controls the utilized widths of the V-link.

<Choice: Enabled, Disabled>

3-4. Integrated Peripherals

The IDE hard drive controllers support up to two separate hard drives. These drives have a master/slave relationship that is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

Integrated Peripherals

Item	Available Options:
VIA OnChip IDE Device	Press Enter
VIA OnChip PCI Device	Press Enter
SuperIO Device	Press Enter
Onboard Serial Port 3	3E8
Serial Port 3 Use IRQ	IRQ5
Onboard Serial Port 4	2E8
Serial Port 4 Use IRQ	IRQ5
Onboard Parallel Port 2	278
Parallel Port 2 Use IRQ	IRQ9
Parallel Port 2 Mode	EPP1.9+SPP
LPT2 ECP Mode Use DMA	3

VIA OnChip IDE Device

Item	Available Options:
OnChip SATA	Enabled
SATA Mode	IDE
OnChip IDE Channel0	Enabled
OnChip IDE Channel1	Enabled
IDE Prefetch Mode	Enabled
Primary Master PIO	Auto
Primary Slave PIO	Auto
Secondary Master PIO	Auto
Secondary Slave PIO	Auto
Primary Master UDMA	Auto
Primary Slave UDMA	Auto
Secondary Master UDMA	Auto
Secondary Slave UDMA	Auto
IDE HDD Block Mode	Enabled

• SATA Mode

These fields are used to select the RAID/IDE mode of the serial ATA drives.

<Choice: RAID, IDE>

• IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

The four IDE PIO (programmed Input/Output) fields let you set a PIO mode (0-4) for each IDE device that the internal PCI 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 Master/Slave UDMA and IDE Secondary Master/Slave UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

• IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sectors read/write.

VIA OnChip PCI Device

Item	Available Options:
VIA-3058 AC97 Audio	Enabled
VIA-3043 OnChip LAN	Enabled
Onboard LAN Boot ROM	Disabled
OnChip USB Controller	All Enabled
OnChip EHCI Controller	Enabled
USB Emulation	ON
USB Keyboard Support	Enabled

- **VIA-3058 AC97 Audio**

Allow the motherboard's BIOS to detect whether you are using any audio device. If an audio device is detected, the onboard audio Codec will be enabled; if no audio is detected, the onboard audio Codec will be disabled. If you want to use different audio controller cards, set these fields to Disabled.

- **VIA-3043 OnChip LAN**

This field can enable or disable onboard LAN function.

- **Onboard LAN Boot ROM**

By default, this field is disabled. Enable this field if you wish to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

- **USB Emulation**

Enable or disable the system's support for the USB port in DOS mode.

<Choice: Off, KB/MS, On>

- **USB Keyboard Support**

If USB Emulation is set at KB/MS, this item allows you to enable/disable the USB keyboard/mouse support.

SuperIO Device

Item	Available Options:
Onboard Serial Port 1	3F8/IRQ4
Onboard Serial Port 2	2F8/IRQ3
UART Mode Select	Normal
RxD, Tx D Acitve	Hi,Lo
IR Transmission Delay	Enabled
UR2 Duplex Mode	Half
Use IR Pins	IR-Rx2Tx2
Onboard Parallel Port	378/IRQ7
Parallel Port Mode	SPP
EPP Mode Select	EPP1.7
ECP Mode Use DMA	3

- **UART Mode Select**

Select an operating mode for the serial port.

<Choice: IrDA, ASKIR, Normal>

- **Parallel Port Mode**

Set the parallel port mode.

<Choice: SPP, EPP, ECP, ECP + EPP, Normal>

3-5. Power Management Setup

The Power Management Setup allows users configuring the system to save energy in a most effective way while operating in a manner consistent with their own style of computer use.

Item	Available Options:
ACPI function	Enabled
ACPI Suspend Type	S1(POS)
Power Management Option	User Define
HDD Power Down	Disabled
Suspend Mode	Disabled
Video Off Option	Suspend -> Off
Video Off Method	V/H SYNC+Blank
Soft-Off by PWRBTN	Instant-Off
Run VGABIOS if S3 Resume	Auto
AC Loss Auto Restart	Off
Delay Prior to Thermal	16 Min
IRQ/Event Activity Detect	Press Enter

• ACPI Function

This function should be enabled only in operating systems that support ACPI. Currently, only Windows® 98SE/2000/ME/XP supports this function. When this field is enabled, the system will ignore the settings in the "Suspend Mode" and "HDD Power Down" fields. If you want to use the Suspend to RAM function, make sure this field is enabled then select "S3 (STR)" in the field below.

• ACPI Suspend Type

This field is used to select the type of Suspend mode.

S1(POS)	Enables the Power On Suspend function.
S3(STR)	Enables the Suspend to RAM function.
S1 & S3	If S3 state is supported by the system, by default [S3] is automatically selected. Otherwise [S1] is selected.

• Run VGABIOS if S3 Resume

Select whether to run VGA BIOS if resuming from S3 state. This is only necessary for older VGA drivers.

<Choice: Auto, Yes, No>

IRQ/Event Activity Detect

Item	Available Options:
PS2KB Wakeup Select	Hot key
PS2KB Wakeup from S3/S4/S5	Disable
PS2MS Wakeup from S3/S4/S5	Disabled
USB Resume from S3	Disabled
VGA	OFF
LPT & COM	LPT/COM
HDD & FDD	ON
PCI Master	OFF
Wake Up By Internal LAN	Disabled
Modem Ring Resume	Disabled
RTC Alarm Resume	Disabled
Date (of Month)	0
Resume Time (hh:mm:ss)	0: 0: 0
IRQs Activity Monitoring	Press Enter

• PS2KB Wakeup Select

When selecting "Password", press <Enter> to change password. The maximum number of characters is eight. "PS2KB Wakeup from S3/S4/S5" and "PS2MS Wakeup from S3/S4/S5" will be disabled while changing the password.

<Choice: Hot Key, Password>

IRQs Activity Monitoring

Item	Available Options:
Primary INTR	ON
IRQ 3 (COM 2)	Disabled
IRQ 4 (COM 1)	Enabled
IRQ 5 (LPT 2)	Enabled
IRQ 6 (Floppy Disk)	Enabled
IRQ 7 (LPT 1)	Enabled
IRQ 8 (RTC Alarm)	Disabled
IRQ 9 (IRQ2 Redir)	Disabled
IRQ 10 (Reserved)	Disabled
IRQ 11 (Reserved)	Disabled
IRQ 12 (PS/2 Mouse)	Enabled
IRQ 13 (Coprocessor)	Enabled
IRQ 14 (Hard Disk)	Enabled
IRQ 15 (Reserved)	Disabled

• Primary INTR

Restore the system to an active state if IRQ activity is detected from any of the enabled channels.

3-6. PnP/PCI Configurations

This section describes the configuration of 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.

Item	Available Options:
PNP OS Installed	No
Reset Configuration Data	Disabled
Resources Controlled By	Auto(ESCD)
IRQ Resources	Press Enter
IRQ-3 assigned to	PCI Device
IRQ-4 assigned to	PCI Device
IRQ-5 assigned to	PCI Device
IRQ-7 assigned to	PCI Device
IRQ-9 assigned to	PCI Device
IRQ-10 assigned to	PCI Device
IRQ-11 assigned to	PCI Device
IRQ-12 assigned to	PCI Device
IRQ-14 assigned to	PCI Device
IRQ-15 assigned to	PCI Device
PCI/VGA Palette Snoop	Disabled
Assign IRQ For VGA	Enabled
Assign IRQ For USB	Enabled

• Reset Configuration Data

Enabled	The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.
Disabled	The BIOS will not reset the configuration data.

• Reset Configuration Data

Auto(ESCD)	The system will automatically detect the settings for you.
Manual	Choose the specific IRQ in the "IRQ Resources" field.

• PCI/VGA Palette Snoop

When set to [Enabled], multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled).

3-7. PC Health Status

This screen shows the information of temperature, Fan speed and Vcore etc. It also can set CPU warning temperature to protect CPU.

PC Health Status

Item	Available Options:
CPU Warning Temperature	Disabled
Current System Temp.	
Current CPU1 Temperature	
Current CPUFan1 Speed	
Current CPUFan2 Speed	
Vcore	
+3.3V	
+ 5 V	
+12 V	
VBAT (V)	
5VSB (V)	
Shutdown Temperature	Disabled

• CPU Warning Temperature

Select the combination of lower and upper limits for the CPU temperature, if your computer contains an environmental monitoring system. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system is activated.

• Shutdown Temperature

Select the combination of lower and upper limits for the system shutdown temperature, if your computer contains an environmental monitoring system. If the temperature extends beyond either limit, the system shuts down.

3-8. Frequency / Voltage Control

Frequency/Voltage Control

Item	Available Options:
VIA C3 Clock Ratio	Default
Auto Detect PCI/DIMM Clk	Enabled
Spread Spectrum	Disabled
CPU Host/3V66/PCI Clock	Default

• VIA C3 Clock Ratio

This item is for VIA C3 CPU Ratio adjustment.

• Auto Detect DIMM/PCI Clk

When enabled, the system will automatically send clock signals to existing PCI devices.

• Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

Chapter 4. VGA, LCD Feature

4-1. VGA Feature

ENDAT-3405M provides integrated S3 Graphics UniChrome™ Pro IGP, featuring a 2D/3D AGP8X graphics core with integrated MPEG-2 decoding and MPEG-4 acceleration for smooth DVD and digital video playback, the VIA 'Luke' CoreFusion processing platform also features support for high bandwidth DDR 333/400 memory, motion compensation and DuoView for the latest multiple format flat panel display devices.

With an internal data flow equivalent to what is available to the latest AGP 8X graphics cards, Unichrome Pro has separate 128-bit data path between the North Bridge for pixel data flow and texture/command access. Separate 128-bit 2D and 3D graphics engines ensure optimal performance for all multimedia, entertainment, and productivity applications.

Unichrome Pro includes native support for the most popular digital video and audio playback through hardware MPEG-4/-2 acceleration and acclaimed VIA Vinyl Audio suite, delivering spectacular playback for entertainment devices.

Unichrome Pro with its optimized shared memory architecture and high definition video support through the Chromotion CE Video Display Engine offers a breathtaking visual experience for the latest HDTV format displays.

The on-board Graphics Controller supports a full AGP implementation internally to remain compatible with existing software and programming models. However, since the engine is integrated, it enjoys a higher bandwidth and lower latency than is possible with discrete solutions.

The controller of ENDAT-3405M supports 2 types of display: CRT and LVDS panel.

4-2. LVDS Panel Feature

The on-board graphic controller supports industry standard LCD panel, LVDS interface only, with 1 channel (18 or 24) and 2 channels (36 or 48bit) data width.

LVDS interface provides low voltage, high speed and low EMI serial DC-balanced differential data via optional onboard LVDS.

The flat panel interface provides or supports following functions for various panels:

- Generates LVDS flat panel channels like clock and data channel.
- Generates different video data formats to directly drive different types of panels (18, 24, 36 or 48bit)
- Wide screen resolution as 16:9 or 16:10.
- Vertical and horizontal expansion of video displays to LCD panel resolution
- Vertical and horizontal centering
- Panel power sequence

4-3. PCI Bus Audio Adapter Features

The Chipset built-in SoundBlaster Pro Hardware and Direct Sound Ready AC97' Digital Audio Controller

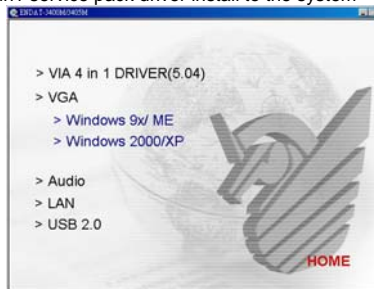
- Dual full-duplex direct sound channels between system memory and AC97' link
- PCI Master interface with scatter / gather and bursting capability
- 32byte FIFO of each direct sound channel
- Host based sample rate converter and mixer
- Standard v1.0 or v2.0 AC98' Codec interface for single or cascaded AC97' Codec's from multiple vendors
- Loop back capability for re-directing mixed audio streams into USB and 1394 speakers
- Hardware SoundBlaster Pro for Windows DOS box and real-mode DOS legacy compatibility
- Plug and Play with 4 IRQ, 4 DMA and 4 I/O space options for SoundBlaster Pro and MIDI hardware
- Hardware assisted FM synthesis for legacy compatibility
- Complete software driver support for Windows-95, Windows-98 and Windows-NT

4-4. Driver Utility Installation Guide

- 5- When finishing the installation of Windows platform (95/98/2000/NT), please install the relative VIA driver (**4in1**) utilities for compliance compatibility of hardware environment.
- 6- Insert the support CD that supplied with motherboard into CD-ROM driver which enable the access with auto-run mode; or double -click the CD driver icon in "My Computer" to bring up the screen.
- 7- Select correct motherboard to install driver / utility for the system



- 8- Select VIA 4in1 service pack driver install to the system



- 9- The Screen will appear VIA 4in1 driver setup screen, please press "NEXT" to continue. Please follow the steps instructed by each screen for the installation of the VIA 4in1 driver. Restart the system after completed the installation.
- 10- After installing the VIA 4in1 driver, please select VGA driver for install. The system will request for "restart" after the completion of the driver installation.
- 11- The Screen can be adjusted at Display properties after the installation of VGA driver.

We strongly recommend using the 4in1 driver to install the system since the 4in1 driver will automatically detect / update the necessary drivers.

This driver will automatically detect and install the latest utilities as following:

IDE Bus master, VIA AGP Driver, IRQ Routing Driver, VIA INF Driver

LAN Driver: Install the LAN driver for on-board LAN adapter.

VGA Driver: Install the VGA driver for on-board AGP VGA adapter

Please download or check from VIA Web site: www.via.com.tw if you prefer to install the drivers individually or you need more information.

Chapter 5. LAN Adapter

The on-board LAN adapter integrated of Single Chip Fast Ethernet Controller with options of one or dual LAN solution, and also the LAN chip option of VIA VT6103 solution. It 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 802.3x 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 Remote Boot ROM by system BIOS
- Provides a comprehensive setup program for displaying the adapter configuration and includes diagnostic on board or network tests
- Complete drivers for Novell, 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.

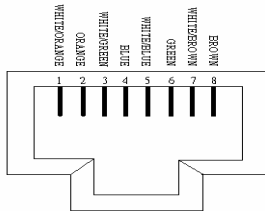
Table A-1 shows the wiring in a straight-through twisted-pair cable (Pins 4, 5, 7 and 8 are not used).

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 is 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 fireproofing 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 Function

This function is available with the BIOS programming for indicated operation system. The remote boot function 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.

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 will automatically run 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.

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 improper change of 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>

AwardBIOS FLASH Utility V8.36E C>Phoenix Technologies Ltd. All Rights Reserved	
Flash Type –	
File Name to Program:	<input type="text"/>
Message:	

3. Enter the name of the system BIOS disk file into the "File Name to Program" field. The following message appears in the "Message" field
4. Do you want to save BIOS (y/n)?
5. To update the FLASH memory from the system BIOS disk file, type Y
6. After complete updating, please re-boot the system (press "F1" key)
7. For upgrade BIOS procedure, please refer to our web site:
<http://www.unicorn-computer.com.tw>

** Please turn off system and clear CMOS data by JBAT1.*

** Please restart your system and load optimal defaults setting.*

Appendix B: LCD Pin Assignment

LVDS1: Dual Channel LVDS (2.0mm)

Pin No.	Signal	Pin No.	Signal
1	VBL (+12V)	2	VBL (+12V)
3	GND	4	GND
5	DISP.ON/OFF	6	GND
7	LCD POWER	8	LCD POWER
9	GND	10	GND
11	TxO0+	12	TxO0-
13	TxO1+	14	TxO1-
15	TxO2+	16	TxO2-
17	TxO3+	18	TxO3-
19	TxOC+	20	TxOC-
21	GND	22	KEY
23	TxE0+	24	TxE0-
25	TxE1+	26	TxE1-
27	TxE2+	28	TxE2-
29	TxE3+	30	TxE3-
31	TxEC+	32	TxEC-
33	LCD POWER	34	LCD POWER
35	GND	36	GND
37	GND	38	GND
39	VBL (+12V)	40	VBL (+12V)

Please make sure the Pin 1 location before inserting the LCD connector.

BIOS LCD panel type list (Advance Chipset Setup/Panel Type)

ID No.	Resolution	Channel
0	640 x 480	1
1	800 x 600	1
2	1024 x 768	1
3	1280 x 768	1
4	1280 x 1024	2
5	1400 x 1050	2
6	1600 x 1200	2
7	1366 x 768	1

Appendix C: Limited Warranty

Standard two years limited warranty on all our ENDAT series all-in-one motherboards and embedded boards. Products that become defective during the warranty period shall be repaired, or subject to manufacturer's option, replaced. The limited warranty applies to normal proper usage of the hardware and does not cover products that have been modified or subjected to unusual electrical or physical stress. Unicorn Computer Corp is not liable to repair or replace defective goods caused by improper using or use of unauthorized parts. The following situations will be charged:

1. The products during the warranty but defective caused by improper using or artificial external pressure and result in the components damages. According to the damage situation, the manufacturer has the rights to decide to repair or not. The manufacturer will charge the parts/repair cost and the returning shipping charge.
2. The products out of warranty will charge the parts/repair cost and the returning shipping charge as per the repair status.
3. The manufacturer has the rights to decide to repair or not based on the stock of parts for the products which are phased out of the production.
4. Please e-mail or fax the RMA Service Request Form when have the defective products.

RMA SERVICE REQUEST FORM

When requesting RMA service, please fill out this "RMA Service Request Form". This form needs to be shipped with your returns. Service cannot begin until we have this information.

RMA NO.:

Company:	Person to Contact:
Phone No:	Purchase Date :
Fax No. :	Applied Date :
Return Shipping Address:	

Model No.	Serial No.	Problem Code	Remark

● **Issue Code of defect.**

01	Second Times R.M.A.	11	Memory Socket Bad
02	No Screen (No Boot)	12	Hang Up Hardware
03	VGA (Display) Fail	13	Hang Up Software
04	CMOS Data Lost	14	PCB Problem
05	FDC Fail	15	CPU Socket Bad
06	HDC Fail	16	LAN Fail
07	Bad Slot	17	Audio Fail
08	BIOS Problem	18	Serial Port Fail
09	Keyboard Controller Fail	19	Parallel Port Fail
10	Cache RAM Problem	20	Others

Please specify the following when returning the RMA boards:
 (1) Hardware Configuration (2) OS or Software (3) Testing Program

 Authorized Signature