ENDAT-3227A

User's Manual

PCB version: A2 or later

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Document version: 0.5

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.

Specification:

Model	ENDAT-3227A
System Chipset	Intel 945GSE + ICH7-M
CPU Supporting	Intel ATOM N270 (1.6GHz 2.5Watt)
Memory	One 240-Pin DDR2 socket supports Single-Channel DDR2 400/533 SDRAM up to 2 GB memory
Ethernet	1 x REALTEK RTL8111B 10/100/1000M
VGA	Intel® 945GSE Integrated GMA 950 Graphics, Share System Memory
Dual view	CRT + LCD physical dual display (Optional)
LVDS support	On-chip 18/36 bit LVDS support (Optional)
Serial/Print	1 x LPT port + 4 x Serial Port with +5V & +12V Power Selector
RS 422 / 485	via COM 2 (Optional)
SATA	Two SATA2/300M connectors
IDE	1 Enhance IDE Connector for 2 x UDMA 33/66/100 devices
USB	8 ports USB 2.0 (4 external + 4 internal)
Expansion	One PCI Slot + One PCI-E 1 lane (Optional)
Watch Dog Timer	On-chip support 1 to 255 seconds / minutes
AUDIO	On-board support AC'97 Audio with 1.2W amplifier
Back Panel I/O	PS/2 Keyboard / Mouse Connector
	1 x USB(2.0) + RJ-45 Connector
	1 x USB Double deck Connector
	1 x VGA, COM1, LPT1 Connector
	1 x SPK, MIC Connector
I/O Onboard	8 x bits Digital I/O (4 x input + 4 x output) Pin Header
	Speaker out, Line-in, CD-in, MIC-in, SPDIF Pin Header
	LVDS / IDE / COM2 / COM3 / COM4 Box Header
	4 ports USB 2.0 Pin Header
Power Supply	ATX power supply
Form Factor	MINI-ITX (170mm x 170mm) with 4 Layers PCB

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Chapter 1. Introduction

In order to cope with the challenges of the low power consumption issues and demand of much more robust embedded system in diverse application, ENDAT-3227A system board provides the ultimate solution by the Intel® Atom™ N270 processor is validated with the mobile Intel® 945GSE Express Chipset, consisting of the Intel® 82945GSE Graphics Memory Controller Hub and Intel® I/O Controller Hub 7-M.

The ENDAT-3227A features power-efficient graphics with an integrated 32-bit 3D graphics engine based on Intel® Graphics Media Accelerator 950 (GMA950) architecture with integrated LVDS and CRT display ports.

The ENDAT-3227A provides rich I/O capabilities and flexibility via high-bandwidth interfaces such as Gigabit Ethernet, Serial ATA, and Hi-Speed USB 2.0 connectivity.

ENDAT-3227A supports standard ATX power supply input.

ENDAT-3227A supports one 240pins DDR2 DIMM socket up to 2GB memory. The highest speed of system memory is up to DDR2-533.

ENDAT-3227A provides one on-board REALTEK RT8111B Gigabit Ethernets. It could get more throughputs in communication performance.

The ideal solutions of ENDAT-3227A

- POS system
- KIOSK
- Vehicle system
- Interactive system
- Industrial controller
- Gaming system
- Medical system
- Embedded system equipment

1-1. Features

Basic Feature:

- Intel® Atom™ N270 processor
- One DDR2 DIMM socket supports 400/533 MHz up to 2 GB
- Intel® Graphics Media Accelerator 950(GMA950)
- One PCI Express interface Gigabit Ethernet chip on-board
- AC'97 Audio supports with 1.2W amplifier built-in
- Four fully function serial ports
- One PCI + one lane PCI-E expansion slot
- ATX power supply

Software Support

- Drivers for major embedded operating systems: Linux, Windows XP, Windows XP embedded and Windows CE 5.0/6.0.

Ordering information:

- **Standard edition:**

  ENDAT-3227A with CRT display only

- **Optional features for ENDAT-3227A:**

  ENDAT-3227A-L: CRT + 18/36bit LVDS

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-3227A System Board
- One SATA HDD Cable
- LCD cable **(Optional)**
- CD with Driver utilities for on-board chipsets, VGA and LAN adapter

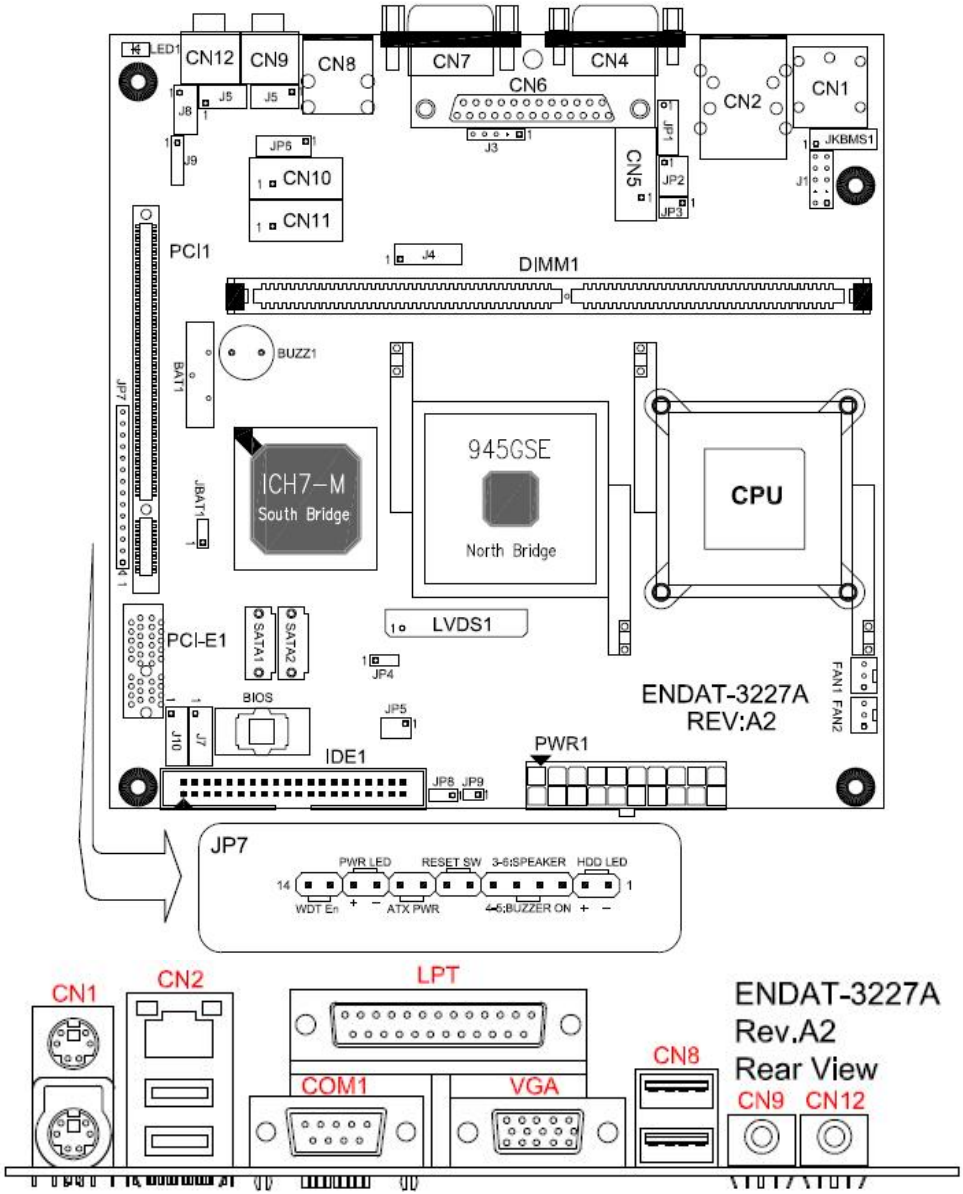
If there is any item missing or damaged, please contact the dealer from whom you purchased the motherboard. Save the shipping material and carton in the event that you want to ship or store the board in the future.

Note: 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. Connectors / Headers and Jumpers

Connectors Overview:

Function	Connectors
Cooling Fan Connector	FAN1, FAN2
ATX Power Supply Connector	PWR1
PS/2 Mouse/KB	CN1
LAN/USB Port	CN2
USB Port	CN8
CRT Output Connector	CN7
SATA 1, SATA 2	SATA1, SATA2
DDR2 RAM Socket	DIMM1
Print Port	CN6
COM1 Connector	CN4
AC'97 Audio Speaker Output	CN12
AC'97 MIC Input	CN9
18/36 bit LCD Panel Connector	LVDS1

Box Headers, Pin Headers Overview:

IDE1 Box Header	IDE1
COM2 Box Header	CN5
COM3 Box Header	CN10
COM4 Box Header	CN11
PS/2 Mouse/KB Header	J1
External PS/2 Device Header	JKBMS1
USB Port Header	J7, J10
IR Pin Header	J3
AC'97 Audio Speaker Output / MIC-IN Pin Header	J5
AC'97 Audio Surround Out (Center / Left / Right) Pin Header	J8
Line-In / CD-In Pin Header	J6
Digital I/O Pin Header	J4
SPDIF Pin Header	J9

Jumpers Overview:

LCD Panel Voltage Selector	JP5
LCD Backlight Voltage Selector	JP4
LCD Backlight Control Voltage Selector	JP8
LCD Backlight Voltage (for +3.3V)	JP9
Clear CMOS	JBAT1
COM1/2/3/4 Voltage Selector	JP1, JP6
RS232 / 485 Selector for COM2	JP2, JP3
Header for Case Panel	JP7
HDD LED	JP7: Pin 1(-), Pin 2(+)
External Speaker	JP7: Pin 3(-), Pin 6(+)
Buzzer On/Off	JP7: Pin 4, Pin 5
Hardware Reset Switch	JP7: Pin 7, Pin 8
ATX Power Supply On/Off Switch	JP7: Pin 9, Pin 10
Power LED	JP7: Pin 11(-), Pin 12(+)
WDT Function Enable/Disable	JP7: Pin 13, Pin 14

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

JP2, JP3: RS232 / 422 / 485 Selectors for COM2 (2.0mm)

TYPE	JP2 (3x4 with 2mm)	JP3 (2x3 with 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

JP1, JP6: COM Port Voltage Selector (2x6 with 2.0mm)

Voltage	+12V(DC)	R.I. *	+5V(DC)
JP1 (COM1)	1-2	3-4	5-6
JP1 (COM2)	7-8	9-10	11-12
JP6 (COM3)	1-2	3-4	5-6
JP6 (COM4)	7-8	9-10	11-12

JP5: LCD Panel Voltage Selector (2x3 with 2.0mm)

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

JP4: LCD Backlight Voltage Selector (1x3 with 2.0mm)

Pin 3-4 *	+12V
Pin 1-2	+5V

JP8: LCD Backlight On/Off Voltage Selector (1x3 with 2.54mm)

Pin 1-2 *	+3.3V
Pin 2-3	+5V

JP9: LCD Backlight for +3.3 Voltage use (1x2 with 2.54mm)

Pin 1-2	+3.3V

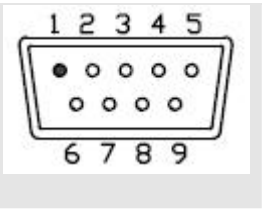
JBAT1: CMOS Data Clear (1x3 with 2.0mm)

Pin 2-3 *	Normal
Pin 1-2	Close for clear CMOS

Part 2: Onboard Connectors and Headers

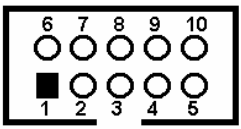
D-SUB Type Connector for COM1 port (RS-232)

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



CN5 / CN10 / CN11: COM2 / COM3 / COM4 Box Headers (2x5 with 2.54mm)

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.



Box Headers Type 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		

Box Headers Type 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		

J3: IRDA Header (1 x 5 with 2.54mm)

Pin No.	Function	Pin No.	Function
1	+5V	**4**	GND
2	KEY	**5**	IR_TX
3	IR_RX		

J7, J10: Pin Header for USB ports (2x5 with 2.54mm)

Pin No.	Function	Pin No.	Function
1	USB0_VCC	**2**	USB1_VCC
3	USB0_D-	**4**	USB1_D-
5	USB0_D+	**6**	USB1_D+
7	USB0_GND	**8**	USB1_GND
9	KEY	**10**	USB1_GND

J1: PS/2 Keyboard / Mouse Header (2x5 with 2.54mm)

Pin No.	Function	Pin No.	Function
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

JKBMS1: External PS/2 Device Header (2x7 with 2.0mm)

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

J4: DIGITAL I/O Pin Header (2 x 7 with 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	GND	**8**	GND
9	DIO-O2	**10**	DIO-I2
11	DIO-O3	**12**	DIO-I3
13	+3.3V	**14**	+3.3V

FAN1, FAN2: Cooling Fan Connector

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

J5: Speaker Output / MIC-IN Header (2 x 4 with 2.54mm)

Pin No.	Function	Pin No.	Function
1	SPK_OUT_R	**2**	MIC1_IN
3	GND_AUD	**4**	GND_AUD
5	GND_AUD	**6**	GND_AUD
7	SPK_OUT_L	**8**	MIC2_IN

J8: Surround Out (Center / Left / Right) Header (2 x 4 with 2.54mm)

Pin No.	Function	Pin No.	Function
1	SURR_OUT_L	**2**	CENTER_OUT
3	GND_AUD	**4**	GND_AUD
5	GND_AUD	**6**	GND_AUD
7	SURR_OUT_R	**8**	LFE_OUT

J6: Line-In / CD-In Header (2 x 4 with 2.54mm)

Pin No.	Function	Pin No.	Function
1	LINE_IN_R	**2**	CD_IN_R
3	GND_AUD	**4**	GND_AUD
5	GND_AUD	**6**	GND_AUD
7	LINE_IN_L	**8**	CD_IN_L

J10: SPDIF Header (1 x 5 with 2.0mm)

Pin No.	Function	Pin No.	Function
1	+5V	**4**	GND
2	NC	**5**	SPDIF-IN
3	SPDIF-OUT		

LVDS1: Dual Channels LVDS (18/36 bit only, 1.25mm)

Pin No.	Function	Pin No.	Function
1	VBL	**2**	VBL
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	N.C.	**18**	N.C.
19	TxOC+	**20**	TxOC-
21	GND	**22**	GND
23	TxE0+	**24**	TxE0-
25	TxE1+	**26**	TxE1-
27	TxE2+	**28**	TxE2-
29	N.C.	**30**	N.C.
31	TxEC+	**32**	TxEC-
33	LCD POWER	**34**	LCD POWER
35	GND	**36**	GND
37	GND	**38**	GND
39	VBL	**40**	VBL

Please make sure the Pin 1 location before inserting the LCD connector.
Please leave NC for pin-23 to pin-32 for single channel LVDS supports.

2-2. Installing Memory

The ENDAT-3227A CPU board offers one 240pin DDR2 DIMM socket supporting up to 2GB memory. The speed of DDR2 memory can be **DDR2-533, DDR2-667 or DDR2-800**.

Note: The memory speed will be down grade to DDR2-533 automatically when using a higher speed of DDR2 module from DDR2-533.

2-3. Shared VGA Memory

The ENDAT-3227A applies built-in Intel® GMA950 graphic engine with DVMT - **up to 224MB** of system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

2-4. Watch Dog Timer

Watch dog 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

Sample code (using TurboC/C++ 3.0):

```
outportb(0x4e,0x87); //Unlock register
outportb(0x4e,0x87); //Unlock register
outportb(0x4e,0x07); //Set Logic Device number pointer
outportb(0x4f,0x07); //Set Logic Device number
outportb(0x4e,0xF5);
outportb(0x4f,0x40);
outportb(0x4e,0xF6);
outportb(0x4f,0x00);//0-7 Bit :Time out value for watch dog timer
outportb(0x4e,0xF5);
outportb(0x4f,0x20);//Bit 5:If this bit is set to 1, the counting of watch dog time is enabled (bit 1:0
are select output pulse width of RESET signal: 0 for 1 ms, 1 for 25 ms, 2 for 125ms and 3 for 5 seconds)
```

2-5. Digital I/O

Pin define:

J4: DIGITAL I/O Pin Header (2 x 7 with 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	GND	**8**	GND
9	DIO-O2	**10**	DIO-I2
11	DIO-O3	**12**	DIO-I3
13	+3.3V	**14**	+3.3V

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

DIGITAL I/O Pin (DIO-I3:DIO-I0) Register configuration (register number: E2):

bit No	7	6	5	4	3	2	1	0
Map	NA	NA	NA	NA	DIO-I3	DIO-I2	DIO-I1	DIO-I0

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

```
#define input_port 0x4f  // Digital input data port
        Unsigned char read_data;
        outportb(0x4e,0x87);                    //Unlock register
        outportb(0x4e,0x87);                    //Unlock register
        outportb(0x4e,0x07);                    //Set Logic Device number pointer
        outportb(0x4f,0x06);                    //Set Logic Device number.
        outportb(0x4e,0xE2);                    //Set active register is CRE2
        read_data=inportb(input_port);          // Read digital input data
        read_data=read_data&&0x0f;              //Get bit3~0
        printf("DIO-Input=%x\n",read_data);     //Show digital input data on screen
```

DIGITAL I/O Pin (DIO-O1:DIO-O0) Register configuration (register number: E1):

bit No	7	6	5	4	3	2	1	0
Map	DIO-O1	NA	NA	DIO-O0	NA	NA	NA	NA

Sample code for output (using Turbo C/C++ 3.0)

```
        outportb(0x4e,0x87);        //Unlock register
        outportb(0x4e,0x87);        //Unlock register
        outportb(0x4e,0x07);        //Set Logic Device number pointer
        outportb(0x4f,0x06);        //Set Logic Device number.
        outportb(0x4e,0xE1);        //Set active register is CRE1
        outportb(0x4f,0x10);        // Set bit4 (DIO-O0) as logical high
        outportb(0x4f,0x80);        //Set bit7 (DIO-O1) as logical high
```

DIGITAL I/O Pin (DIO-O2) Register configuration (register number: F1):

bit No	7	6	5	4	3	2	1	0
Map	DIO-O2	NA	NA	NA	NA	NA	NA	NA

Sample code for output (using Turbo C/C++ 3.0)

```
outportb(0x4e,0x87);      //Unlock register
outportb(0x4e,0x87);      //Unlock register
outportb(0x4e,0x07);      //Set Logic Device number pointer
outportb(0x4f,0x06);      //Set Logic Device number.
outportb(0x4e,0xF1);      //Set active register is CRF1
outportb(0x4f,0x80);      //Set bit7 (DIO-O2) as logical high
```

DIGITAL I/O Pin (DIO-O3) Register configuration (register number: D1):

bit No	7	6	5	4	3	2	1	0
Map	NA	NA	NA	NA	NA	NA	NA	DIO-O3

Sample code for output (using Turbo C/C++ 3.0)

```
outportb(0x4e,0x87);      //Unlock register
outportb(0x4e,0x87);      //Unlock register
outportb(0x4e,0x07);      //Set Logic Device number pointer
outportb(0x4f,0x06);      //Set Logic Device number.
outportb(0x4e,0xD1);      //Set active register is CRD1
outportb(0x4f,0x01);      //Set bit7 (DIO-O3) as logical high
```

Chapter 3. AWARD BIOS SETUP

Phoenix – Award BIOS CMOS Setup Utility

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

Use the BIOS 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 BIOS 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.

All of the above CMOS BIOS items require board knowledge on PC/AT system architecture. 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	Optimized defaults
Date (mm:dd:yy)	
Time (hh:mm:ss)	
IDE Channel 0 Master	**Press Enter**
IDE Channel 0 Slave	**Press Enter**
IDE Channel 1 Master	**Press Enter**
IDE Channel 1 Slave	**Press Enter**
Video	EGA/VGA
Halt On	All , But Keyboard

- **Video**

  Select the type of primary video subsystem.
  <Choice: EGA / VGA, CGA 40, CGA 80, MONO>

IDE Channel 0~1 Primary Master/Slaver

Item	Optimized defaults
IDE HDD Auto-Detection	**Press Enter**
IDE Channel	**Auto**
Access Mode	**Auto**

- **IDE HDD Auto-Detection**

  Press <Enter> to auto-detect the parameters of the IDE/SATA device on this channel. IDE Channel 0, 1, 2, 3 Master/Slave configure your IDE/SATA devices by using one of the three methods below:

- **IDE Channel Master/Slave**

  Configure your IDE/SATA devices by using one of the three methods below:
  Auto: Lets BIOS automatically detect IDE/SATA devices during the POST. (Default)
  None: If no IDE/SATA devices are used, set this item to None so the system will skip the detection of the device during the POST for faster system startup.
  Manual: Allows you to manually enter the specifications of the hard drive when the hard drive access mode is set to CHS.

- **Access Mode**

  Set the hard drive access mode. Options are: Auto (default), CHS, LBA, and Large.

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	Optimized defaults
CPU Feature	**Press Enter**
Hard Disk Boot Priority	**Press Enter**
Virus Warning	**Disabled**
Hyper-Threading Technology	**Enabled**
Quick Power On Self Test	**Enabled**
First Boot Device	**Hard Disk**
Second Boot Device	**CDROM**
Third Boot Device	**Removable**
Boot Other Device	**Enabled**
Boot Up NumLock Status	**On**
Gate A20 Option	**Normal**
Typematic Rate Setting	**Disabled**
Typematic Rate (Chars/Sec)	**6**
Typematic Delay (Msec)	**250**
Security Option	**Setup**
APIC Mode	**Enabled**
MPS Version Control For OS	**1.4**
OS Select For DRAM > 64MB	**Non-OS2**

- **Hyper-Threading Technology**

  Hyper-Threading technology is a technique which enables a single CPU to act like multiple CPU's.

- **APIC Mode**

  This item can enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Leave this field in its default setting.

- **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 configuring 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 set as they provide the best operating conditions for your system. Users can change settings if find any data is lost while operating the system.

Item	Optimized defaults
System BIOS Cacheable	**Enabled**
Video BIOS Cacheable	**Enabled**
Memory Hole At 15M-16M	**Disabled**
**** VGA Setting ****	
On-Chip Frame Buffer Size	**8MB**
DVMT Mode	**DVMT**
DVMT/FIXED Memory Size	**128MB**
Boot Display	**CRT**
Panel Number	**1024x768 18bit 1CH**

.

On-Chip Frame Buffer Size

This field is used to select the onboard VGA's frame buffer size that is shared from the system memory.
<Choice: 1MB, 8MB>

· DVMT Mode

Intel's Dynamic Video Memory Technology (DVMT) allows the system to dynamically allocate memory resources according to the demands of the system at any point in time. The key idea in DVMT is to improve the efficiency of the memory allocated to either system or graphics processor.
It is recommended that you set this BIOS feature to DVMT Mode for maximum performance. Setting it to DVMT Mode ensures that system memory is dynamically allocated for optimal balance between graphics and system performance.

· DVMT/FIXED Memory

When set to DVMT/FIXED Mode, the graphics driver will allocate a fixed amount of memory as dedicated graphics memory, as well as allow more system memory to be dynamically allocated between the graphics processor and the operating system.

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.

Integrated Peripherals

Item	Optimized defaults
OnChip IDE Device	Press Enter
Onboard Device	Press Enter
SuperIO Device	Press Enter
Onboard Lan Boot ROM	Disabled
Onboard Serial Port 3	3E8H
Serial Port 3 IRQ	IRQ5
Onboard Serial Port 4	2E8H
Serial Port 4 IRQ	IRQ10
IR Function	Disabled
USB Device Setting	Press Enter

·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.

OnChip IDE Device

Item	Available Options:
IDE HDD Block Mode	Enabled
IDE DMA transfer access	Enabled
On-Chip Primary PCI IDE	Enabled
IDE Primary Master PIO	Auto
IDE Primary Slave PIO	Auto
IDE Primary Master UDMA	Auto
IDE Primary Slave UDMA	Auto
On-Chip Serial ATA	Auto
SATA Port Speed Settings	Disabled
PATA IDE Mode	Secondary
SATA Port	P0,P2 is Primary

IDE HDD Block Mode

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

IDE Primary 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

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.

Notice: The Secondary IDE channel is not available for this board. All settings of Secondary IDE channel will be ignore by system BIOS.

• On-Chip Serial ATA

Disabled	Disables the onboard SATA.
Auto	The system will detect the existing SATA and IDE drives then automatically set them to the available master/slave mode.
Combined Mode	This option allows you to use both IDE and SATA drives; allowing a maximum of 4 drives. You must manually set the SATA drives' master/slave mode in the "Serial ATA Port0 Mode" and "Serial ATA Port1 Mode" fields.
Enhanced Mode	This option allows you to use both IDE and SATA drives; allowing a maximum of 6 drives.
SATA Only	This option automatically sets the SATA drives to Primary Master and Secondary Master modes. Since both drives are in master mode, you cannot set the IDE drives to Master mode. The "Serial ATA Port0 Mode" and "Serial ATA Port1 Mode" fields will not be configurable.

• SATA PORT Speed Settings

The SATA PORT Speed Settings option controls the maximum access speed allowed for the connected SATA devices, with the GEN I setting used for SATA-150 type devices and GEN II used for SATA II type devices.

- **PATA IDE Mode**

These fields are used to select the master/slave mode of the serial ATA drives. Make sure they do not conflict with the settings of the IDE hard drives.

SuperIO Device

Item	Available Options:
POWER ON Function	BUTTON ONLY
Onboard Serial Port 1	3F8/IRQ4
Onboard Serial Port 2	2F8/IRQ3
Onboard Parallel Port	378/IRQ7
Parallel Port Mode	SPP
ECP Mode Use DMA	3
PWRON After PWR-Fail	off

- **Parallel Port Mode**

Set the parallel port mode.

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

- **PWRON After PWR-Fail**

This item enable to power on the system after power failure

USB Device Setting

Item	Available Options:
USB 1.0 Controller	Enabled
USB 2.0 Controller	Enabled
USB Operation Mode	Full/Low Speed
USB Keyboard Function	Enabled
USB Storage Function	Enabled

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	Optimized defaults
ACPI function	Enabled
ACPI Suspend Type	S1(POS)
Run VGABIOS if S3 Resume	AUTO

Item	Optimized defaults
Power Management	**User Define**
Video off Method	**DPMS**
Vido off In Suspend	**Yes**
Suspend Type	**Stop Grant**
Suspend Mode	**Disabled**
Item	**Optimized defaults**
HDD Power Down	**Disabled**
Soft-Off by PWR-BTTN	**Instant-Off**
USB KB Wake-Up From S3	**Disabled**
Power-On by Alarm	**Disabled**
Resume by Alarm	**Disabled**
Date (of Month) Alarm	**0**
Time (hh:mm:ss) Alarm	**0 : 0 : 0**

- **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.

- **Resume On RTC Alarm**

  When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

- **Power Management**

  This field allows you to select the type of power saving management modes.

- **Video Off Method**

  This field defines the Video Off features.

Blank Screen	Writes blanks to the video buffer.
V/H SYNC + Blank	Enables the Suspend to RAM function.
DPMS	Allows BIOS to control the video display.

- **Soft-Off by PWR-BTTN**

  This field defines the power-off mode when using an ATX power supply.

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	Optimized defaults
Init Display First	**PCI Slot**
Reset Configuration Data	**Disabled**
Resources Controlled By	**Auto(ESCD)**
IRQ Resources	**Press Enter**

· 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.

· Resources Controlled By

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

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	Optimized defaults
Shutdown Temperature	**Disable**
VCC	
CPU Vcore	
+5V Voltage	
+12V Voltage	
+1.8V Voltage	
CPU Temperature	
Fan 1 Speed	
Fan 2 Speed	

Chapter 4. VGA and drivers

4-1. Graphic controller Features

The ENDAT-3227A integrated a high performance Intel® GMA950 GFX engine with Intel® DVMT technology. The Intel® GMA950 offering the 3D enhancements enable greater flexibility and scalability. Improved realism with support for Microsoft DirectX 9.1.

The ENDAT-3227A integrated graphics device (IGD) delivering cost competitive 3D, 2D and video capabilities. It's contains an extensive set of instructions for 3D operations, 2D operations, motion compensation, overlay, and display control. The video engines support video conferencing and other video applications. The Intel® GMA950 uses a UMA configuration with Intel® DVMT for graphics memory.

The ENDAT-3227 provides one LVDS port to support digital display application through on-chip integrated 18 / 36 bit LVDS panel.

The build-in Graphics Controller's main features include:

- High Performance 3D and 2D graphics controller
- Support Microsoft DirectX 9.1
- DVMT 3.0
- Support resolution up to 1600 x 1200 (through on-chip 18/36 bit LVDS)
- Support resolution up to 2048 x 1536 (through CRT)

4-2. Driver Utility Installation Guide

1. When finishing the installation of Windows XP, Vista, please install the relative Intel® chipsets, display and AUDIO driver manually for compliance compatibility of hardware environment.

2. Please contact sales department of UNICORN for Embedded OS user driver (Linux, Windows CE and Windows XP embedded). All of embedded OS driver is not be included in any versions of driver CD-ROM from UNICORN.

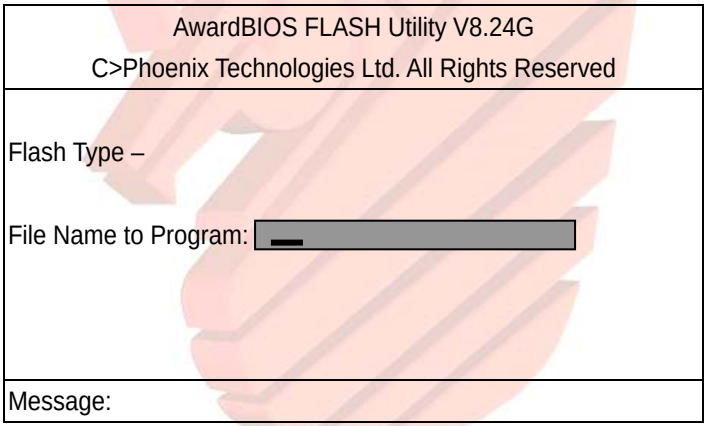
Please download or check from Intel® web site: www.intel.com for more information or last versions of driver as needs!

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. Prepare a bootable (MS-DOS) storage (HDD, USB sticker, ZIP…etc) and copy the BIOS file and flash utility to same direction.
2. At the DOS prompt, type A:>AWDFLASH (or C:\AWDFLASH) and press <Enter>



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 setup default.***

Appendix B: LIMITED WARRANTY

Standard Two years limited warranty on all our ENDAT series all-in-one motherboards and embedded board. 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