

ENDAT-7201MF/MH

User's Manual

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Rev. A2

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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-7201MF/MFC
Form Factor	5"25 SBC 203 mm x 146 mm (7.99"x6.69") with 6 layers PCB
System Chipset	VIA CX700M(NB/ 3.5 W)
CPU Support	VIA Eden ULV 500MHz (1W) , VIA Eden 1.0GHz (5W) , VIA C7-D 1.5GHz (20W)
Memory	One 240Pin DDRII 533/400 DIMM up to 1GB
Ethernet	VIA PCI interface Gigabit Ethernet Controller VT6122
VGA	Integrated VIA UniChrome Pro II 3D / 2D Graphics & Video Processor (32/64/128 MB Frame Buffer)
LCD interface	Integrated dual-channel LVDS Transmitter support 18/24/36/48 bits panel with VIA CX700M
DVI interface	VIA DVI Transmitter VT1632A (Optional)
Duo View	CRT+LCD or CRT+DVI
Video Interface	Integrated MPEG-2(DVD/DVB), MPEG-4 and WMV9 decoding acceleration and Hardware 2D rotation
Serial / Parallel RS-422/485	4 Serial Port w/ +5V, +12V Power Selector / 1 Parallel port Via COM2 (Optional)
Watchdog Timer	Programmable WDT from 1 to 255 seconds / minutes by Winbond W83697HG
IDE Connector	1 x 40pin IDE connector support UDMA 33/66/100/133,
SATA Connector	2 x 150MB/s SATA device support Raid 0, 1, JBOD
AUDIO	Integrated CX700M Audio controller w/ VT1708A Audio Codec for 2 Channel output
Expansion Slot	1x 32bits PCI slot
Back Panel I/O	PS/2 Keyboard / Mouse Connector
	2 USB port + RJ-45 LAN Connector(10/100)
	VGA with D-Sub connector
	COM1 / COM2 / COM3 with D-Sub connector
	DVI-I connector
I/O on board	Audio jack for Line-out
	LVDS with 1.25mm DF13 40-pin connector
	LPT with 2.0mm Box Header
	COM4 with 2.54mm Box Header
	1 IrDA TX/RX port with Pin Header
	SM Bus with 2.0mm Pin Header
Digital IO	Reserved Pin Header for VGA, KB/MS, 4 x USB, CD-in, SPDIF-IN/OUT, Mic-in, Line-in, Line-out, HDD Power
Digital IO	2.0mm Pin Header for 8-bits Digital I/O with CMOS/TTL level (4 bit input / 4 bit output)
Power Supply	ENDAT-7201MF supports ATX power input ENDAT-7201MFC supports 12V DC power input

Model	ENDAT-7201MH/MHC
Form Factor	5"25 SBC 203 mm x 146 mm (7.99"x6.69") with 6 layers PCB
System Chipset	VIA CX700M(NB/ 3.5 W)
CPU Support	VIA Eden ULV 500MHz (1W) VIA Eden 1.0GHz (5W) VIA C7-D 1.5GHz (20W)
Memory	One 240Pin DDRII 533/400 DIMM up to 1GB
Ethernet	VIA PCI interface Gigabit Ethernet Controller VT6122
VGA	Integrated VIA UniChrome Pro II 3D / 2D Graphics & Video Processor (32/64/128 MB Frame Buffer)
LCD interface	Integrated dual-channel LVDS Transmitter support 18/24/36/48 bits panel with VIA CX700M
DVI interface	VIA DVI Transmitter VT1632A (Optional)
Duo View	CRT+LCD or CRT+DVI
Video Interface	Integrated MPEG-2(DVD/DVB), MPEG-4 and WMV9 decoding acceleration and Hardware 2D rotation
Serial / Parallel RS-422/485	4 Serial Port w/ +5V, +12V Power Selector / 1 Parallel port Via COM2 (Optional)
Watchdog Timer	Programmable WDT from 1 to 255 seconds / minutes by Winbond W83697HG
IDE Connector	1 x 40pin IDE connector support UDMA 33/66/100/133,
SATA Connector	2 x 150MB/s SATA device support Raid 0, 1, JBOD
AUDIO	Integrated CX700M HD Audio controller w/ VT1708A Audio Codec for 2 Channel output
Expansion Slot	1x 32bits PCI slot
Back Panel I/O	PS/2 Keyboard / Mouse Connector
	RJ-45 LAN connector and 2.54mm pin header for USB
	2.0mm Box header for VGA
	2.54mm Box header for COM1 / COM2 / COM3 / COM 4
	2.0mm pin header for DVI-I
I/O on board	2.54mm pin header for Audio
	LVDS with 1.25mm DF13 40-pin connector
	LPT with 2.0mm Box Header
	1 IrDA TX/RX port with 2.54mm Pin Header
	SM Bus with 2.0mm Pin Header
Digital IO	Reserved Pin Header for VGA, KB/MS, 4 x USB, CD-in, SPDIF-IN/OUT, Mic-in, Line-in, Line-out, HDD Power
Digital IO	2.0mm Pin Header for 8-bits Digital I/O with CMOS/TTL level (4 bit input / 4 bit output)
Power Supply	ENDAT-7201MH supports ATX power input ENDAT-7201MHC supports 12V DC power input

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Chapter 1. Introduction

ENDAT-7201MF/MH supports high performance of VIA C7 processors. It also supports high speed DDR memory with 64-bit wide interfaces with non-ECC DIMM (up to 1GB). Only Double Data Rate (DDRII) SDRAM memory is supported and the speed of memory can be 400 and 533 MHz.

ENDAT-7201MF/MH 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 for smooth DVD and digital video playback, the VIA C7® processing platform also features support for high bandwidth DDRII 400/533 MHz memory, motion compensation and DuoView for the latest multiple format flat panel display devices.

ENDAT-7201MF/MH 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-7201MF/MH 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-7201MF/MH

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

1-1. Features

Basic Feature:

- Board format: SBC 203mm x 146mm
- Supports 400/533 MHz FSB by VIA C7®
- Digital I/O: 4 bits input and 4 bits output (5V)
- Supports DDRII 400/533 MHz SDRAM up to 1GB
- Serial ATA connector x 2
- Enhance 40 Pin IDE connector x 1
- Multiple I/O ports: COM port x 4; USB (2.0) x 6
- All COM ports with +5V, +12V power selector
- Watchdog Timer
- VIA Giga 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 or DC12V Input

Optional features:

- VIA DVI Transmitter VT1632A
- RS 422/485 via COM 2

Ordering Information:

Connector Type:

- ENDAT-7201MF: ATX-In
- ENDAT-7201MF-D: ATX-In, DVI Output
- ENDAT-7201MFC: DC-In
- ENDAT-7201MFC-D: DC-In, DVI Output

Box Header Type:

- ENDAT-7201MH: ATX-In
- ENDAT-7201MH-D: ATX-In, DVI Output
- ENDAT-7201MHC: DC-In
- ENDAT-7201MHC-D: DC-In, DVI Output

Full Software Support:

- Drivers for major operating systems and APIs: Windows 2000, Windows XP, Direct3D, DirectDraw and DirectShow, OpenGL ICD for Windows 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-7201MF/MH System Board

HDD / IO Cables

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

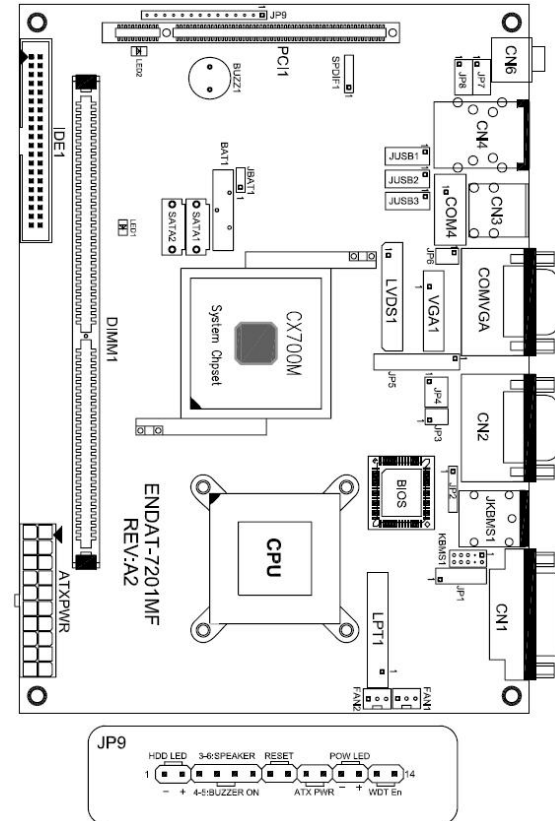
If any of these items are missing or damage, please contact the dealer from whom you purchase the motherboard. Save the shipping material and carton in the event that you want to ship or store the board in the future.

Note: Please leave the motherboard in its original package until you are ready to install it!

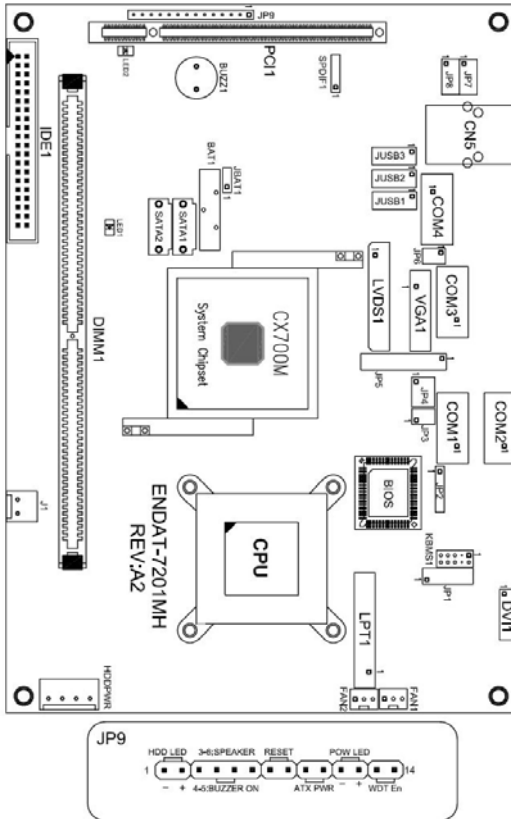
1-3. Electrostatic Discharge Precautions

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. ENDAT-7201MF/7201MFC Motherboard Layout



1-5. ENDAT-7201MH/7201MHC Motherboard Layout



Chapter 2. Setting up the Motherboard

2-1. ENDAT-7201MF/MFC 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
DDR2 SDRAM socket	DIMM1
LVDS Panel Connector	LVDS1
LVDS Voltage Selector	JP6
VGA Connector	COMVGA
VGA Box Header	VGA1
DVI Connector (Optional)	CN1
IR Pin Header	JP2
PS/2 MS/KB Pin Header	CN2
PS/2 MS/KB Connector	KBMS1
USB Port	CN3 / 4 , JUSB3
Header for Case Panel	JP9
HDD active LED	JP9: Pin 1(-), Pin 2(+)
External Speaker	JP9: Pin 3, Pin 6
Buzzer On/Off	JP9: Pin 4, Pin 5
Hardware Reset Switch	JP9: Pin 7, Pin 8
ATX Power Supply On/Off Switch	JP9: Pin 9, Pin 10
Power LED	JP9: Pin 11(-), Pin 12(+)
WDT Function Enable/Disable	JP9: Pin 13, Pin 14
LAN Connector	CN4
COM1 / COM2 / COM3	CN2 , COMVGA
COM4 Box Header	COM4
COM Port Voltage Selector	JP5
RS232 / 422/ 485 Selector for COM2	JP3 & JP4
PCI SLOT	PCI1
DIGITAL I/O Pin Header	JP1
LPT1 Box Header	LPT1

Function	Jumpers/Connectors
SATA 1, SATA 2	SATA1, SATA2
40-Pin IDE Connector	IDE1
LINE OUT Pin Header	JP7
MIC IN / LINE IN Pin Header	JP8
LINE OUT Connector	CN6
SPDIF Pin 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

JP6: LVDS1 Voltage Selector (2.0mm)

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

Caution: Improper setting will damage LCD panel.

JP9: Pin 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

JP3, JP4: RS232 / 422 / 485 Selector for COM2 (2.0mm)

TYPE	JP3 (2x3/2mm)	JP4 (3x4/2mm)
RS-232 *	1-2	1-2, 4-5, 7-8, 10-11
RS-422	3-4	2-3, 5-6, 8-9, 11-12
RS-485	5-6	2-3, 5-6, 8-9, 11-12

JP5: COM Port Voltage Selector (2.0mm)

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

Part 2: Onboard connectors

JP1: DIGITAL I/O Pin 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	GND	8	GND
9	DIO-O3	10	DIO-I3
11	DIO-O4	12	DIO-I4
13	+12V	14	+12V

JP2: IR Pin Header Connector (2.54mm)

Pin No.	Function	Pin No.	Function
1	VCC	4	GND
2	n/c	5	IRTX
3	IRRX		

FAN1, FAN2: CPU / 2nd Cooling Fan Connector

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

JP7: LINE OUT Pin Header Connector (2.54mm)

Pin No.	Function	Pin No.	Function
1	LO_J_R	2	RESERVED
3	JACK_DETECT	4	RESERVED
5	GND_AUD	6	RESERVED
7	LO_J_L	8	RESERVED

JP8: Microphone IN & LINE IN Pin Header Connector (2.54mm)

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

Notice: Please connect the jack detect pin to GND (or GND_AUD) if the actual connector cannot support the jack detect function!

KBMS1: PS/2 Keyboard / Mouse Pin Header Connector (2.0mm)

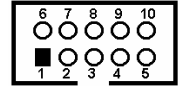
Pin No.	Signal (KB)	Pin No.	Signal (MS)
1	KB Data	2	MS Data
3	KEY	4	KEY
5	GND	6	GND
7	+5V(DC)	8	+5V(DC)
9	KB_CLK	10	MS_CLK

VGA1: 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) (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

**D-SUB Type Connector for COM1 ~ COM3 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		

SPDIF: SPDIF Pin Header Connector (2.0mm)

Pin No.	Function
1	+5V
2	n/c
3	SPDIFOUT
4	GND
5	SPDIFIN

JUSB1/JUSB2/JUSB3: Pin 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

CN1: DVI Connector (2.0mm)

Pin No.	Description	Pin No.	Description
C1	CRT-R	C2	CRT-B
C3	GND	C4	GND
C5	CRT-G	C6	CRT-HS

Pin No.	Description	Pin No.	Description	Pin No.	Description
1	TX2-	9	TX1-	17	TX0-
2	TX2+	10	TX1+	18	TX0+
3	GND	11	GND	19	GND
4	NA	12	NA	20	NA
5	NA	13	NA	21	NA
6	SB_CLK	14	PVDD	22	GND
7	SB_DAT	15	GND	23	TXC+
8	CRT-VS	16	HPDET	24	TXC-

IDE1: IDE1 Connector (40Pins)

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

LPT1: Printer (LPT1) 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

J1: Power Supply Connector 2 pin wafer (3.96mm)

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

HDDPWR: Output Power for Hard Disk (3.96mm)

Pin No.	Function	Pin No.	Function
1	+5V	3	GND
2	GND	4	+12V

ATXPWR: ATX Power connector

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

LVDS1: Dual LVDS Channel (1.25mm)

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.

LVDS Panel ID:

Resolution & Channel
640x480x18 1CH
800x600x18 1CH
1024x768x18 1CH
1280x768x24 1CH
1280x1024x24 2CH
800x480x18 1CH
1600x1200x24 2CH
1366x768x24 1CH

2-2. ENDAT-7201MH/MHC Jumpers and Connectors

Jumpers/Connectors Overview:

Function	Jumpers/Connectors
Power Supply Connector 2 pin wafer	J1
Output Power for Hard Disk	HDDPWR
Cooling Fan Connector	FAN1, FAN2
Buzzer	BUZZ1
Battery	BAT1
Clear CMOS	JBAT1
DDR2 SDRAM socket	DIMM1
LVDS Panel Connector	LVDS1
LVDS Voltage Selector	JP6
VGA Box Header	VGA1
DVI Pin Header (Optional)	DVI1
IR Pin Header	JP2
PS/2 MS/KB Pin Header	CN2
USB Port	JUSB1 / 2 / 3
Header for Case Panel	JP9
HDD active LED	JP9: Pin 1(-), Pin 2(+)
External Speaker	JP9: Pin 3, Pin 6
Buzzer On/Off	JP9: Pin 4, Pin 5
Hardware Reset Switch	JP9: Pin 7, Pin 8
ATX Power Supply On/Off Switch	JP9: Pin 9, Pin 10
Power LED	JP9: Pin 11(-), Pin 12(+)
WDT Function Enable/Disable	JP9: Pin 13, Pin 14
LAN Connector	CN5
COM1 / COM2 / COM3 / COM4 Box Header	COM1, COM2, COM3, COM4
COM Port Voltage Selector	JP5
RS232 / 422 / 485 Selector for COM2	JP3 & JP4
PCI SLOT	PCI1
DIGITAL I/O Pin Header	JP1
LPT1 Box Header	LPT1
SATA 1, SATA 2	SATA1, SATA2
40-Pin IDE Connector	IDE1
LINE OUT Pin Header	JP7
MIC IN / LINE IN Pin Header	JP8
SPDIF Pin Header	SPDIF1

Function	Jumpers/Connectors
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

JP6: LVDS1 Voltage Selector (2.0mm)

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

Caution: Improper setting will damage LCD panel.

JP9: Pin 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

JP3, JP4: RS232 / 422 / 485 Selector for COM2 (2.0mm)

TYPE	JP3 (2x3/2mm)	JP4 (3x4/2mm)
RS-232 *	1-2	1-2, 4-5, 7-8, 10-11
RS-422	3-4	2-3, 5-6, 8-9, 11-12
RS-485	5-6	2-3, 5-6, 8-9, 11-12

JP5: COM Port Voltage Selector (2.0mm)

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

Part 2: Onboard connectors**JP1: DIGITAL I/O Pin 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	GND	8	GND
9	DIO-O3	10	DIO-I3
11	DIO-O4	12	DIO-I4
13	+12V	14	+12V

JP2: IR Pin Header Connector (2.54mm)

Pin No.	Function	Pin No.	Function
1	VCC	4	GND
2	n/c	5	IRTX
3	IRRX		

JP7: LINE OUT Pin Header Connector (2.54mm)

Pin No.	Function	Pin No.	Function
1	LO_J_R	2	RESERVED
3	JACK_DETECT	4	RESERVED
5	GND_AUD	6	RESERVED
7	LO_J_L	8	RESERVED

JP8: Microphone IN & LINE IN Pin Header Connector (2.54mm)

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

Notice: Please connect the jack detect pin to GND (or GND_AUD) if the actual connector cannot support the jack detect function!

KBMS1: PS/2 Keyboard / Mouse Pin 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

VGA1: CRT Box Header Connector (2.0mm)

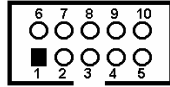
Pin No.	Description	Pin No.	Description
1	RED	9	n/c / +5V
2	GREEN	10	GND
3	BLUE	11	n/c
4	n/c	12	DDC DAT
5	GND	13	H-Sync
6	GND	14	V-Sync
7	GND	15	DDC CLK
8	GND		

FAN1, FAN2: CPU / 2nd Cooling Fan Connector

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

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

**D-SUB Type Connector for COM1 ~ COM3 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		

SPDIF: SPDIF Pin Header Connector (2.0mm)

Pin No.	Function
1	+5V
2	n/c
3	SPDIFOUT
4	GND
5	SPDIFIN

JUSB1/JUSB2/JUSB3: Pin 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

DVI1: DVI Connector (2.0mm)

Pin No.	Function	Pin No.	Function
1	TX2-	2	PVDD
3	TX2+	4	NA
5	SB_DAT	6	HPDET
7	SB_CLK	8	TX0-
9	TX1-	10	TX0+
11	TX1+	12	GND
13	TXC-	14	TXC+

IDE1: IDE1 Connector (40Pins)

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

LPT1: Printer (LPT1) 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

J1: Power Supply Connector 2 pin wafer (3.96mm)

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

HDDPWR: Output Power for Hard Disk (3.96mm)

Pin No.	Function	Pin No.	Function
1	+5V	3	GND
2	GND	4	+12V

ATXPWR: ATX Power connector

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

LVDS1: Dual LVDS Channel (1.25mm)

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.

LVDS Panel ID:

Resolution & Channel
640x480x18 1CH
800x600x18 1CH
1024x768x18 1CH
1280x768x24 1CH
1280x1024x24 2CH
800x480x18 1CH
1600x1200x24 2CH
1366x768x24 1CH

2-3. Installing Memory

ENDAT-7201MF/MH system board offers one 240 pin DDRII SDRAM socket supports up to 1GB memory and the speed can be 400 and 533 MHz.

2-4. Shared VGA Memory

ENDAT-7201MF/MH is using built-in AGP VGA controller with Integrated VIA UniChrome Pro II 3D / 2D Graphics & Video Processor up to 128MB of system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

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	COM2
4	Used	COM1
5	Used	COM3
6	Used	Floppy Disk
7	Used	LPT1
8	Used	RTC
9	Used	LPT2 or Audio
10	Used	COM4
11	Used	LAN Adapter (on board)
12	Used	PS/2 Mouse
13	Used	Coprocessor
14	Used	Hard Disk (IDE 1)
15	Used	Reserved (IDE 2)

2-6. 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 LIOU of UNICORN computer corp.
\n2005/10/07 release version:1.0a\n");
    printf("This program is design for test Watch Dog Timer for
ENADT-7201MF/MH(W83697HF).\n");
}
```

2-7. Digital I/O

1) Pin out of digital I/O header (JP1):

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-O3	10	DIO-I3
11	DIO-O4	12	DIO-I4
13	+12V	14	+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 "2Eh" and "2Fh". Please see the sample code of below for implement.

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

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

```
#define input_port 0x2f
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //Set Logic Device number pointer
outportb(0x2f,0x07); //Set Logic Device number
outportb(0x2e,0xF1); // Set active register is CRF1
read_data=inportb(input_port); // Read digital input data
printf("DIO-Input=%02X\n",read_data); //Show digital input data on screen
```

Register configuration:

Bit No	7	6	5	4	3	2	1	0
Map	Out 3	Out 2	Out 1	Out 0	IN3	IN2	IN1	IN0

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

```
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //Set Logic Device number pointer
outportb(0x2f,0x07); //Set Logic Device number
outportb(0x2e,0xF1); //Set active register is CRF1
outportb(0x2f,0xnn); //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	
Virus Warning	Disabled
Quick Power On Self Test	Enabled
First Boot Device	Hard Disk
Second Boot Device	CDROM
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
Video BIOS Shadow	Enabled

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
Memory Hole	Disabled
System BIOS Cacheable	Enabled
Video RAM Cacheable	Enabled
Init Display First	AGP

DRAM Clock/Drive Control

Item	Available Options:
Current FSB Frequency	
Current DRAM Frequency	
DRAM Clock	By SPD
DRAM Timing	Auto By SPD

- **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, 200MHz, 266MHz>

- **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.

AGP & P2P Bridge Control

Item	Available Options:
AGP Aperture Size	128M
VGA Share Memory Size	64M
Direct Frame Buffer	Enabled
Select Display Device	CRT
Panel Type	1024x768x24 1CH

- **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, 128M>

- **Select Display Device**

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

<Choice: CRT, LVDS, DVI, CRT+LVDS, CRT+DVI, LVDS+DVI>

- **Panel Type**

Resolution & Channel
640x480x18 1CH
800x600x18 1CH
1024x768x18 1CH
1280x768x18 1CH
1280x1024x24 2CH
800x480x18 1CH
1600x1200x24 2CH
1366x768x24 1CH

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.

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 Lan Boot ROM	Disabled
Onboard Serial Port 3	280
Serial Port 3 Use IRQ	IRQ5
Onboard Serial Port 4	288
Serial Port 4 Use IRQ	IRQ5
USB Device Setting	Press Enter

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:
Azalia HAD Controller	AUTO

• Azalia HAD Controller

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.

SuperIO Device

Item	Available Options:
Onboard Serial Port 1	3F8/IRQ4
Onboard Serial Port 2	2F8/IRQ3
UART Mode Select	Normal
RxD, TxD Active	Hi,Lo
IR Transmission Delay	Enabled
UR2 Duplex Mode	Half
Use IR Pins	IR-Rx2Tx2
Onboard Parallel Port	378/IRQ7
Parallel Port Mode	Normal
EPP Mode Select	EPP1.9
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
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	Any Key
PS2MS Wakeup from S3/S4/S5	Any Button
PS2 Keyboard Power ON	Disabled
PS2 Mouse Power ON	Disabled
PowerOn by PCI Card	Enabled
Modem Ring Resume	By OS
RTC Alarm Resume	Disabled
Date (of Month)	0
Resume Time (hh:mm:ss)	0: 0: 0

• 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>

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	Reserved
IRQ-4 assigned to	Reserved
IRQ-5 assigned to	PCI Device
IRQ-7 assigned to	Reserved
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
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 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	Available Options:
Current System Temp.	
Current CPU1 Temperature	
Current CPUFan1 Speed	
Current CPUFan2 Speed	
Vcore	
+3.3V	
+ 5 V	
+12 V	
VBAT (V)	
5VSB (V)	

3-8. Frequency / Voltage Control

Frequency/Voltage Control

Item	Available Options:
CPU Clock Ratio	
Auto Detect PCI Clk	Enabled
Spread Spectrum	Disabled
CPU Clock	100MHz

• CPU Clock Ratio

This item is for CPU Ratio adjustment.

• Auto Detect 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

VIA UniChrome™ Pro Graphics Core

With an internal data flow equivalent to what is available to the latest AGP 8X graphics cards, VIA UniChrome Pro II has a 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.

Flawless Digital Media Playback

VIA UniChrome Pro II includes native support for the most popular digital video formats through hardware MPEG-2/MPEG-4/WMV9 playback

The controller of ENDAT-7201MF/MH supports 3 types of display: CRT, LVDS panel and DVI.

- Support CRT resolutions up to 1920x1440
- Support LCD resolutions up to 1600x1200
- Support DVI resolutions up to 1600x1200(Option)

4-2. LVDS Panel Feature

The VIA CX700M graphic controller supports industry standard LCD panel, LVDS interface only, with 1 channel (18 or 24) and 2 channels (36 or 48bit) data width.

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

• VIA Video Display - DVI Transmitters

The VIA VT1632 DVI transmitter is designed for compliance with DVI Revision 1.0 (DVI is backwards compliant with VESA P&D and DFP) and supports display solutions ranging from VGA to UXGA resolutions (25 to 165Mpps) with a single link interface. Three TMDS data channels send data at up to 1.65Gbps per channel.

The VIA VT1632 has a highly flexible interface with either a 12-bit mode (1/2 pixel per clock edge), the VT1632 supports single or dual edge clocking. The VIA VT1632 also supports dual edge single clocking or single edge dual clocking in 12-bit mode. **Supporting receiver and Hot Plug Detection, the VIA VT1632 can be programmed through an I2C interface.**

The flat panel interface Feature:

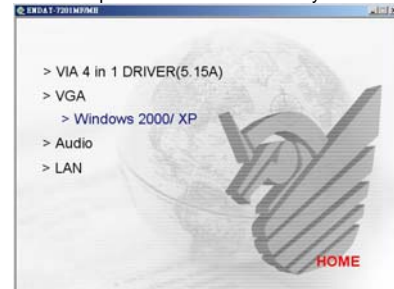
- 25 to 165 MHz Input Clock (VGA to UXGA).
- Hot Plug Detection Input
- Standard compliant with DVI Rev. 1.0

4-3. Driver Utility Installation Guide

1. When finishing the installation of Windows platform (2000/XP), please install the relative VIA driver (4in1) utilities for compliance compatibility of hardware environment.
2. 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.
3. Select correct motherboard to install driver / utility for the system



4. Select VIA 4in1 service pack driver install to the system



5. 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.
6. 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.
7. 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 VIA Velocity VT6122 Gigabit Ethernet Controller

The VIA Velocity™ VT6122 Gigabit Ethernet controller enables leading-edge performance in a small 14x14mm 128-pin LQFP package, optimized for 32-bit PCI applications in space-constrained systems. Integrating a feature laden MAC and Cicada's patented SimpliPHY™ transceiver, the VT6122 Controller is optimized for space constrained systems with a low power, low profile design.

Supporting 10/100/1000 Mbps triple-speed and full/half-duplex capability at all speeds, the integrated Cicada PHY is fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. With Cicada's proven SimpliPHY design, VIA Networking's Velocity controllers feature leading narrow band noise tolerance that delivers superior performance for real world PCBs and cables.

To minimize host-side CPU utilization, VIA Velocity Gigabit Ethernet Controllers adopt an adaptive interrupt scheme to reduce interrupts made to the processor, and maximize the use of packet bursts for efficient PCI bandwidth usage. The Velocity controllers can further offload tasks from the host CPU to improve the overall system performance with TCP/UDP/IP checksum, and TCP segmentation offloading.

Applications

The Velocity VT6122 controller is optimized for 32-bit PCI client-end applications. Its small form factor 14x14mm, 0.4mm pin-pitch, 128-pin LQFP package provides a low pin count body size that helps simplify signal routing, minimize board routing area, resulting in a cost-effective board implementation. Furthermore, to allow a flexible Gigabit Ethernet (10/100/1000-Mbps) or Fast Ethernet (10/100-Mbps) implementations on the same board, VIA Networking offers a number of configuration options integrating our wide range of Ethernet IC options.

5-1. Features

- Gigabit Ethernet MAC and PHY supporting full and half duplex 10/100/1000 triple-speed operation.
- Leading DSP-based Cicada PHY technology: 10BASE-T, 100BASE-TX, and 1000BASE-T compliant.
- Support for PCI v2.2 – (VT6122: 32-bit 33/66MHz).
- Priority Queuing support (IEEE 802.1p).
- Virtual LAN (VLAN) Support (IEEE802.1Q) » Management Features - MIB counters, SNMP/RMON monitoring and Wake on LAN (WOL) support.
- Ipv4 TCP, IP, and UDP checksum off-loading.
- Ipv4 TCP segmentation off-loading capability over Tx.
- Power Management: PCI Power Management v1.1, ACPI 2.0 , Wake-up from PRE-ACPI and abnormal shut-down and Automatic link switch from 1000 to 10 or 100 in standby.
- PXE 2.1 remote boot support.
- IEEE 1149.1 JTAG built-in
- Complete driver support :
Windows 95, 98(SE), ME, 2000, NT, XP, Server 2003.
Linux, Novell, Unix, DOS, Boot ROM, Macintosh.
- 3.3V I/Os (5V tolerant) - Integrated 3.3V to 1.5V regulator circuit.

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.

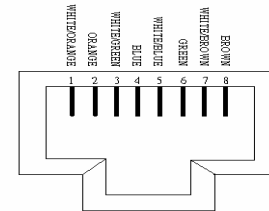
Table A-1 shows the wiring in a straight-through twisted-pair cable (Pins 4, 5, 7 and 8 are not used).

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, rereck 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 (1.25mm)

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)

Resolution & Channel	Resolution & Channel
640x480x18 1CH	1280x1024x24 2CH
800x600x18 1CH	800x480x18 1CH
1024x768x18 1CH	1600x1200x24 2CH
1280x768x24 1CH	1366x768x24 1CH

CN1: DVI Connector (2.0mm)

Pin No.	Description	Pin No.	Description
C1	CRT-R	C2	CRT-B
C3	GND	C4	GND
C5	CRT-G	C6	CRT-HS

Pin No.	Description	Pin No.	Description	Pin No.	Description
1	TX2-	9	TX1-	17	TX0-
2	TX2+	10	TX1+	18	TX0+
3	GND	11	GND	19	GND
4	NA	12	NA	20	NA
5	NA	13	NA	21	NA
6	SB_CLK	14	PVDD	22	GND
7	SB_DAT	15	GND	23	TXC+
8	CRT-VS	16	HPDET	24	TXC-

DVI1: DVI Connector (2.0mm)

Pin No.	Function	Pin No.	Function
1	TX2-	2	PVDD
3	TX2+	4	NA
5	SB_DAT	6	HPDET
7	SB_CLK	8	TX0-
9	TX1-	10	TX0+
11	TX1+	12	GND
13	TXC-	14	TXC+

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.

