

LV-681

Mini-ITX motherboard

User's Manual

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Packing List

Please check package component before you use our products.

LV – 681 board

Quick Installation Guide

CD for manual and drivers

Cable Kit (CPU cooler, IDE cable, Serial ATA cable, Serial Port cable, I/O Shield)

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General Information

Introduction

The LV-681 Mini – ITX board incorporates the ATI RS485M + ATI RS460 chipset , supports the AMD Turion 64 / Sampron uPGA 638 Pin processors with 800 MHz Front Side Bus (FSB), The RS485M integrates an ATI RADEON X-300-based 2D/3D graphics engine, dual display, The SB460 is a south bridge that integrates key I/O, communications, and audio features. The board supports DDRII 533 MHz system memory, PCI interface, Gigabit LAN, Audio, LVDS, CompactFlash, Mini – PCI, Serial ATA, USB 2.0, COM

Multimedia Applications

For multimedia application solution, ATI RS485M chipset provides on board high performance graphics, 18 – bit LVDS interface, Audio function. This feature will be good of use in very requirement of the multimedia application.

Widely Expanded Interface

The board provides PCI slot, you can add a third LAN port, and also provides Mini – PCI slot and CompactFlash Type II slot.

Specification

Board	LV-681 Mini - ITX
CPU	AMD Mobile Turion 64 638-pin Processor Sempron 638-pin Processor
Chipset	ATI RS485M + ATI SB460
Memory	2 DDR II SoDIMM slot support DDR II 400 / 533 MHz SDRAM Up to 2GB
VGA	Built in ATI RS485M chipset
I / O Control	ATI SB460 + ITE 8712 + Fintek F81216D
LAN	2 Realtek RTL8111B 10 / 100 / 1000Mbit PCI-Express Giga LAN
Audio	ATI SB460 with Realtek ALC655 Codec
IDE	1 40Pin UDMA 66/ 100 / 133 ATA IDE connection
SATA	2 Serial ATA 150MBbit/sec ports
Slot	1 Mini – PCI slot 1 CompactFlash slot 1 PCI slot
BIOS	Phoenix – Award 4Mb PnP Flash
GPIO	8 – bit digital I / O
Green Function	ACPI 1.0 and APM 1.2 compliant
Watchdog Timer	System reset programmable watchdog timer with 1 ~ 255 Min. of time - out
Real Time Clock	ATI SB460 built – in RTC with Lithium battery
Form Factor	Mini – ITX 6.69 “(L) x 6.69” (W) / 17 x 17 mm

VGA Display

Chipset	ATI RS485M chipset
Memory	Shared system memory
Display	CRT / LCD monitor with analog for 18 – bit dual channel LVDS interface

Internal I/O Ports

GPIO	1 GPIO Port Connector
USB	2 USB Connector Supports 4 USB ports
Serial Port	1 RS-232 Connector Supports 2 COM ports
IDE	1 40-Pin IDE connector
LVDS	1 18-Bit LVDS Connector
FAN	2 FAN Connector

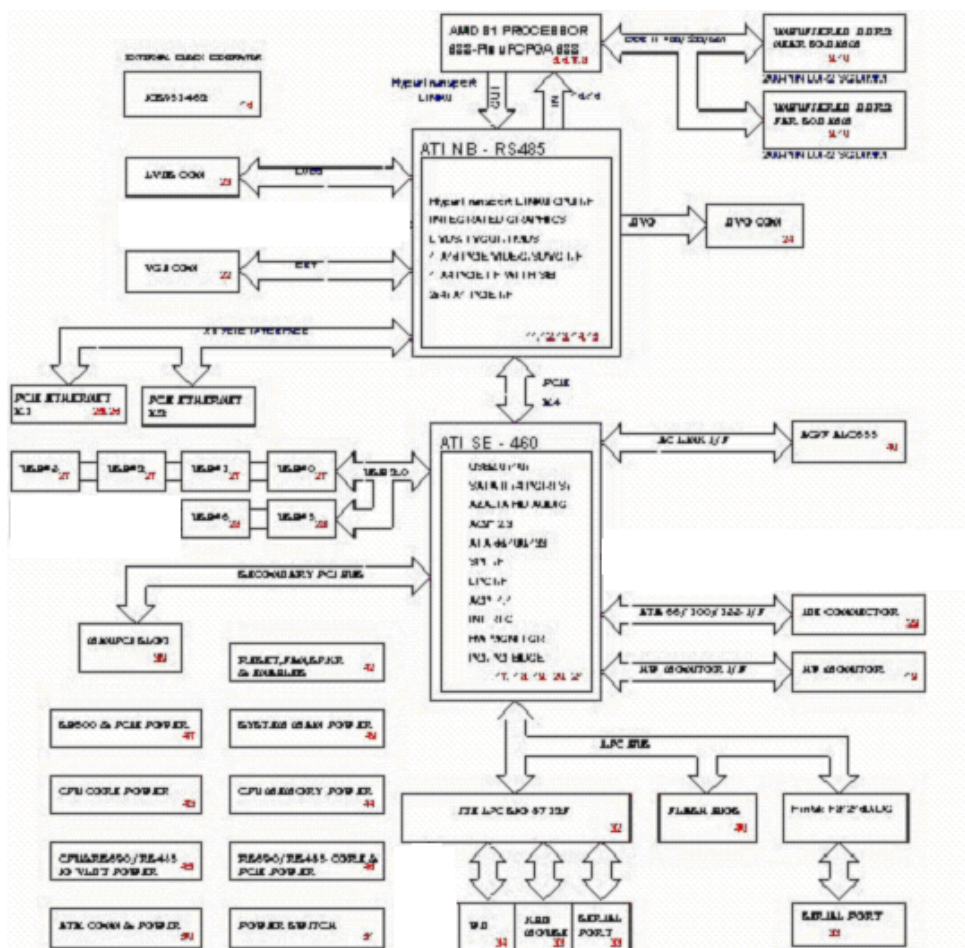
External I/O Ports

Keyboard/ Mouse	1 PS / 2 ports
Serial Ports	1 external RS – 232 port (COM 1)
	1 external RS – 232 / 422 / 485 port (COM 2)
VGA	1 VGA port
Audio	1 external jack for MIC – In / Line – In / Line – Out
LAN	2 external RJ – 45 ports with LED
USB	4 external USB 2.0 ports

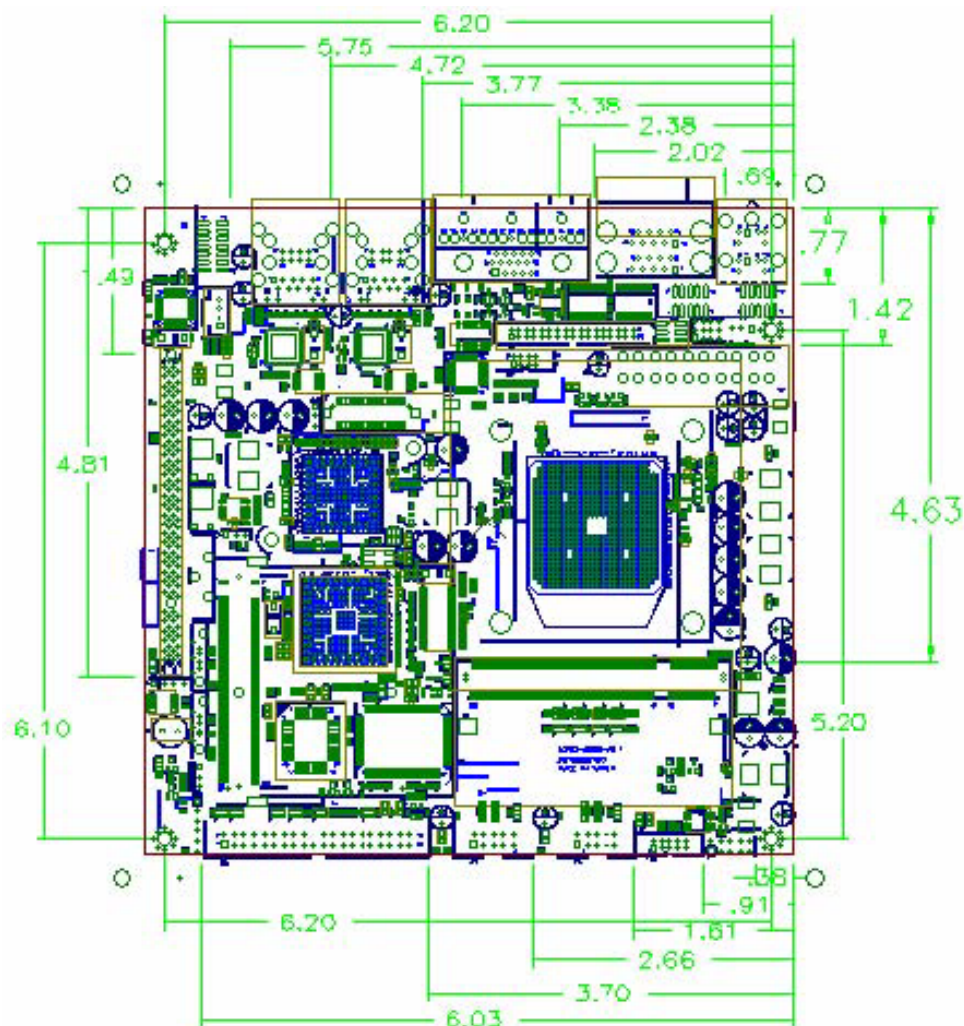
Power And Environment

POWER	ATX 20 Pin power connector
TEMPERATURE	Operating temperature with 0°C~65°C (32°F~149°F)
	Storage temperature with 20°C~80°C (-68°F~176°F)

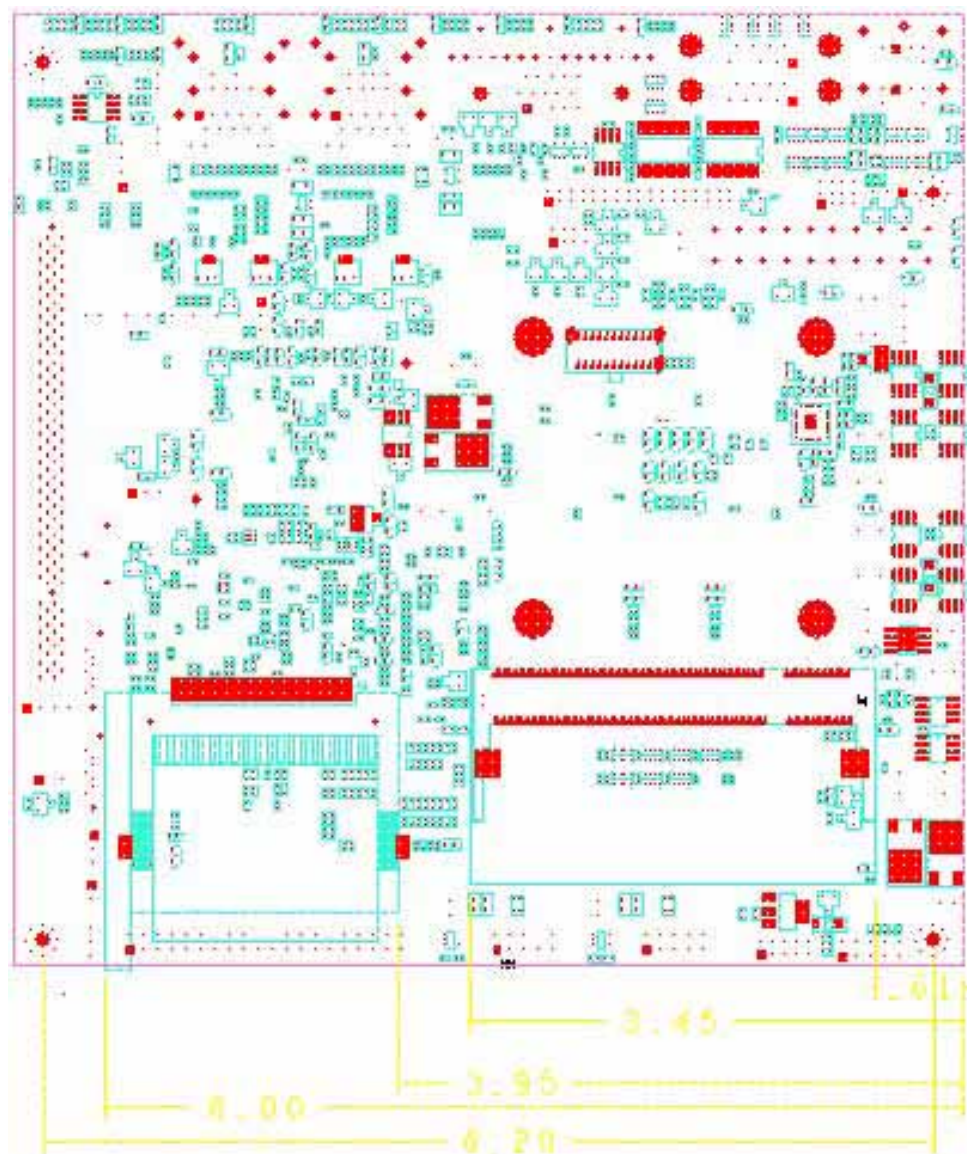
1.3 <Block Diagram>



1.4 <Mechanical Drawing >



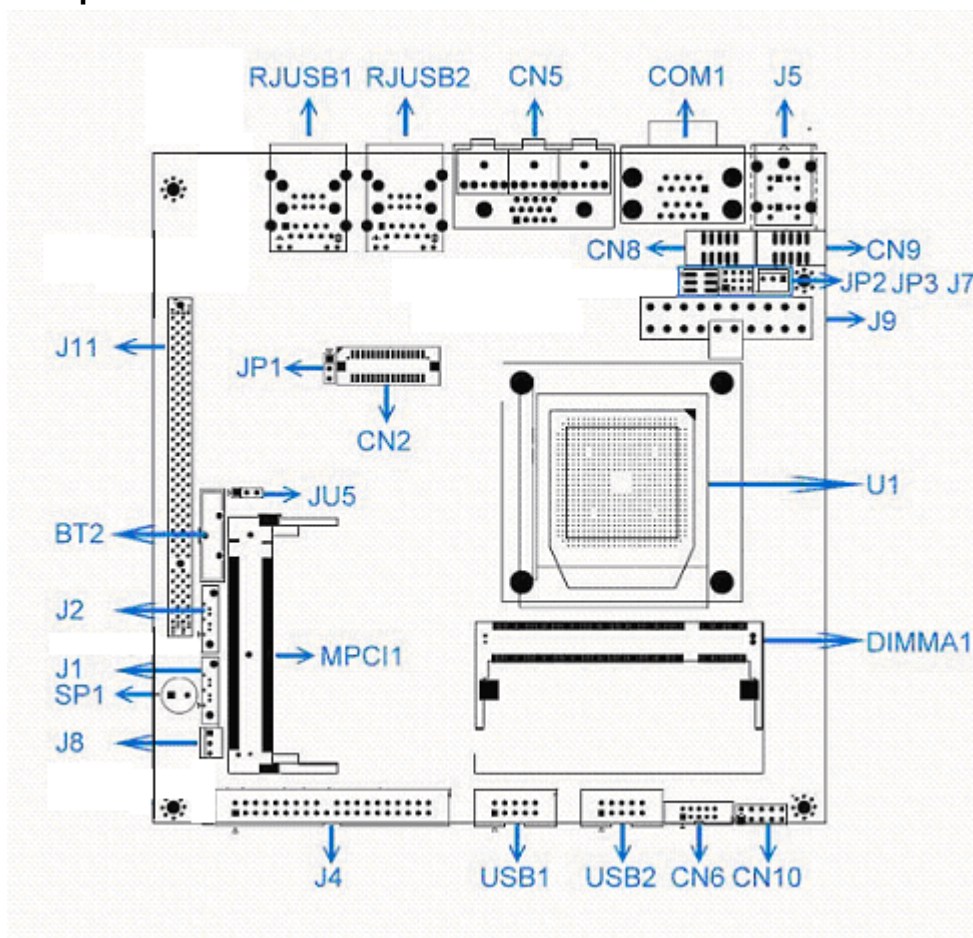
Solder Side

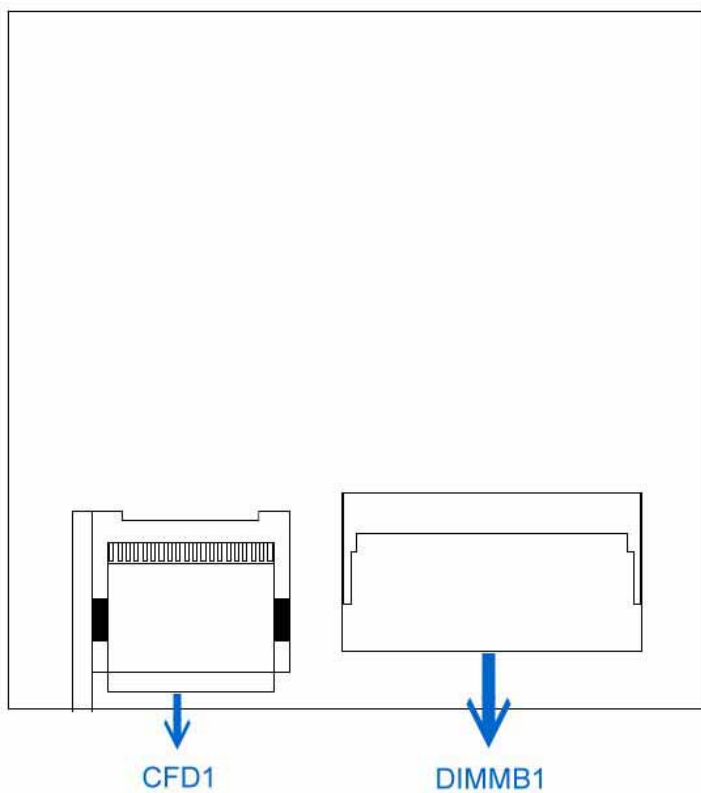


Hardware Installation

Connectors Location

Component Side





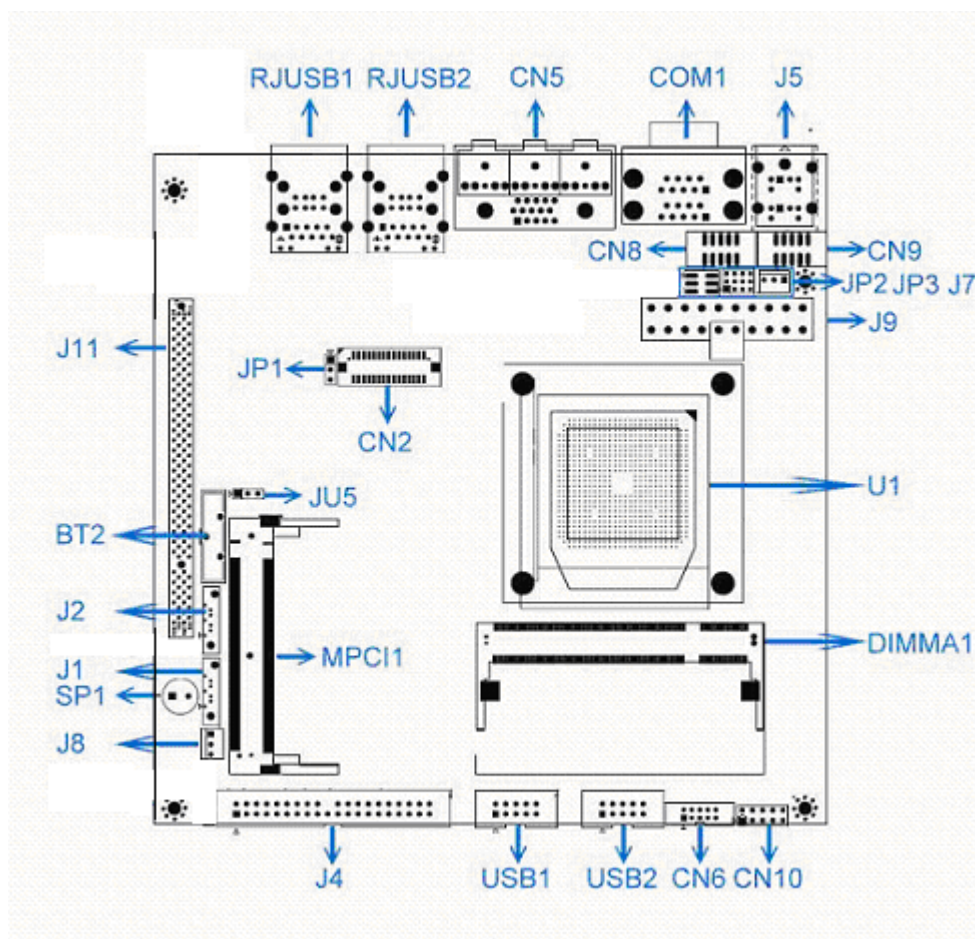
I / O Panel



Connectors

Connector	Function
CN2	LVDS Connector
CN5	VGA & AUDIO Connector
CN6	GPIO Connector
CN8	COM3 RS-232 Connector
CN9	COM4 RS-232 Connector
CN10	Front Panel Connector
J1	SATA1 Connector
J2	SATA2 Connector
J4	EIDE Connector
J5	PS2 Keyboard / Mouse Connector
J7	CPU Fan Connector
J8	System Fan Connector
J9	ATX Power Connector
J11	Slim PCI Connector
CFD1	CompactFlash Slot
COM1 Down	COM1 RS-232 Connector
COM1 Up	COM2 RS-232 / RS-422 / RS-485 Connector
DIMMA1	SoDIMM Slot
DIMMB1	SoDIMM Slot
MPCI1	Mini - PCI Slot
RJUSB1 A / B	PCI-E Gigabit LAN / USB Connector
RJUSB2 A / B	PCI-E Gigabit LAN / USB Connector
USB1	USB1 Connector
USB2	USB2 Connector

Jumpers Locations



Jumpers Setting

OPEN 1 - 2 - 3			SHORT 1 - 2			SHORT 2 - 3		
☐	☐	☐	☒	☒	☐	☐	☒	☒
1	2	3	1	2	3	1	2	3

LVDS Panel Voltage Selection (JP1)

5V			3.3V		
1	☐	☐	2	☒	☒
	2			3	

Clear CMOS Selection (JU5)

Protected			Clear CMOS		
1	☒	☒	2	☐	☐
	2			3	

COM2 RS232/422/485 Selection (JP3,JP2)

COM2 SETTING RS232

JP3	JP2
1  2  3 ○	1  2
4  5  6 ○	3  4
7  8  9 ○	5  6
10  11  12 ○	

COM2 SETTING RS422

JP3	JP2
1 □ 2  3	1  2
4 ○ 5  6	3  4
7 ○ 8  9	5  6
10 ○ 11  12	

COM2 SETTING RS485

JP3	JP2
1 □ 2  3	1  2
4 ○ 5  6	3  4
7 ○ 8  9	5  6
10 ○ 11  12	

LVDS Connector (CN2)

Pin	Assignment	Pin	Assignment
1	BKL _ EN	2	BKL _ CTL
3	LVDS _ VCC	4	GND
5	LVDS _ CH1 _ CLK-	6	LVDS _ CH1 _ CLK+
7	LVDS _ VCC	8	GND
9	LVDS _ CH1 _ DATA0-	10	LVDS _ CH1 _ DATA0+
11	LVDS _ CH1 _ DATA1-	12	LVDS _ CH1 _ DATA1+
13	LVDS _ CH1 _ DATA2-	14	LVDS _ CH1 _ DATA2+
15	N / C	16	N / C
17	N / C	18	N / C
19	LVDS _ CH2 _ DATA0-	20	LVDS _ CH2 _ DATA0+
21	LVDS _ CH2 _ DATA1-	22	LVDS _ CH2 _ DATA1+
23	LVDS _ CH2 _ DATA2-	24	LVDS _ CH2 _ DATA2+
25	LVDS_DDCPDATA	26	LVDS_DDCPCLK
27	LVDS _ VCC	28	GND
29	LVDS _ CH2 _ CLK-	30	LVDS _ CH2 _ CLK+

VGA Display Connector (CN5)

Pin	Assignment	Pin	Assignment
1	RED	2	GREEN
3	BLUE	4	N / C
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	N / C	12	CRT_DDCDATA
13	HSYNC	14	VSYSN
15	CRT_DDCCLK		

GPIO Connector (CN6)

Pin	Assignment
1	GPI
2	GPO
3	GPI
4	GPO
5	GPI
6	GPO
7	GPI
8	GPO
9	5V
10	GND

COM 3 RS-232 Connector (CN8)

Pin	Assignment	Pin	Assignment
1	DCD3#	2	RXD3
3	TXD3	4	DTR3#
5	GND	6	DSR3#
7	RTS3#	8	CTS3#
9	RI3#	10	N / C

COM4 RS-232 Connector (CN9)

Pin	Assignment	Pin	Assignment
1	DCD4#	2	RXD4
3	TXD4	4	DTR4#
5	GND	6	DSR4#
7	RTS4	8	CTS4#
9	RI4#	10	N / C

Front Panel Connector (CN10)

Pin	Assignment	Pin	Assignment
1	GND	2	Power Switch
3	BUZZER-	4	BUZZER+
5	HD_LED-	6	HD_LED+
7	POWER LED-	8	Power LED+
9	GND	10	Reset

EIDE Connector (J4)

Pin	Assignment	Pin	Assignment
1	IDERST#	2	GND
3	PID7	4	PID8
5	PID6	6	PID9
7	PID5	8	PID10
9	PID4	10	PID11
11	PID3	12	PID12
13	PID2	14	PID13
15	PID1	16	PID14
17	PID0	18	PID15
19	GND	20	N / C
21	PDREQ	22	GND
23	PIOR#	24	GND
25	PIOR#	26	GND
27	PRDY	28	GND
29	PACK#	30	GND
31	PIRQ14	32	N / C
33	PPDA1	34	ATA66 _ DET
35	PPDA0	36	PPDA2
37	PPCS1#	38	PPCS3#
39	HDLED#	40	GND

PS2 KB / MS Connector (J5)

Pin	Assignment	Pin	Assignment
1	KB_DATA	2	N / C
3	GND	4	KB_VCC
5	KB_CLK	6	N / C
7	MS_DATA	8	N / C
9	GND	10	KB_VCC
11	MS_CLK	12	N / C

CPU Fan Connector (J7)

Pin	Assignment
1	GND
2	12V
3	FAN Sense

System Fan Connector (J8)

Pin	Assignment
1	GND
2	12V
3	FAN Sense

ATX Power Connector (J9)

Pin	Assignment	Pin	Assignment
1	3.3V	2	3.3V
3	GND	4	5V
5	GND	6	5V
7	GND	8	N / C
9	5VSB	10	12V
11	3.3V	12	-12V
13	GND	14	PSON
15	GND	16	GND
17	GND	18	-5V
19	5V	20	5V

Slim PCI Connector (J11)

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
A1	TRST	A2	+12V	A3	TMS	A4	TDI
A5	+5V	A6	INTA	A7	INTC	A8	+5V
A9	RESERVED	A10	+5V	A11	RESERVED	A12	GND
A13	GND	A14	3,3Vaux	A15	RST	A16	+5V
A17	GNT	A18	GND	A19	PME	A20	AD30
A21	+3.3V	A22	AD28	A23	AD26	A24	GND
A25	AD24	A26	IDSEL	A27	+3.3V	A28	AD22
A29	AD20	A30	GND	A31	AD18	A32	AD16
A33	+3.3V	A34	FRAME	A35	GND	A36	TRDY
A37	GND	A38	STOP	A39	+3.3V	A40	RESERVED
A41	RESERVED	A42	GND	A43	PAR	A44	AD15
A45	+3.3V	A46	AD13	A47	AD11	A48	GND
A49	AD9	A52	C/BE0	A53	+3.3V	A54	AD6
A55	AD4	A56	GND	A57	AD2	A58	AD0
A59	+5V	A60	REQ64	A61	+5V	A62	+5V
B1	-12V	B2	TCK	B3	GND	B4	TDO
B5	+5V	B6	+5V	B7	INTB	B8	INTD
B9	PRSNT1	B10	RESERVED	B11	PRSNT2	B12	GND
B13	GND	B14	RESERVED	B15	GND	B16	CLK
B17	GND	B18	REQ	B19	+5V	B20	AD31
B21	AD29	B22	GND	B23	AD27	B24	AD25
B25	+3.3V	B26	C/BE3	B27	AD23	B28	GND
B29	AD21	B30	AD19	B31	+3.3V	B32	AD17
B33	C/BE2	B34	GND	B35	IRDY	B36	+3.3V
B37	DEVSEL	B38	GND	B39	LOCK	B40	PERR
B41	+3.3V	B42	SERR	B43	+3.3V	B44	C/BE1
B45	AD14	B46	GND	B47	AD12	B48	AD10
B49	GND	B52	AD8	B53	AD7	B54	+3.3V
B55	AD5	B56	AD3	B57	GND	B58	AD1
B59	+5V	B60	ACK64	B61	+5V	B62	+5V

COM1 RS-232 Connector (COM1 DOWN)

Pin	Assignment	Pin	Assignment
1	DCD1#	2	RXD1
3	TXD1	4	DTR1#
5	GND	6	DSR1#
7	RTS1#	8	CTS1#
9	RI1#		

COM2 RS-232/422/485 Connector (COM1 Up)

Pin	Assignment	Pin	Assignment
1	DCD2#(422TXD-/485DATA-)	2	RXD2(422RXD+)
3	TXD2(422TXD+/485DATA+)	4	DTR2#(422RXD-)
5	GND	6	DSR2#
7	RTS2#	8	CTS2#
9	RI2#		

USB Connector (USB1,USB2)

Pin	Assignment	Pin	Assignment
1	USB_VCC	2	GND
3	USB4-	4	GND
5	USB4+	6	USB5+
7	GND	8	USB5-
9	GND	10	USB_VCC

CompactFlash Slot (CFD1)

Standard CompactFlash Connector Type II

SoDIMM Slot (DIMMA1)

Standard DDRII SoDIMM Connector

SoDIMM Slot (DIMMB1)

Standard DDRII SoDIMM Connector

Mini - PCI Slot (MPCI1)

Standard Mini - PCI Connector

PCI-E Gigabit LAN / USB Connector (RJUSB1)

Standard RJ - 45 Connector / Standard USB Connector

PCI-E Gigabit LAN / USB Connector (RJUSB2)

Standard RJ - 45 Connector / Standard USB Connector

SATA1 Connector (J1)

Standard Serial ATA Connector

SATA2 Connector (J2)

Standard Serial ATA Connector

BIOS Setup

BIOS (Basic Input and Out System) includes a CMOS Setup utility which allows user to configure required settings or to activate certain system features.

When the power is turned on, pushing the button during the Power-On Self test will take you to the CMOS Setup screen. If you still wish to enter Setup, restart the system by pressing the <Ctrl>, <Alt> and keys. You can also restart by turning the system Off and back On again.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power PnP/PCI Peripherals PC Health Boot Exit

Date (mm:dd:yy)	Mon, Jan 15 2007	Item Help
Time (hh:mm:ss)	10 : 59 : 36	
IDE Channel 0 Master	[None]	Menu Level > Change the day, month, year and century
IDE Channel 0 Slave	[None]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended memory	980992K	
Total Memory	982016K	

↑ ↓ → ←:Move Enter:Select + / - /PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Date

Day Sun to Sat
Month Jan. through Dec.
Date 1 to 31
Year 1999 through 2099

Time

Hour	00 to 23
Minute	00 to 59
Second	00 to 59

IDE Channel 0, 1 Master / Slave

Auto	Allow BIOS to automatically detect IDE devices.
None	If no IDE devices are used.
Manual	Enter the appropriate option based on following information.
Cylinder	Number of cylinders
Head	Number of heads
Precomp	Write precomp
Landing Zone	Landing zone
Sector	Number of sectors

Halt On

No Errors	The system boot will not be halted for any error that may be detected.
All Errors	Whenever the BIOS detects a non-fail error the system will be stopped.
ALL, But Keyboard error, it	The system boot will not stop for a keyboard will stop for all other errors.
All, But Diskette will	The system boot will not stop for a disk error, it stop for all other errors.
All, But Disk/Key keyboard	The system boot will not stop for a disk or error, it will stop for all other errors.

Phoenix-AwardBIOS CMOS Setup Utility

Main **Advanced** Power PnP/PCI Peripherals PC Health Boot Exit

Quick Power On Self Test	[Enabled]	Item Help
Full Screen LOGO Show	[Disabled]	Menu Level >
APIC Mode	[Enabled]	
Init Display First	[Onboard]	
Video Display Device	[Auto]	
UMA Frame Buffer Size	[64MB]	

↑ ↓ → ←: Move Enter: Select + / - / PU / PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Quick Power On Self Test	When this option enabled, this field speeds up the Power On Self Test after the system is turned on.
Full LOGO Screen Show	The EPA logo appears at the right side of the monitor screen when the system is boot up.
APIC Mode	APIC stands for Advanced Programmable Interrupt Controller.
Init Display First	The default setting is Onboard.
Video Display Device	The default setting is Auto.
UMA Frame Buffer Size	The default setting is 64MB.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced **Power** PnP/PCI Peripherals PC Health Boot Exit

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	Menu Level >
PwrOn After PWR-Fail	[Always Off]	

↑ ↓ → ←: Move Enter: Select + / - / PU / PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Function Enable this option to support ACPI Function.
ACPI Suspend Type Select ACPI Suspend to S1(POS)
PwrOn after PWR-Fail The default setting is Always OFF.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power **PnP/PCI** Peripherals PC Health Boot Exit

Reset Configuration Data	[Disabled]	Item Help
Resources Controlled By	[Auto(ESCD)]	Menu Level >
IRQ Resources	Press Enter	

↑ ↓ → ←: Move Enter: Select + / - / PU / PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Reset Configuration Data This option allows you to determine whether to reset the configuration data or not.

Resources Controlled By This PnP BIOS can configure all of the boot and compatible devices automatically with use a PnP operating system.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power PnP/PCI **Peripherals** PC Health Boot Exit

OnChip USB Controller	[Enabled]	Item Help
OnChip USB KBC Controller	[Enabled]	Menu Level >
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
Uart Mode Select	[Normal]	
Onboard Serial Port 3	[3E8/IRQ11]	
Onboard Serial Port 4	[2E8/IRQ10]	
Onboard AC97 Audio	[Enabled]	
OnChip USB2.0 Controller	[Enabled]	
OnChip IDE Device	[Press Enter]	

↑ ↓ → ←: Move Enter: Select + / - / PU / PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

USB Controller

This option allows you to select USB Controller Enabled or Disabled.

USB Keyboard Support

This option allows you to select USB Keyboard Support Enabled or Disabled.

Onboard Serial Port 1

The default values is 3F8/IRQ4.

Onboard Serial Port 2

The default values is 2F8/IRQ3.

Onboard Serial Port 3

The default values is 3E8/IRQ11.

Onboard Serial Port 4

The default values is 2E8/IRQ10.

OnBoard AC97 Audio

This option allows you to select AC97 Audio function Enabled or Disabled

USB 2.0 Controller

This option allows you to select USB 2.0 Controller Enabled or Disabled.

OnChip IDE Device

OnChip IDE Channel0	[Enabled]	Item Help
IDE Primary Master PIO	[Auto]	Menu Level >
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
OnBoard SATA Controller	[Enabled]	

IDE DMA Transfer Access	[Enabled]	
-------------------------	-------------	--

↑ ↓ → ←: Move Enter: Select + / - / PU / PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

OnChip IDE Channel0 The default is Enabled.

IDE Primary / Master / Slave PIO

The PIO allows the BIOS to communicate with the controller and CPU directly. When Auto is selected, the BIOS will select the best available mode.

IDE Primary / Master / Slave UDMA

These option allow your disk I/O 33Mb/sec to Ultra DMA 33 feature.

OnBoard SATA Controller The default is Enabled.

IDE DMA transfer access The default is Enabled.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power PnP/PCI Peripherals **PC Health** Boot Exit

Vcore	1.12V	Item Help
V5V	4.89V	Menu Level >
+12V	11.9V	
Vbat	3.02V	
CPU Temperature	34°C	
System Temperature	25°C	
CPU Fan Speed	4963 RPM	
System Fan Speed	0 RPM	

↑ ↓ → ←:Move Enter:Select +/–/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

PC Health

This option allows you to see the temperature Monitoring function feature of the board. The Values are read-only as monitored by the system and show the PC health status.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power PnP/PCI Peripherals PC Health **Boot** Exit

First Boot Device	[CDROM]	Item Help
Second Boot Device	[Hard Disk]	
Third Boot Device	[USB-FDD]	
Boot Other Device	[Enabled]	
Hard disk Boot Priority	[Press Enter]	

↑ ↓ → ←: Move Enter: Select +/ -/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

First/Second/Third Boot Device

Hard Disk	Select your boot device priority by Hard Disk.
CDROM	Select your boot device priority by CDROM.
USB-FDD	Select your boot device priority by USB-FDD.
USB-CDROM	Select your boot device priority by USB-CDROM.
LAN	Select your boot device priority by LAN.
Disabled	Disable this function.

Boot Other Device

This option allows the system to search for an OS from other devices.

Hard Disk Boot Priority

Select boot sequence for on board SCSI, RAID, etc.

Phoenix-AwardBIOS CMOS Setup Utility

Main Advanced Power PnP/PCI Peripherals PC Health Boot **Exit**

Save & Exit Setup Load Optimized Defaults Exit without Saving Set Password	Item Help
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↑ ↓ → ←:Move Enter:Select +/–/PU/PD:Value F10:Save ESC:Exit F1:General Help

F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Save & Exit Setup

This menu allows you to determine whether to accept modifications or not. If you type “Y”, you will quit the Setup Utility and save all you setup value to the CMOS. If you type “N”, you will return to Setup Utility.

Load Optimized Defaults

This menu allows you to load the factory defaults for BIOS and Chipset features which the system automatically detects.

Exit Without Saving

This menu allows you to exit the Setup Utility without saving the changes. If you type “Y”, you will quit the Setup Utility without saving to CMOS. If you type “N”, you will return to Setup Utility.

Set Password

When you select this function, the following message will appear at the center of the screen to assist you creating a password.

Type the password, up to eight characters and press <Enter>. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password , just press <Enter> when you are prompt to enter the password. A message “PASSWORD DISABLED” will appear to confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Appendix

Watchdog Timer

User could test watchdog timer function under “ DEBUG.EXE ” program as follows:

DEBUG	Description
O 2e 87	
O 2e 01	
O 2e 55	
O 2e 55	
O 2e 07	
O 2f 07	
O 2e 72	
O 2f c0	C0: second (40: minute)
O 2e 72	
O 2e 73	Control second or minute
O 2f 00 ~ FF	O 2f 08 (8 second reset)