Chapter 5

Hardware Specifications

You can enjoy and utilize the Z96Js Notebook more effectively with a better comprehension of detailed hardware specifications of the notebook.

This chapter lists the detailed specifications of the notebook's main system and modules. Please refer to this section when you need to find out specific technical data about the notebook.

This chapter contains the following information:

- **System Specifications**
- **Chipset Specifications**
- **Key Parts List**
- **System Resource**
- **Module Specification**

Marketing Specification

(System operation ambient temperature is between 5℃ to 35℃.)

Z96JS Specification				Notes
Product Family	Z96JS			
Dimension	362 mm x 268 mm x 28.5mm ~ 39mm			
Weight	2.9~3 kg (with 6 cell battery)			
CPU				
	Type	Intel Yonah Dual core	Intel Yonah Single core	
	Speed	1.6GHz ~ 2.16GHz	1.66GHz	
	Package	Intel µFC-PGA (479 pin)	Intel µFC-PGA (479 pin)	Socket
System Memory				
	Type		Dual channel DDR2 SO-DIMM, 2 slots	
	Memory		Up to 2048 MB	SO-DIMM 1.25"x2 Slot
LCD				
	Size & Resolution		15.4" WXGA & WSXGA+	
	Panel Type		TFT-LCD	
	Interface		LVDS	
	Contrast Control		No	
	Brightness Control		Hot-key (16 steps)	
Hard Disk Drive				
	Type		2.5", 9.5mm SATA	
	Transfer Mode		Up to UltraDMA-100	
	Size		60/80/100 GB	
Optical Disk Drive				

	Type	ATAPI DVD+CD-RW, Combo drive ATAPI DVD Super Multi drive	
Chipset			
	North Bridge	Intel 945PM (Calistoga-PM)	
	South Bridge	Intel ICH7-M	
	AUDIO	ALC882	
	Hardware Monitor	G781P8F	
	EC	ITE IT8510E	
	ROM	4Mb ISA	512K x8 (4Mbit)
Graphic Accelerator			
	Controller	ATI M56-P	
	Package	880-ball BGA	
	I/F	PCI-E 1.0a, PCI-E 1.1 compliant	
	PCI-E Support	Yes	x16
	3D	Yes	
	Dual view/Dual App	Yes	
	Memory	256 MB	
NEWCARD			
	Controller	INTEL ICH7-M	
	Express Card	Yes	
Card Reader			
	Controller	RICOH R5C832	
	Card Type	SD/MS/MMC	
Sound System			
	Compatibility	Sound Blaster 16, and 3D Positioning audio	
	Controller	ALC882	
	Speaker	Stereo	
	I/F	Azalia	
	PC99	Yes	
	Audio Amplifier	TI TPA6017A2PWP	
	MIC	Array Mic	
Modem			
	Controller	Moto	
	Spec	56K	

	I/F	Azalia	
	Jack	RJ-11	
	ACPI	Yes	
	V.90	Yes	
	Wake on ring	Yes	AC=S3,S4 DC=S3 ONLY
LAN			
	Controller	Realtek RTL8110SBL	
	Spec.	10/100/1000 Mbps	
	Jack	RJ-45	
	I/F	PCI	
	Wake on LAN	Yes	AC=S3,S4 DC=S3 ONLY
Internal Keyboard			
	Vendor	Sunrex	
	Key	86 Keys (US) 87 Keys (UK) 90 Keys (JP)	
	Stroke / Pitch	19mm/2.5mm	
	Function Key	Yes	
Hot Key Function (15 Hot Keys)			
	Suspend switch	Fn + F1	
	WLAN/Bluetooth switch	Fn + F2	
	Display Device switch	Fn + F3	
	Brightness Down	Fn + F4	
	Brightness Up	Fn + F5	
	Volume On/Mute switch	Fn + F6	
	Volume Down	Fn + F7	

	Volume Up	Fn + F8	
	MEDIA PLAY/PAUSE	Fn + F9	
	MEDIA STOP	Fn + F10	
	MEDIA BACKWARD	Fn + F11	
	MEDIA FORDWARD	Fn + F12	
	PRT SC	Fn + Ins	
	SYSRQ	Fn + Del	
	Scroll Lock on/off	Fn + NUM LK	
Status Indication			
	Power Status LED	GREEN light when power on; Blinking when in S3 mode; No light when power off.	(Breathe LED)
	Battery Charge Status LED	Orange light when charging Blinking when battery low No light when fully charged or in Battery-powered mode	
	Bluetooth Status LED	Blue light when Bluetooth on; No light when Bluetooth off	
	Wireless Status LED	GREEN light when WLAN on; No light when WLAN off	
	HDD LED	GREEN light while accessing HDD; No light when not	
	Number Lock LED	GREEN light while use the keypad as number key; No light when not.	
	Caps Lock LED	GREEN light while the alphabet is capitalized; No light when not.	
Function Control			
	Power On Button	Yes	

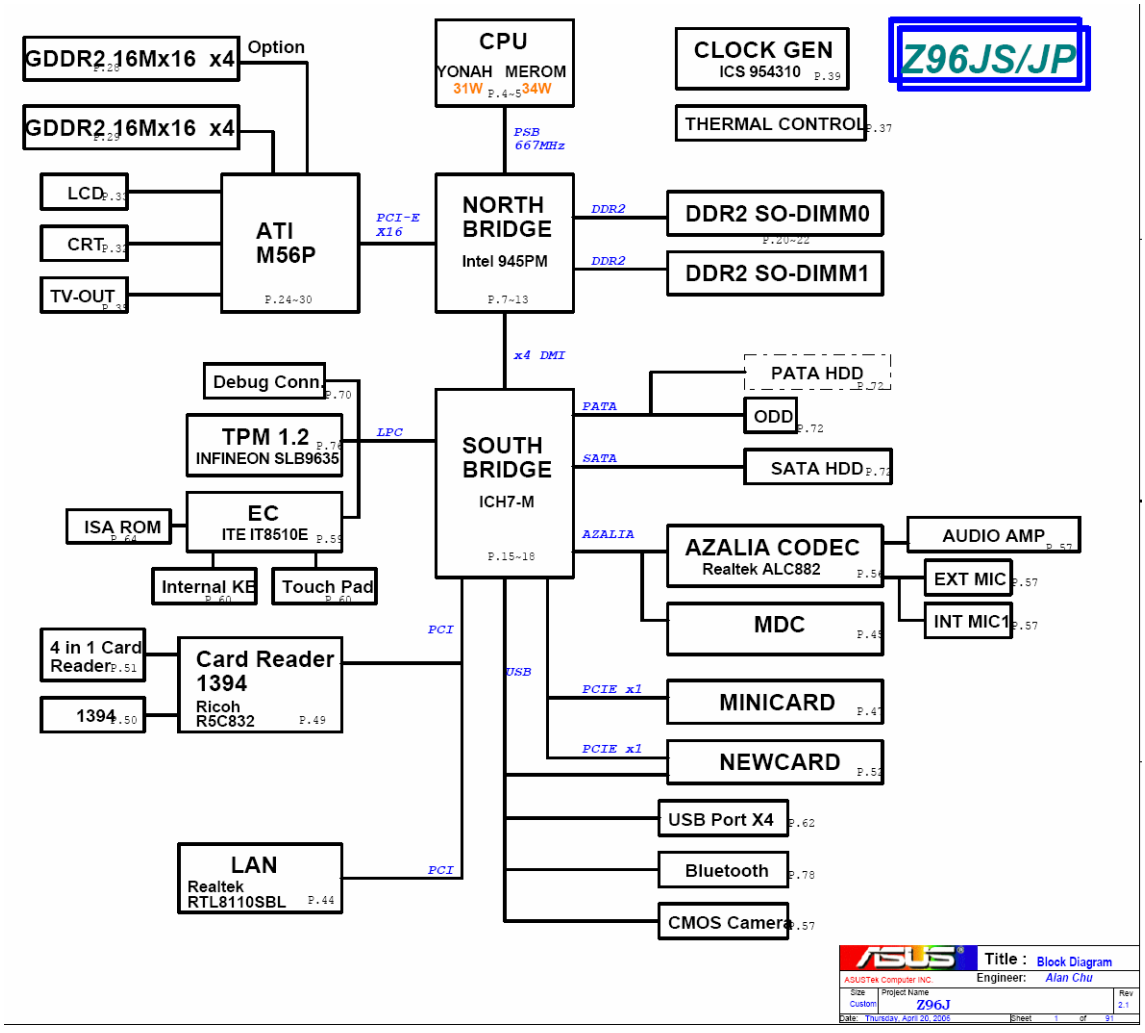
	OUTLOOK	Yes	Hot Keys
	TOUCH PAD ON/OFF	Yes	Hot keys
	INTERNET	Yes	Hot keys
	Reset Button	Yes	Force power off
	POWER 4 GEAR	Yes	Hot keys
I/O Port			
	CRT	Yes	15-pin D-sub
	TV Out	Yes	S-Video Out
	Fax/Modem	RJ-11 Port	1 Modem Port
	LAN	RJ-45 Port	1 LAN port
	Head Phone Jack	Yes	Stereo
	Mic.-In Jack	Yes	Mono
	USB Port	Yes	4 Ports, 1.1 & 2.0
	1394	Yes	1 port
	DC-In	Yes	3-pin type
Heat Solution			
	Heat Pipe	Yes	
	Heat Sink	Yes	
	FAN Support	Yes	One Fan
AC Adaptor			
	Type	Delta 90W	3-pin
	Input	AC 100-240 Volt, 50/60 Hz	
	Output	DC 19V, 4.74A, 90W	
Battery			
	1st Battery	3S2P, 4800mAH 3S3P, 7200mAH	
Charging time			
	Machine OFF	1st Battery (3S2P)	TBD	Fast charge
Battery Life				
	BatteryMark life	1st Battery (3S2P)	TBD	Battery saving mode
Power Management				
	LCD Cover Close/Open	Yes	
	LCD Back-light	Yes	
	Suspend/Resume	Yes	

	Hibernation (S2D)	Yes	
	Thermal Control	Yes	
	ACPI	Yes	
Security			
	Password	Yes	

	Security Lock	Yes	
S/W			
	Install OS	Windows XP	
	Option	Windows 2000/XP	
	Flash BIOS	Yes	
Drivers			
	Chipset Driver	Yes	Intel
	VGA Driver	Yes	ATI
	ATK Driver	Yes	ASUS
	AUDIO Driver	Yes	REALTEK
	Express Card Driver	Yes	OS Default
	Card Reader	Yes	RICOH
	LAN Driver	Yes	Realtek
	WLAN Driver	Yes	Intel
	Bluetooth	Yes	ASUS
	Glide Pad Driver	Yes	Synaptics
	Modem Driver	Yes	ASUS
Logo			
	Microsoft PC99	Yes	
	ACPI 1.0	Yes	
Instant Key			

	Power4 Gear	Yes	
	Internet	Yes	
	OUTLOOK	Yes	
	Touch Pad Lock	Yes	

System Block Diagram



Module Specification

Overall System:

The notebook system consists of the following PCB assembly and modules.

Board Assembly

Board Name	Descriptions
Main Board	Main System board with DC/DC and Battery charger function
SO-DIMM	Memory Expansion
Modem Module	Azalia Modem
Wireless Module	Intel 802.22 a/b/g WLAN module, MINICARD Interface
Inverter Board	LCD Module Back-light Control
DC Board	Output: 19V DC, 4.74A, 90W
VGA Board	PEG module
ODD Board	Connected Main Board
Touch Pad Board	Connected between Main Board & Touchpad
HDD	Connected Main Board
Instant key	Power4 Gear, Internet, WLAN, Pad Lock button
LED	Power, charger, HDD and WLAN status LED display

Modules

Module Name	Remark
Main Battery Module	

Main board

Feature:

CPU socket, CPU thermal sensor,
Clock generator,
DDR2 SO-DIMM sockets,
PC/AT compatible system (RTC, DMA, INT, Timer, … etc)
IDE controller with PIO Mode 5 & UDMA -33/66/100,
1394//Card Reader controller & their sockets
Power management control circuit,
External Graphic/Display controller,
Keyboard Controller,
Audio analog signal,
Power control, DC/DC,
Battery Charger

Modem board

Function features:

Modem Daughter Card (MDC) hardware component
Controller: Motorola
Interface: Azalia
ML3054 Host Side Device
DAA technology supports V.92/V.90 analog receive data up to 56kbps with V.44 data compression
Data modem with receive rates up to 56kbps and send rates up to 48kbps (V.92 mode) or up to V.34 rates (V.90 mode)
Fax modem with send and receive rates up to 14.4kbps
Microsoft PC 98 and PC 99 Design Initiative compliant

Vendor: ASUS

Part Number: ASUS/61-BMM012-01

Chipset List

Chipset Summary Table

Function	Vendor / Model No.	HW ACPI / PC99
CPU	Intel Yonah processor	Not required
DDR2 SDRAM (L2 Cache)	Pipeline Burst SRAM (On-die)	Not required
North Bridge	Intel 945PM (Calistoga-PM)	YES
South Bridge	ICH7-M	YES
MEMORY	DDR2 SO-DIMM	Not required
BIOS ROM	SST39VF040-70-4C-NHE	Not required
VGA	ATI M56-P	YES
NEWCARD	ICH7-M	YES
1394A	Ricoh R5C832	YES
AUDIO	ALC882	YES
AUDIO AMPLIFIER	GMT1420	Not required
KB CONTROLLER	ITE8510	YES
CLOCK Generator	ICS954310	YES
MODEM	ASUS/61-BMM012-01 (MOTO)	YES
LAN	Realtek RTL8110SbL	YES

CPU

Processor Intel Yonah CPU

compatibility:	
Cache Type:	2MB L2 cache
Processor frequency:	1.66 ~ 2.16 GHz
Construction method:	µFC-PGA with socket 479-pin
Supply voltage:	VCCA:1.5V；VCCP:1.05V
Function feature:	

Supports Intel® Architecture with Dynamic Execution
High performance, low-power core
On-die, primary 32-kbyte instruction cache and 32-kbyte write-back data cache
On-die, 2-MByte second level cache with Advanced Transfer Cache Architecture
Advanced Branch Prediction and Data Prefetch Logic
Streaming SIMD Extensions 2 (SSE2) and Streaming SIMD Extensions 3 (SSE3)
667-MHz, Source-Synchronous processor system bus
Advanced Power Management features including Enhanced Intel SpeedStep® technology
Micro-FCPGA and Micro-FCBGA packaging technologies

Chipset

945PM (Calistoga-PM) & ICH7-M constructs the North Bridge and South Bridge functions.

North Bridge

Function:

533/667MHz processor system bus support, FSB interrupt delivery
GTL+ & AGTL+ bus driver technology
Single/Dual DDR2 SDRAM channel supported, 128MB~2GB, support On Die Termination (ODT) for DDR2
One 16-lane PCI Express Graphics interface supports traditional PCI/AGP style traffic.
Analog CRT DAC/Digital LVDS interface support, 1x18/2x18 bpp for TFT panels with single/dual channels LVDS
GMCH integrated panel power sequencing as defined in SPWG, integrated PWM interface for LCD backlight inverter control, SDVO support
Dual independent display pipes, 2D/3D graphics engine, Frame Buffer Compression, backlight image adaptation support.

Vendor:	INTEL
Parts Number:	Calistoga
Package:	1466pin µFCBGA

South Bridge

Function:

10Gb/s each direction Media Interface, full duplex
4 PCI Express root ports, can be statically configured as 4x1 or 1x4. Supports PCI Express 1.0a. Module base Hot-Plug supported
PCI Bus Rev2.3 specification at 33MHz, support for 64 bit addressing on PCI using DAC protocol
Integrated IDE controller, Ultra ATA 100/66/33, BMIDE and PIO modes
High Definition Audio Interface. PCI Express endpoint. Independent Bus Master logic for eight general purpose streams. Support three external codecs. Supports multichannel. 32-bit sample depth. 192kHz sample rate output. Support low voltage mode.
Includes one USB 2.0 High-speed Debug port, support wake up form sleeping S1~S5
Support ACPI 2.0 compliant, ACPI power management timer, APM-based legacy power management for non-ACPI Desktop and Mobile implementations
Enhanced 2 DMA 8237 controllers, support LPC DMA
SMBus 2.0 SPEC, Flexible SMBus/SMLink architecture to optimize for ASF, slave interface allows an internal/external Microcontroller to access system resources
FWH I/F support BIOS Memory size up to 8MB, integrated 1.5V regulator for suspend/LAN wells, 1.5V operation with 3.3V I/O.

Vendor: INTEL
Parts Number: ICH7-M
Package: 652-pin BGA

External Graphic Controller

Compatibility: ATI VGA

Function features:

The M56 represents ATI's 2nd generation PCI Express technology product and leverages a brand new graphics architecture. Based on 80nm/90nm process technology, the M56 will deliver a 16-lane PCI Express bus interface and RoHS compliant ASIC.

Support for Microsoft® DirectX® 9.0 programmable vertex and pixel shaders in hardware.

Shader Model 3.0 vertex and pixel shader support:

Complete feature set also supported in OpenGL® 2.0.

3Dc+™ — Advanced Texture Compression

New Ring Bus Memory Controller

Avivo™ Video and Display Engine

CrossFire™ Support

PCI Express 1.0a and PCI Express 1.1 compliant. Native x16 PCI Express bus interface. Supports x1, x2, x4, x8, x12, and x16 lane widths.

Single chip solution in 90nm, 1.0V-1.3V CMOS technology

Full ACPI 1.0b, OnNow, and IAPC (Instantly Available PC) power management.

Static and dynamic power management support (APM as well as ACPI) with full VESA DPM and Energy Star compliance.

Vendor:	ATI
Parts Number:	M56-P

DRAM MEMORY

Expansion Memory

Number of sockets:	Two 200 pin SO-DIMM sockets
Bus:	64-bit /128-bit data path
Supply voltage:	1.8V

Functional features:

Double Data Rate 2 architecture
Fast data transfer rates: PC2-4300, PC2-5300
Differential data strobe (DQS, DQS#)
Differential clock inputs (CK, CK#)
On Die Termination

Hardware features: Utilizes 533/667MTs DDR2 SDRAM
Easy removable and exchangeable for user's future upgradeability

BIOS ROM

ROM Type:	512K x8 (4 Mb) Flash Memory
Package:	32-Pin PLCC
Supply voltage:	3.0~3.6V
Low Power Consumption	
	Active Current: 6 mA
	Standby Current: 10 µA
Serviceability:	End user upgradeable design

I/O Interface Controller

Function: ITE8510 directly interfaces to LPC bus and provides ACPI embedded controller function, keyboard controller (KBC) and matrix scan , external flash interface for system bios and ec code ,pwm, adc ,and smart auto fan control for hardware monitor ,PS/2 interface for external keyboard/mouse devices ,RTC and system wake up function for system power management,

Vendor: ITE
Part Number: ITE8510
Package: TQFP176L

Media Card / 1394 Controller

Function:

Compliant with IEEE1394-1995 Standard Specification and IEEE1394a-2000 Standard Specification
Compliant with 1394OHCI Release 1.1/1.0 Standard Specification
Supports Cycle Master
Provides the Asynchronous receive/transmit FIFO and isochronous receive/transmit FIFO
Data transmission rate of 100, 200 and 400Mbps
1 ports of 1394 Cable interface
24.576MHz crystal oscillator and Internal 393.216MHz PLL
Programmable low power consumption modes for PHY block
SD Memory Card Specification Version 1.1
SDIO Card Specification Version 1.1
SD Host controller Standard Specification Version 1.0
Compatible with MutiMediaCard System
Memory Stick Standard Specification Version 1.4
Memory Stick PRO Specification Version 1.00
xD Picture Card Specification Version 1.20
xD Picture Card Host Guideline Version 1.20

Vendor:	RICOH
Part Number:	R5C832
Package:	128pin TQFP

Keyboard Controller

Function features:

8042-style host interface
Support hardware speed-up of GateA20 and RC
Local 16x8 keyboard switch matrix support

Vendor:	ITE
Part Number:	ITE8510
Package:	TQFP176L

Audio CODEC

Function features:

Supports both AC'97 and HD audio interfaces
6 DAC channels for 5.1 surround
Variable sample rate: 7kHz ~ 96kHz
Greater than 90dB dynamic range
20-bit resolution on all DACs
20-bit resolution on all ADCs
External Amplifier Power Down (EAPD) capability
S/PDIF output, integrated headphone amplifiers
High quality differential CD input
Jack presence detection on up to8 jacks
Power management modes

Vendor: REALTEK
Part Number: ALC882
Package: LQFP-48

Audio Amplifier

Function features:

The TPA6017A2 is a stereo audio power amplifier in a 20-pin TSSOP thermally enhanced package capable of delivering 2 W of continuous RMS power per channel into 3-&loads. Internal gain control minimizes the number of external components needed, simplifying the design, and freeing up board space for other features. Amplifier gain is internally configured and controlled by way of two terminals (GAIN0 and GAIN1). Gain settings of 6 dB, 10 dB, 15.6 dB, and 21.6 dB (inverting) are provided

Vendor: GMT
Part Number: G1420
Package: 24-pin TSSOP

LAN Controller

Function features:

Integrated 10/100/1000 transceiver
Auto-Negotiation with Next page capability
Supports PCI 2.3™
Crossover Detection & Auto-Correction
Supports Full Duplex flow control(IEEE 802.3x)
Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE802.3ab
Wake-on-LAN and remote wake-up support
Supports IEEE 802.1P Layer2 Priority Encoding
Supports IEEE 802.1Q VLAN Tagging

Vendor: Realtek
Parts Number: RTL8110SBL
Package: LQFP128

Key Parts list

Priority		Vendor	Model Name	Part Number	Schedule		Comment
1	2				ES/CS	MP	
CPU							
1		Intel	Yonah 2.16 GHz (T2600)	01G011400001		Now	FSB 667MHz, 65nm, 2MB L2, Dual-Core
1		Intel	Yonah 2.00 GHz (T2500)	01G011400101		Now	FSB 667MHz, 65nm, 2MB L2, Dual-Core
1		Intel	Yonah 1.83 GHz (T2400)	01G011400201		Now	FSB 667MHz, 65nm, 2MB L2, Dual-Core
1		Intel	Yonah 1.66 GHz (T2300)	01G011400301		Now	FSB 667MHz, 65nm, 2MB L2, Dual-Core
1		Intel	Yonah 1.66 GHz (T1300)	01G011430000		Now	FSB 667MHz, 65nm, 2MB L2, Single-Core
15.4" WSXGA+ (1680 x 1050)							
1		CMO	N154Z1-L02 GLARE	18G241546071		Now	344.0 x 222.0 x 6.5max, 560g typ, Glare
15.4" WXGA (1280 x 800)							
1		AUO	B154EW01 V9	18G241546602		Now	344.0 x 222.0 x 6.5max, 580g typ, 180 nit, Glare
1		CPT	CLAA154WA05 v5	18G24154632A		Now	344.0 x 222.0 x 6.2max, 585g typ, 170 nit, Glare
DVD-SuperMulti							
1		TSST	TS-L632C	17G141115001		Now	Generic Bezel, CSEL+, DL8X/6X/5X/4X
DVD-Combo							
1		KME	UJDA770AU1-A	17G112151201		Now	Generic Bezel, CSEL+, F/W: 1.00
2.5" HDD							
1		Fujitsu	MHV2060BH	17G013A31112		Now	SATA, 60GB, 50G/platter, 5400 rpm, M60
1		Fujitsu	MHV2080BH	17G013A32111		Now	SATA, 80GB, 50G/platter, 5400 rpm, M60
1		Fujitsu	MHV2100BH	17G013A34110		Now	SATA, 100GB, 50G/platter, 5400 rpm, M60
1		HGST	HTS541060G9AT00	17G013131706		Now	PATA, 60GB, 40G/platter, 5400 rpm, Moraga Plus-B

1		HGST	HTS541080G9AT00	17G013132707		Now	PATA, 80GB, 40G/platter, 5400 rpm, Moraga Plus-B
1		HGST	HTS541010G9AT00	17G013134700		Now	PATA, 100GB, 50G/platter, 5400 rpm, Moraga Plus-B
CMOS Camera Module			—	—	—	—	—
1		D-Max	DM-M811	04G370011500	Now	Q1'06	1.3M Pixels, shared with F3
1		Sertek	BN2AF-OV9653-D	04G370007230	Now	Q1'06	1.3M Pixels, shared with F3
BlueTooth Module			—	—	—	—	—
1		ASUS	BT-183	61-I6I002-01		Now	CSR BC04-EXT, Class 2, BT 2.0, EDR, Non-Green
MDC Module			—	—	—	—	—
1		ASUS	AFM6010NAM	61-BMM012-01		Now	Motorola, Azalia MDC 1.5, Green , 90-BMM012-P1Z

TPM1.2 Module			—	—	—	—	—
1		ASUS	ASUS TPM1.2 Modole	60-ND6TM1000-A01P		Now	Infenion
WLAN							
1		Intel	PRO/Wireless 3945ABG (MoW 1)	04G033051000		Now	802.11 a/b/g, MiniCard, NA & TWN, 1~11
1		Intel	PRO/Wireless 3945ABG (MoW 2)	04G033052000		Now	802.11 a/b/g, MiniCard, EU, 1~13
1		Intel	PRO/Wireless 3945ABG (RoW)	04G033052010		Now	802.11 a/b/g, MiniCard, CHN, 1~13
1		Intel	PRO/Wireless 3945ABG (JP)	04G033052020		Now	802.11 a/b/g, MiniCard, JPN, 1~13
WLAN Antenna							
1		YAGEO	Z96 ANTENNA CABLE L	14G152095100		Now	For 802.11a/b/g, 802.11n
1		YAGEO	Z96 ANTENNA CABLE R	14G152095200		Now	For 802.11a/b/g, 802.11n
Touchpad							
1		Synaptics	TM61PDE8G307	04G110001710		Now	Normal Type, Share with A5/A6/A7, RoHS
Keyboard			**CBB**				
1		Sunrex	SUNREX/K020662U	04GNI51KUS00		Now	300mm x 108mm x 5.1mm
1		Sunrex	SUNREX/K020662V	04GNI51KUK00		Now	300mm x 108mm x 5.1mm
1		Sunrex	SUNREX/K020662W	04GNI51KJP00		Now	300mm x 108mm x 5.1mm
AC Adapter			**CBB**				
1		Delta	ADP-90SB BBAG	04G266006010		Now	90W (19V/4.74A), 3-Pin
Battery Pack			**CBB**				
1		Celxpert	BATT-LI SAMSUNG FULL-PACK	07G016A61865		Now	3.7V, 2400mAh, 3S2P, 6 cell, ICR18650-24E
1		Celxpert	BATT-LI SAMSUNG FULL-PACK	07G016B31865		Now	3.7V, 2400mAh, 3S3P, 9 cell, ICR18650-24E
256MB DDR2-533 SO-DIMM							
1		Nanya	NT256T64UH4A0FN-37B	04G00161465F		Now	32M*64, PC-4300
1		Unifosa	GU33256AGHYQ612L3PC	04G0016146F5		Now	32M*64, PC-4300
512MB DDR2-533 SO-DIMM							
1		Nanya	NT512T64UH8A1FN-37B	04G001616619		Now	64M*64, PC-4300
1		Unifosa	GU33512AGHYQ61	04G001616673		Now	64M*64, PC-4300
512MB DDR2-667 SO-DIMM							
1		Nanya	NT512T64UH8A1FN-3C	04G00161661B		Now	64M*64, PC2-5300
1		Unifosa	GU33512AJEPN612L4GE	04G001616674		Now	64M*64, PC2-5300
1GB DDR2-667 SO-DIMM							
1		Nanya	NT1GT64U8HA0BN-3C	04G001617634		Now	128M*64, PC2-5300
1		Unifosa	GU331G0AJEPN6E2L4GE	04G001617651		Now	128M*64, PC2-5300

Display

[Option: 15” WXGA TFT]

Technology:	Active color (TFT: Thin Film Transistor)
Size:	15.4”
Resolution:	WXGA (1280*800)
Dimension:	344.0*222.0*6.5mm
Pixel Pitch:	0.2588mm x 0.2588mm
Display Colors:	6-bit, 262K colors
Vendor:	AU / **B154EW01 V9**
	CPT / CLAA154WA05 v5

Hard Disk Drive

[Option:]

Form factor:	2.5 inch	
Capacity:	60 / 80 / 100 GB; 5400 rpm	
Height:	9.5 mm	
Interface:	SATA	
Functional features:	Power Management APM 1.1 and 1.2 (standby/suspend) LBA-modes	
Hardware features:	Standard I/O addresses: 1F0h to 1F7h and 3F6h Support of minimum IRQ 14 Support of at least 3 DMA channels, if DMA is supported Easily removable and exchangeable for user’s future upgradeability	
Vendor/model:	MHV2060BH	Fujitsu
	MHV2080BH	Fujitsu
	MHV2100BH	Fujitsu

Optical Device

Form factor:	5.25 Inch		
Speed:	24X or higher		
Height:	12.7 mm		
Interface:	IDE (ATAPI)		
Functional features:	Power Management APM 1.1 and 1.2 (standby/suspend)		
Hardware features:	Standard I/O addresses Support of minimum IRQ		
Vendor/Model:	COMBO	UJDA770AU1-A	KME
	DVD-SuperMulti	L632C	TSST

Touch Pad

Dimensions:	79.7 mm (W) x 47.7 mm (H)
Sensor effective areas:	76.9 mm (W) x 44.6 mm (H)
Interface:	PS/2
X/Y position resolution:	40 points/mm (graphics mode)
Track pad top material:	ABS material, Sweat and UV hardening resin
Customizing:	
Functional features:	Accurate positioning Low fatigue pointing action Low power consumption Environmentally scaled Software configurable

Vendor/Model	SYNAPTICS

Keyboard

Compatibility:	MS-Windows XP
Functional features:	Standard Notebook-Keyboard

Hardware feature:	Simultaneously use of internal and external keyboard Easily to assemble or disassemble
Dimensions:	(H) 300 mm x (V) 109.5 mm
Type:	Key switch Membrane
Operating travel:	2.25 ±0.30 mm
Full travel:	2.5 ±0.30 mm
Key top:	
Language versions:	ARB, BEL, BRA, CAF, TWN, CHN, CZH, DEN, DUH, FRN, GER, GRK, HEB, HUN, ITY, JPA, KOR, NOW, POT, RUS, SWD, SWG, SPN, SWF, TAI, TUR, USA, UKB, SI, FSI, UKR, ICE,
Vendor/ Model	SUNREX

Internal Speaker

Rating: 1.5W.

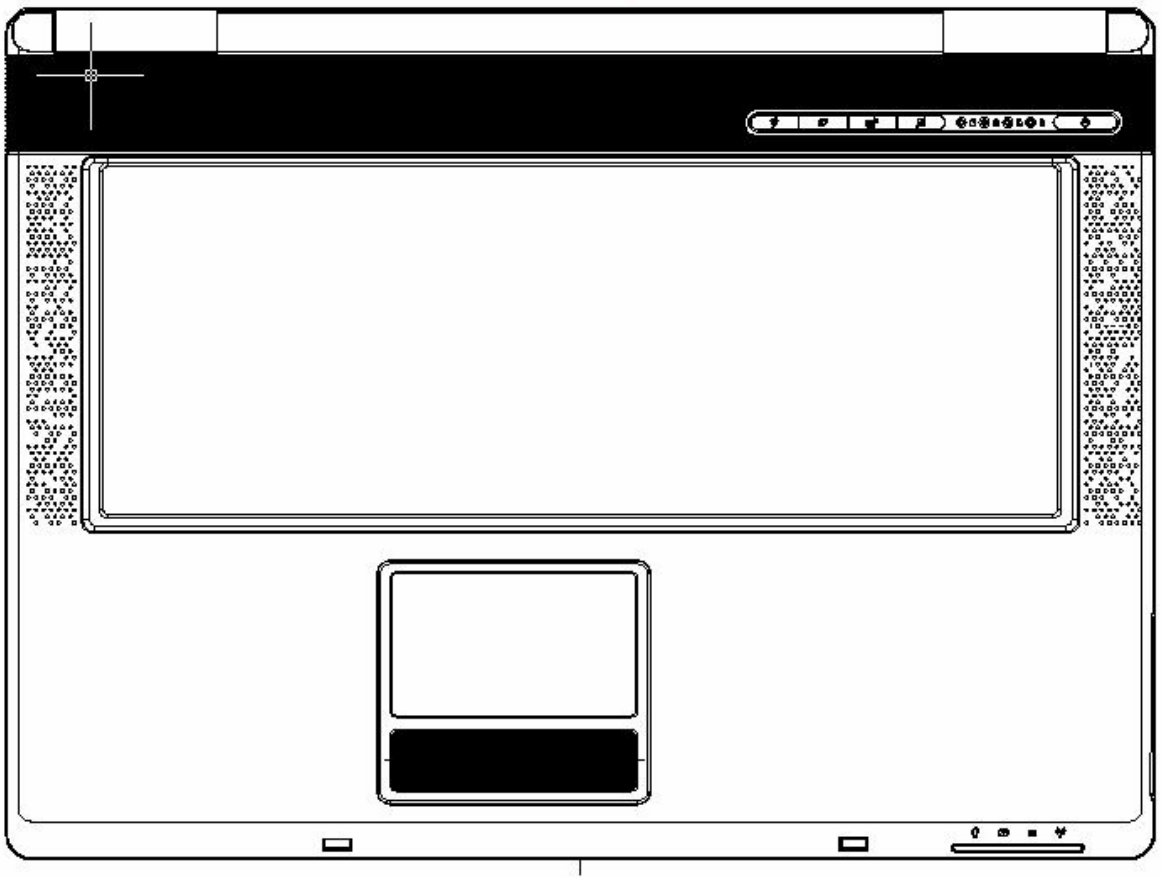
Power Components

1. Main Battery
2. RTC Backup Battery
3. AC/DC Adapter

Please refer to the chapter "Power".

System

System Top View



6.2.2 ISA DMA Map
6.2.3 PCI INT Map

DMA Channel	Device
DMA 0	None
DMA 1	None
DMA 2	None
DMA 3	Fast Infrared Port
DMA 4	DMA Controller

INT	Description
INTA	1394
INTB	Ricoh R5C832

INTC	LAN
INTD	None

6.2.4 PCI Bus Master Map

REQ	Description
REQ0	Ricoh R5C832
REQ1	None
REQ2	LAN
REQ3	None

6.2.5 IDSEL

IDSEL	CHIPSET
AD17	Ricoh R5C832
AD23	LAN

I/O Port Pin Assignment

No	FUNCTION	DESCRIPTION
	CRT	CRT Display (Analog)

1.		
2.	HDD	Primary IDE Channel
3.	ODD	Secondary IDE Channel
4.	LCD	LCD power & 2 LVDS Channels
5.	KEYBOARD	Internal KEYBOARD
6.	TOUCH PAD	Internal TouchPad
7.	BATTERY	System Battery
8.	DC IN	Adapter Input
9.	AUDIO JACK	Internal Speaker, Headphone, Mic-In.
10.	CPU FAN	Fan for CPU
11.	INVERTER	LCD Inverter & Internal MIC
12.	MINI PCI-E	Mini PCI-E socket
13.	MODEM	Azalia MDC daughter board
14.	Giga LAN JACK	Internet in - RJ45 JACK
15.	USB	Universal Serial Bus 1.1 & 2.0
	1394A	1394A Bus

16.		
17.	NEWCARD socket	NEWCARD Card

Hard disk connector pin assignment

No.	Signal	Description	Type
1	GND		
2	SATA_TXP0	SATA differential TX+	
3	SATA_TXN0	SATA differential TX-	
4	GND		
5	SATA_RXN0	SATA differential RX+	
6	SATA_RXP0	SATA differential RX-	
7	GND		
8	+3VS	+3v power supply	
9	+3VS	+3v power supply	
10	+3VS	+3v power supply	
11	GND		
12	GND		
13	GND		
14	+5VS	+5v power supply	
15	+5VS	+5v power supply	
16	+5VS	+5v power supply	
17	GND		
18	TP		
19	GND		
20			

ODD Connector Pin Assignment

No.	Signal	Description	Type
49,50	nc	nc	
48	gnd		
47	CD_CSEL	Cable select (device configuration)	O
43-46	gnd	gnd	

38-42	+5vs	+5VS power supply	PWR
37	IDE_PDASP#	Driver active/slave present	I/O
36	IDE_PDCS3#	Secondary disk chip select for 300 range	O
35	IDE_PDCS1#	Secondary disk chip select for 100 range	O
34	IDE_PDA2	Secondary disk address 2	O
33	IDE_PDA0	Secondary disk address 0	O
32	IDE_PDIAG	Test Point	I/O
31	IDE_PDA1	Secondary disk address 1	O
30	nc	nc	
29	IDE_IRQ14	Secondary disk interrupt	I
28	IDE_PDDACK#	Secondary DMA acknowledge	O
27	IDE_PIORDY	Secondary disk IO channel ready	I
26	gnd	gnd	O
25	IDE_PDIOW#	Secondary disk IO write	O
24	IDE_PDIOR#	Secondary disk IO read	O
23	gnd	gnd	I
22	IDE_PDDREQ	Secondary disk DMA request	I
21	IDE_PDA0	Secondary disk address 0	O
20	IDE_PDD15	Secondary disk data 15	I/O
17	IDE_PDD2	Secondary disk data 2	I/O
18	IDE_PDD14	Secondary disk data 14	I/O
15	IDE_PDD3	Secondary disk data 3	I/O
16	IDE_PDD13	Secondary disk data 13	I/O
13	IDE_PDD4	Secondary disk data 4	I/O
14	IDE_PDD12	Secondary disk data 12	I/O
11	IDE_PDD5	Secondary disk data 5	I/O
12	IDE_PDD11	Secondary disk data 11	I/O
9	IDE_PDD6	Secondary disk data 6	I/O
10	IDE_PDD10	Secondary disk data 10	I/O
7	IDE_PDD7	Secondary disk data 7	I/O
8	IDE_PDD9	Secondary disk data 9	I/O
5	IDERST#	IDE Reset primary disk	O
6	IDE_PDD8	Secondary disk data 8	I/O
4	GND	ground	
3	CD_GND_A	CD sound ground	

1	CD_L_A	CD sound left channel AMP	O
2	CD_R_A	CD sound right channel AMP	O

LCD Connector Pin Assignment

No.	Signal	Description	Type
1	LVDS_L0N	Panel data A0-	O
3	LVDS_L0P	Panel data A0+	O
5	GND	Ground	
2	LVDS_L1N	Panel data A1-	O
4	LVDS_L1P	Panel data A1+	O
6	GND	Ground	
7	LVDS_L2N	Panel data A2-	O
9	LVDS_L2P	Panel data A2+	O
11	GND	Ground	
8	LVDS_LCLKN	Panel clock A-	O
10	LVDS_LCLKP	Panel clock A+	O
12	GND	Ground	
13	LVDS_U0N	Panel data B0-	O
15	LVDS_U0P	Panel data B0+	O
17	GND	Ground	
14	LVDS_U1N	Panel data B1-	O
16	LVDS_U1P	Panel data B1+	O
18	GND	Ground	
19	LVDS_U2N	Panel data B2-	O
21	LVDS_U2P	Panel data B2+	O
23	+3VS		
20	LVDS_UCLKN	Panel clock B-	O
22	LVDS_UCLKP	Panel clock B+	O
24	GND		
25	GND		
26	EDID_CLK		
27	NC		
28	EDID_DAT		
29	+3VS_LCD	Power supply	
30	+3VS_LCD	Power supply	

Internal Keyboard Connector Pin Assignment

No	Signal	Description	Type
1	KSI1	Keyboard matrix column1	I
2	KSI7	Keyboard matrix column 7	I
3	KSI6	Keyboard matrix column 6	I
4	KSO9	Keyboard matrix row 9	O
5	KSI4	Keyboard matrix column 4	I
6	KSI5	Keyboard matrix column 5	I
7	KSO0	Keyboard matrix row 0	O
8	KSI2	Keyboard matrix column 2	I
9	KSI3	Keyboard matrix column 3	I
10	KSO5	Keyboard matrix row 5	O
11	KSO1	Keyboard matrix row 1	O
12	KSI0	Keyboard matrix column 0	I
13	KSO2	Keyboard matrix row 2	O
14	KSO4	Keyboard matrix row 4	O
15	KSO7	Keyboard matrix row 7	O
16	KSO8	Keyboard matrix row 8	O
17	KSO6	Keyboard matrix row 6	O
18	KSO3	Keyboard matrix row 3	O
19	KSO12	Keyboard matrix row 12	O
20	KSO13	Keyboard matrix row 13	O
21	KSO14	Keyboard matrix row 14	O
22	KSO11	Keyboard matrix row 11	O
23	KSO10	Keyboard matrix row 10	O
24	KSO15	Keyboard matrix row 15	O

Internal Touchpad

No	Signal	Description	Type
1	+5VS_TP	Power	Power
2	+5VS_TP	Power	Power
3	INTDATA_5S	KBC control signal	
4	INTDATA_5S	KBC control signal	
5	INTCLK_5S	KBC control signal	Power
6	INTCLK_5S	KBC control signal	Power
7	GND	Ground	

8	GND	Ground	
9	LEFT		
10	RIGHT		

Main Battery Connector Pin Assignment

No	Signal	Description	Type
1	GND	Ground	
2	GND	Ground	
3	TS1#	Main Battery present detection	I
4	SMB0_DAT	KBC control	I/O
5	SMB0_CLK	KBC control	I/O
6	GND		
7	GND		
8	BAT	Battery power	Power
9	BAT	Battery power	Power

DC-in Jack Pin Assignment

No	Signal	Description	Type
1	A/D_DOCK_IN	POWER	
2	GND	Ground	
3	NC	Ground	
4	GND	Ground	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	

Audio Jack

Internal Speaker Connector

No	Signal	Description	Type
1	SPKL-	Internal speaker left sound negative	O
2	SPKL+	Internal speaker left sound positive	O
3	SPKR-+	Internal speaker right sound negative	O
4	SPKR+	Internal speaker right sound positive	O

Headphone

No	Signal	Description	Type
1	GND	GND	
2	EARL	Headphone left sound	O
3	EARR	Headphone right sound	O
4	JACK_IN#	Headphone in signal	
5	GND	GND	
6	NC		
7	GND	GND	
8	GND	GND	

Microphone Jack

No	Signal	Description	Type
1	GND_AUDJACK	Ground	
2	MIC_L	External microphone signal	I
3	MIC_R	External microphone signal	
4	INTMIC_MUTE	INTERNAL MIC MUTE	
5	GND_AUDJACK	Ground	
6	GND_AUDJACK	Ground	
7	GND_AUDJACK	Ground	
8	GND_AUDJACK	Ground	

CPU Fan Connector Pin Assignment

No	Signal	Description	Type
1	FAN0_TACH	FAN Speed Detect	
2	GND		
3	FAN_PWM	FAN_PWM	
4	+5VS	POWER	

Inverter Connector Pin Assignment

No	Signal	Description	Type
1	GND		
2	GND		
3	+3VA_CON		

4	GND	Ground	
5	BL_EN_CON	Backlight enable	
6	BL_DA_CON	Adjust backlight	
7	LID_EC#_CON		
8	GND		
9	+VIN_INV	AC DOCK IN Voltage	
10	+VIN_INV	AC DOCK IN Voltage	

Mini-PCI Express Connector Pin Assignment

Pin No.	Signal	Pin No.	Signal
1	WLAN_WAKE#	2	+3VS
3	CH_DATA	4	GND
5	CH_CLK	6	+1.5VS
7	CLK_MINICARD#	8	NC
9	NC	10	NC
11	CLK_PCIE_MINICARD#	12	NC
13	CLK_PCIE_MINICARD	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WLAN_ON
21	GND	22	BUF_PLT_RST#
23	PCIE_RXN2_MINICARD	24	+3V
25	PCIE_RXP2_MINICARD	26	GND
27	GND	28	+1.5VS
29	GND	30	Reserved
31	PCIE_TXN2_MINICARD	32	Reserved
33	PCIE_TXP2_MINICARD	34	GND
35	GND	36	Reserved
37	NC	38	Reserved
39	NC	40	+3VS
41	NC	42	NC
43	NC	44	MPCI_WLAN_LED#
45	NC	46	NC
47	NC	48	+1.5VS
49	NC	50	GND
51	NC	52	+3VS

53	GND	54	NC
55	GND	56	NC

Azalia MDC Connector Pin Assignment

Pin No.	Signal	Pin No.	Signal
1	GND	2	NC
3	ACZ_SDOUT_MDC	4	NC
5	GND	6	+3V
7	ACZ_SYNC_MDC	8	GND
9	ACZ_SDIN1	10	GND
11	ACZ_RST#_MDC	12	ACZ_BCLK_MDC
13	GND	14	GND
15	GND	16	GND
17	GND	18	GND

GIGA LAN / Modem – RJ11 / RJ45 Jack Pin Assignment

No	Signal	Description	Type
10	TIP	Modem TIP	I/O
11	RING	Modem Ring	I/O
1	LTXP	LAN Media Dependent Interface Positive [0]	I/O
2	LTXN	LAN Media Dependent Interface Negative [0]	I/O
3	LRXP	LAN Media Dependent Interface Positive [1]	I/O
4	LTRLP2	LAN Media Dependent Interface Positive [2]	I/O
5	LTRLM2	LAN Media Dependent Interface Negative [2]	I/O
6	LRXN	LAN Media Dependent Interface Negative [1]	I/O
7	LTRLP3	LAN Media Dependent Interface Positive [3]	I/O
8	LTRLM3	LAN Media Dependent Interface Negative [3]	I/O

USB Connector

USB Connector 2 (2 Ports)

No	Signal	Description	Type
1	+5V_USB12	USB +5V power	PWR
2	USB_P3-	USB differential signal pair -	I/O

3	USB_P3+	USB differential signal pair +	I/O
4	GND	Ground	
5	+5V_USB12	USB +5V power	PWR
6	USB_P2-	USB differential signal pair -	I/O
7	USB_P2+	USB differential signal pair +	I/O
8	GND	Ground	

1394A Connector

No	Signal	Description	Type
1	LTPB0-	1394a differential signal B pair -	I/O
2	LTPB0+	1394a differential signal B pair +	I/O
3	LTPA0-	1394a differential signal A pair -	I/O
4	LTPA0+	1394a differential signal A pair +	I/O
5	GND	Ground	
6	GND	Ground	

Power Management

System Power Plane

Power Group	Power Control Pin	Controlled Devices
AC_IN		AC Dock Input (19V)
+12VS	SUSB#	Control signal of +5VS_TPD
+0.9VS	SUSB#	DDR2 SODIMM
+1.8VS	SUSB#	SATA Bridge
+1.5VS	SUSB#	CPU VCCA, 945PM, ICH7M, MINICARD, NEWCARD
+2.5VS	SUSB#	945PM, ATI M56-P
+3V	SUSC#	TPM, Keyboard Controller, Azalia MDC, Bluetooth, MINICARD, NEWCARD

+3VS	SUSB#	Thermal Sensor, 915PM, System Clock Generator, DDR2 SODIMM SPD, LCD, TPM, ICH7-M, SATA Bridge, Audio Codec, MINICARD Socket, 1394/Media Card Controller, Media Card, NEWCARD Power Switch
+5V	SUSC#	USB, Audio Power Switch
+5VS	SUSB#	ICH7-M, HDD, Audio AMP, LED, FAN
+3VA	(AC IN)	TPM
+3VSUS	(AC IN & PWR BTN)	ICH7-M, LAN Controller, NEWCARD Power Switch
+5VA	(AC IN)	Thermal protection Ckt
+5VLCM	(AC/BAT IN)	Charge LED, PWR Limit CKT, Micro-P (PIC16F57)

Power Management Mode

Full-On mode

1. Performance state >> All system devices are not power managed and the system can respond to applications with maximum performance. The CPU internal clock is in higher frequency.
2. Battery state >> All system devices are not power managed and the system can respond to applications. The CPU internal clock is in lower frequency.

Sleeping mode

The CPU operation is stopped but all other devices are full on. An event, such as Interrupt, AnyKey, HotKey, PowerBTN or RTC (AC IN), can bring the system out of the doze mode.

Stand by mode

A suspend state where all motherboard components are still powered-on except for the system clock generator device. The PCI and CPU buses are driven to the inactive idle state. The system memory is powered and refreshed by the memory bridge or itself. An event, such as Interrupt, AnyKey, HotKey, PowerBTN or RTC (AC IN), can bring the system out of the stand by state. The south bridge also provides a resume timer that allows the system to resume after a programmed time has elapsed.

Suspend-to-RAM mode (STR)

A suspend state where most motherboard components are powered-off. The CPU and PCI busses are powered off. All devices connected to the CPU and PCI busses must either be powered-off or isolate their bus interfaces. The system memory is powered and refreshed by the memory bridge or itself. Only an enabled “resume event”, such as AnyKey, HotKey, PowerBTN

or RTC (AC IN), can bring the platform out of the suspend to RAM (STR) state.

Suspend-to-disk mode (STD)

A suspend state where the context of the entire system is saved to disk, all motherboard components are powered-off, and all clocks are stopped. Any enabled “resume event”, such as PowerBTN or RTC (AC IN), can bring the platform out of the suspend-to-disk (STD) state.

Soft-off mode (SOFF)

This is the same as suspend to disk except the context of memory is not saved. The system will resume from Soft Off as if a hard reset had occurred.

PMU Mode Transition Event:

The following table summarizes the entry events and wake-up events of each power management mode.

Power State	Entry Event	Wake up Event
Sleeping	Sleeping Time out	Predefined Mem/IO range access Ring Indicator Keystroke Mouse movement IRQ1-15
Stand by	Stand by Time out Stand by hot key pressed	Predefined Mem/IO range access Battery Warning Battery Low Ring Indicator Keystroke (Int.,Ex. and USB keyboard) Mouse movement Schedule Alarm
STR	Suspend Time out STR hot key pressed Suspend button Battery Low	Power Button Ring Indicator Keystroke (Int. keyboard) Schedule Alarm LAN wake up
STD	Suspend Time out STD hot key pressed Hibernate Battery Low	Power Button Schedule Alarm (AC mode)

Soft Off	Power Button Execute Windows shutdown command	Power Button Schedule Alarm (AC mode)

Lid Switch

Display Mode	State	Lid Close	Lid Open
LCD	Full on	LCD OFF	LCD ON
	Stand by	LCD OFF	No action
	STD	LCD OFF	No action
CRT	Full on	No action	CRT ON
	Stand by	No action	No action
	STD	No action	No action
SIMUL	Full on	CRT	No action
	Stand by	No action	No action
	STD	No action	No action

* LCD display will be shut down while closing LCD.

Power Button:

Power button can power on/off the system or wake up the system in S3/S4 power state. User cannot power on/off the computer system by the power button when the Audio-DJ function is in power-on state. Support ACPI power button mechanism.

Device Power Management:

Power states of local devices table

Power State / Component	Doze	Standby	STR	STD/SOff
CPU	Quick Start	Stop Clock	Power Off	Power Off
NB	ON	Stop Clock	Power Off (except VDDM)	Power Off
SB	ON	ON	Power Off (except USBVCC, AUX VCC, RTCVCC)	Power Off (except AUX VCC (AC-IN), RTCVCC)
DDR SDRAM	ON	Self Refresh	Self Refresh	Power Off

CD-ROM (DVD)	ON	Power Down	Power Off	Power Off
HDD	ON	Power Down	Power Off	Power Off
KBC	ON	ON	Power Down	Power Off
VGA	ON	Power Down	Power Down	Power Off
PCMCIA	ON	Power Down	Power Down	Power Off
Audio CODEC	ON	ON	Power Off	Power Off
Audio Amplifier	ON	Power Down	Power Off	Power Off
LCD Backlight	ON	Power Off	Power Off	Power Off
LAN	ON	Power Down	Power Down	Power Off (except AC-IN)
Modem	ON	Power Down	Power Down	Power Off
USB	ON	Power Down	Power Down	Power Off
1394A	ON	Power Down	Power Down	Power Off

ON: Normal Operation.
Self Refresh: Stop I/O Operation but Retain data inside.
Power Down: Stop Operation but Power exists.
Power Off: No Operation and No Power.

Device PM Control During Standby Mode

Device	Power Controlled by	Description
CPU	Register/Signal	Controlled by STPCLK#
VGA Chip	Register/Signal	Controlled by SUS_STAT#
1394/Media Card Controller	Register	Enter PCI PM D3Hot state
Keyboard Controller	Working	ITE8510 support power down command
HDD	Register	HDD support power down command
CD-ROM	Register	CD-ROM support power down command
Internal Modem	Register	Enter PCI PM D3Hot state
LAN	Register	Enter PCI PM D3Hot state
LCD Panel Back-light	Register/Signal	Controlled by VGA controller
Clock Synthesizer	Register/Signal	Controlled by VID_PWRGD

Device PM Control During STR Mode

Device	Power Down Controlled by	Description
VGA Controller	Register/Signal	Power Off
HDD	Register/Signal	Power Off
ODD	Register/Signal	Power Off
Internal Modem	Register	Power Down
LAN	Register	Power Down
USB FDD	Register/Signal	Power Down
Audio CODEC	Register	Power Off
Audio AMP	Register/Signal	Power Off
LCD Panel	Register/Signal	Power Off
LCD Back-light	Register/Signal	Power Off
Clock Synthesizer	Register/Signal	Power Off

Keyboard Controller	Register	Controlled by IT8510 power down command

Device PM Control During STD Mode

Device	Power Down Controlled by	Description
Core Logic	Register/Signal	Power off (except Resume Well when AC IN)
VGA Chip	Register/Signal	Power off
HDD	Register/Signal	Power off
ODD	Register/Signal	Power off
1394/Media Card Controller	Register/Signal	Power off
Internal Modem	Register/Signal	Power off
LAN	Register/Signal	Power off (except AC IN)
Audio Chip	Register/Signal	Power off
Audio AMP	Register/Signal	Power off
LCD Panel	Register/Signal	Power off
Back-light	Register/Signal	Power off
Clock Synthesizer	Register/Signal	Power off
Keyboard Controller	Register/Signal	Power off

Controller	Input Voltage	Output Voltage	Current	Regulation
ISL6262CRZ	8-20V	+Vcore	35A	+-1.5%
TPS51020	8-20V	+3VO +5VO +5VAO	7.5A 6A 70mA	+-5% +-5% +-5%
ISL6227CAZ_T	8-20V	+1.5VO +1.05VO (for CPU I/O ,ATI core ,NB/SB)	7A 18A	+-5% +-5%

NCP5214MNR2G	8-20V	+1.8VO +0.9VO	9.5A 1A	+-5% +-3.2%
CM8562GISTR	3V	+2.5VO	2A	+-5%
AP60T03GH	8-20V	+3VAO	100mA	+-5%
L78L05ACD13TR	8-20V	+12VSUS	100mA	+-5%

Description

IRQ 0

System Timer **Inverter Board**

IRQ 1 Input voltage: 9~20V

Keyboard Output current: 6.5mA(max)

IRQ 2 Efficiency: 80%(min)

[Cascade] Brightness adjusted by input control duty cycle (By DC level).

IRQ 3 Frequency: 55~65KHz

Fast Infrared Port Output connector for CCFT:

Start voltage: 1500Vrms(min)

Support output short circuit and open LAMP protection

IRQ 4 2-2 CN2 --- SM02B-BHSS-1

NO	Description	
1	GND	CCFL negative
2	CCFL	CCFL positive

Available

Power

DC/DC module spec

Inverter spec

Adapter spec

Input

Input voltage: 100~240VAC, Full range
Input frequency: 50-60Hz
Input current: 1.5A max (100-240VAC at full load)
Inrush current: No damage
Efficiency: 85%min (100-240VAC @ full load)

Output

90W power output
Output Voltage/Current: 18.2~19.8V/4.74A
Ripple: 300mVp-p

Protection

OVP: 30V max
SCP: Yes
OCP: 6A(max)

Battery

Battery pack capacity:

	Vendor	Cells	Voltage	Capacity	Watts
Li-Ion	Celxpert	6	11.1V	4800mAh	53WH
Li-Ion	Celxpert	9	11.1V	7200mAh	79.9W

Battery warning and low percentage (Li-Ion):
Battery Low = 10%
Battery LLow = 0%

Gauge controller (BQ2060H) setting:
Charging voltage: 16.8V(4S)
Charging voltage: 12.6V(3S)
Charging efficiency: 90%
Low temperature capacity: 70%

Charger current:

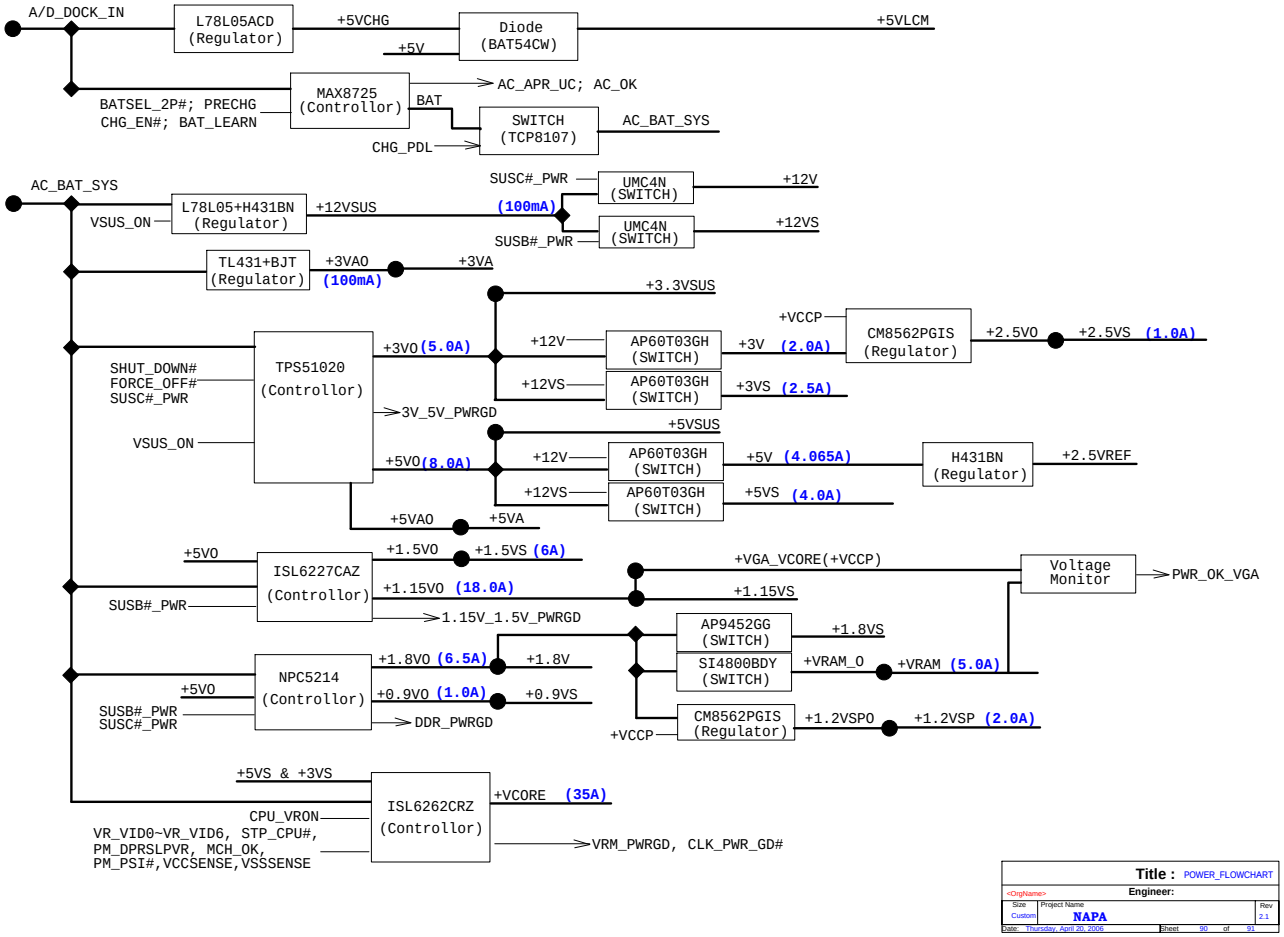
Input: Adapter			
Contain	Min	Typ.	Max
Charge current (system off)	TBD (3S2P)	2.89A (3S2P)	TBD (3S2P)
	TBD (3S3P)	2.89A (3S3P)	TBD (3S3P)

Charge current (system on)	TBD (3S2P)	2.89A (3S2P)	TBD (3S2P)
	TBD (3S3P)	2.89A (3S3P)	TBD (3S3P)
Ripple & Noise	500mV		
Efficiency	90%		

RTC Backup Battery

Purpose: Backup the RTC/CMOS data
While AC adapter off & Main Battery removed
Chemistry: Coin cell Li-ion battery
Voltage: Nominal 3V
Capacity: 200mAH
Vendor: PANASONIC (CR2032)

Power System Diagram



Safety and EMI

Power cord list: (TBD)

Where	Description	Vendor
KOR	AC POWER CORD KOR/3C,BLACK,6FT	I-SHENG
SWISS	AC POWER CORD SWISS/3C,BLACK	LONGWELL
T-mark	AC POWER CORD T-MARK/2C BLACK	LONGWELL
SAA	AC POWER CORD SAA/3C BLACK	LONGWELL
UK	AC POWER CORD UK/3C BLACK	ISHEN
UL	AC POWER CORD UL/CSA/3C,FLAT	LONGWELL
CEE	AC POWER CORD MAXDATA/3C,BLACK	LONGWELL

CCEE	AC POWER CORD CCEE/3C	I-SHENG
BSMI	AC POWER CORD BSMI/3C	LONGWELL

Safety/EMI Appliance: (TBD)

Agency Approval	**EMC**	CE Mark (Europe)
	EMI	FCC(USA),VCC(JAPAN),C-TICK(AUSTRLIA), MIC(KOREA),BSMI(TAIWAN),CCC(CHINA)
	Safety	
	Telecomm.	JATE (Japan), AUSTEL (Australia), TELEPERWIT (New Zealand), CTR-21 (EU)
Other Requirements	**Industry Standards Compliance**	