

Chapter

5

Hardware Specifications

You can enjoy and utilize the Eee PC 4G (701) 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:

- MARKETING SPECIFICATION
- CHIPSET LIST
- KEY PARTS LIST
- SYSTEM
- I/O PORT PIN ASSIGNMENT
- POWER MANAGEMENT
- MODULE SPECIFICATION

LIST OF FIGURES

1 MARKETING SPEC

Eee PC 4G (701) Specification			(One-Spindle Design)
Product Family	EEE PC 4G (701)		
CPU Type	Intel Celeron-M-ULV		Dothan
Speed	900MHz(normal run 630MHz)		
Package	FCBGA 479		Onboard
L2 Cache	Yes		
Size	512 KB		On-die cache memory
Memory Type	DDR II SDRAM without ECC		
Base Memory	None		
Expansion Memory	256/512MB/1GB		SO-DIMM x 1 Slot
MAX	2GB		
LCD Size	7"		
Resolution	WVGA		
Panel Type	TFT		
Interface	LVDS		
Contrast Control	None		
Brightness Control	Hot-key		
HDD type	Onboard / Flash Module		Flash Module option
Ultra DMA 66	Yes		
Size	Onboard 4G / Flash Module 16G		
Chip Set	Intel Sonoma Platform		
North Bridge	Intel 910GML/910GMLE		
South Bridge	Intel ICH6-M		
Super IO	N/A		
Thermal Sensor	G781P8F		
Micro-Processor	ENE KB3310		
KBC	ENE KB3310		

	Flash ROM (SPI)	SST/Winbond/MXIC	4Mbits
Graphic Accelerator		Intel 910GML internal GPU	
	3D	Yes	
	Controller	Intel Internal graphic	
	AGP Support	No	
	Dual view/Dual App	Yes	
	Graphic Memory	Share Memory	
TV Out Support		No	
Sound System			
	Controller	Realtek ALC662	
	SW wave table	Yes	
	FM synthesizer	Yes	
	Speaker	Stereo	
	I/F	Azalia	
	PC99	Yes	
	S/PDIF	None	
	6 channel output	Yes	
	Audio Amplifier	TPA6017A2PWP	
	Microphone	Mono	
Modem		CONEXANT	
	Controller	CONEXANT	
	Spec	56K	
	I/F	Azalia MDC	
	Jack	RJ-11	RJ-11 port
	ACPI	Yes	
	V.90	Yes	
	Voice Phone	No	
	Digital Line Protection	Yes	
	Wake On Ring	Yes	
LAN		Yes	
	Jack	RJ-45	RJ-45 port
	Wake On LAN	YES	

	Controller	Atheros L2	
Internal Keyboard			
	Key	80 Keys (W/ MS-Windows function keys)	
	Function Key	12 Function Keys	
Hot Key Function		13 Hot Keys	
	Suspend (STR or STD)	Fn + F1	
	Wi-Fi enable	Fn + F2	802.11b+g
	Application manager	Fn + F6	
	Brightness Up	Fn + F4	
	Brightness Down	Fn + F3	
	LCD/CRT	Fn + F5	
	PC Speaker Volume	Fn + F7	On/Mute
	PC Speaker Volume	Fn + F9	Volume increase
	PC Speaker Volume	Fn + F8	Volume decrease
	Number Lock	Fn + F11	
	Scroll Lock	Fn + F12	
	Print screen	Fn + Ins	
	Sys Rq	Fn + Del	
Instant Keys		None	
Status Indication		4 LEDs	
	Power Status	Yes (Yellow on LED when Power on. Blinking when in SUSPEND mode. OFF when power off.)	
	Battery Charge Status	Yes (Orange when charging. Blinking when battery low. OFF when fully charged/empty.)	
	HDD LED	Yes (Yellow while accessing)	
	Number Lock LED	None	
	Caps Lock LED	None	
	Scroll Lock LED	None	
	W-LAN LED	Blue	
Pointing Device		Glide Pad	Synaptics

	Glide Pad	Yes	
	Right Button	Yes	
	Left Button	Yes	
	Scroll	Yes	
Function Control			
	Power On Button	Yes	
	LCD Brightness	Yes	Hot Keys
	LCD Lid Switch	Yes	
	Sound Volume	Yes	Hot Keys
	Password Override	Yes (Master Password)	
	Reset/Force Off	Yes (Reset switch)	
I/O Port		All ports support hot-plug	
	Parallel	N/A	
	CRT	Yes	15-pin D-Sub
	Mouse/Keyboard	N/A	
	IrDA Port	N/A	
	Fax/Modem	Yes	RJ11
	LAN Jack	Yes	RJ45
	Line In Jack	N/A	
	Mic In Jack	Yes	
	Head Phone Jack	Yes	Stereo out
	USB port	Yes	3 Ports
	DC-In	Yes	22W
Heat Solution			
	Heat Pipe	N/A	
	Heat Sink	N/A	
	FAN Support	Yes	
AC Adaptor		Delta	
	Input	AC 100-240Volt, 50~60Hz	
	Output	DC 9.5V, 2.315A, 22W	
1 st	Battery	4 Cells	7.4V 5200mAh
	Type	Li-ION(5200mAH)	

	1st Battery	新力盛	
Charging time			Li-ION (5200mAH)
	Machine ON	TBD.	
	Machine OFF	TBD.	
Battery Life		TBD.	
	PM Off	TBD.	
	PM On	TBD.	
Power Management		AMI BIOS	
	LCD Close/Open	Yes	
	LCD Back-light	Yes	
	Suspend/Resume	Yes	
	Hibernation (S2D)	Yes	
	Thermal Control	Yes	
	ACPI	Yes	
	DMI 2.0	Yes	Support DMI BIOS 2.1
Security			
	Password	Yes	Password overridden by Master password
	Security Lock	N/A	
S/W			
	Install OS	Linux	
	Flash BIOS	Yes	
Drivers			
	Chipset Driver	Yes	
	VGA Driver	Yes	
	AUDIO Driver	Yes	
	LAN Driver	Yes	
	Glide Pad Driver	Yes	
	Modem Driver	Yes	
	WLAN Driver	Yes	

2 CHIPSET LIST

Chipset Summary Table

Function	EEE PC 4G (701)	HW ACPI/PC99
CPU	Intel Dothan	Not required
SRAM (L2 Cache)	512KB	Not required
North Bridge	Intel 910GML/910GMLE	YES
South Bridge	Intel ICH6-M	YES
MEMORY	DDR II SDRAM	Not required
BIOS ROM	SST/Winbond/MXIC 4Mb	Not required
VGA	Intel internal graphic	YES
SUPER I/O	N/A	
PCMCIA	N/A	
AUDIO	Azalia CODEC	YES
AUDIO AMPLIFIER	TPA6017A2PWP	Not required
KB CONTROLLER	ENE KB3310	YES
IrDA	N/A	
CLOCK Generator	CS9LPR426	YES
MODEM	CONEXANT	YES
Bluetooth	N/A	
1394	N/A	
LAN	Atheros L2	YES

2.1 CPU

Processor Type:	Intel Dothan Processor Intel Celeron-M ULV 353
Processor frequency:	900MHz (normal run 630MHz)
Construction method:	FCBGA479
Supply voltage:	Core:0.85V(High_Frequency_Mode)~0.75V(lowest_Frequency_Mode)
Function feature:	On-die , primary 32-KB instruction cache and 32-KB write-back data cache. On-die , 512KB second level cache with Advanced Transfer Cache Architecture. Data Prefetch. Streaming SIMD extensions 2(SSE2). 400 MHZ FSB support

2.2 CHIPSET

2.2.1 North Bridge

Function:	Full support 32bits AGTL+ host bus addressing Supports DDR2-400 device Integrates the graphic controller Support Intel Rapid Memory power management Enhanced Intel SpeedStep technology DMI x2/x4 Interface connect to ICH
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Vendor:	Intel
Parts Number:	910GML/910GMLE
Package:	1257-ball micro-FCBGA

2.2.2 South Bridge

Function:	<p>DMI x2/x4 interface link with GMCH</p> <p>Integrated PC/AT compatible system (DMA Controller, INT, Timer/Counters)</p> <p>Integrated one channels IDE controller with Ultra DMA/33/66/100 support</p> <p>Integrated USB 1.1 and 2.0 Host Bus controller with 8 USB ports</p> <p>Integrated HD Audio Interface</p> <p>Build-in RTC</p> <p>LPC Interface</p>
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Vendor:	Intel
Parts Number:	ICH6-M
Package:	609-ball BGA

2.3 DRAM MEMORY

2.3.1 ON-BOARD MEMORY

None

2.3.2 EXPANSION MEMORY

Number of sockets:	One 200 pin SO-DIMM slot
Bus:	64-bit data path
Supply voltage:	1.8V
Functional features:	Supports up to 16 simultaneous open pages
Hardware features:	Supports DDR2 400 DDR devices Maximum of 2GB of system memory

Parity support:	without ECC
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2.4 BIOS ROM

ROM Type:	SST/Winbond/MXIC Flash Memory
Package:	8-lead S0IC
Supply voltage:	3.3V
Serviceability:	End user upgradeable for the firmware

2.5 INTERNAL VGA CONTROLLER

Function features:	3D Setup and Render Engine Integrated 24 bit RAMDAC that can drive a standard progressive scan analog monitor up to 2048 X 1536 CRT resolution at a maximum refresh rate of 75 Hz Single or dual channel LVDS panel support up to 112MHZ TV out resolution up to 1024x768
Vendor:	Intel
Chipset	910GML/910GMLE

2.6 KEYBOARD CONTROLLER

Function features:	Embedded controller-style host Support hardware speed-up of GateA20 and RC Local 18x8 keyboard switch matrix support Three industry standard serial keyboard interfaces All three ports are bi-directional
Vendor:	ENE
Parts Number:	KB3310
Package:	128-pin LQFP

2.7 AUDIO CODEC

Vendor:	Realtek
Parts Number:	ALC662
Package:	48-pin LQFP

2.8 AUDIO AMPLIFIER

Function features:	Max 1.5w Stereo Audio Amplifier with 8 ohm load Depop Circuitry Fully Differential Input
Vendor:	TI
Parts Number:	TPA6017A2
Package:	20pin TSSOP

2.9 LAN & MODEM

2.9.1 LAN

Function features:	Scatter and gather transmit receive DMA Interrupt coalescing 10Mb/s, 100Mb/s, operation Compliant to ACPI 2.0 specification Compliant to IEEE 802.3u Auto-Negotiation Support Wake-on-LAN function and remote wake up (Magic Internal transmit and receive FIFO(2KB*2)
Vendor:	Atheros
Parts Number:	L2
Package:	64-Pin LQFP

2.9.2 MODEM

Function features:	V.90 and K56 flex support Integrated PnP functionality PC99 compliant Support both APM and ACPI power management Support Wake-on-ring functionality
Vendor:	Askey
Parts Number:	1456VQL-R3(INT-RoHS)
Package:	Azalia MDC

3 KEY PARTS LIST

Key Parts Summary:

3.1 Display

WVGA	Technology:	Active color (TFT: Thin Film Transistor)
	Size:	7"W
	Resolution:	WVGA (800 X 480)
	Dimension:	164mm(H) * 103mm(V) * 5.1mm(T)
	Pixel Pitch:	0.1905mm * 0.1905mm
	Display Colors:	16M Colors
	Vendor:	AUO

VGA+	Technology:	N/A
	Size:	
	Resolution:	
	Dimension:	
	Pixel Pitch:	
	Display Colors:	
	Vendor:	

3.2 Touch Pad

Dimensions:	47.8(W) x31.9(H) x 0.85(T) (Unit: mm)
Sensor Effective Areas:	35.5 (W) x 28.9 (H) (Unit: mm)
Interface:	PS/2
X/Y Position Resolution:	40 points / mm (graphics mode)
Customizing:	Custom color can be printed on the sensor pad
Functional features:	Accurate positioning
	Low fatigue pointing action
	Low power consumption
	Software configurable
	Scanner function for signature
	Low profile, compact size and low weight

Vendor/Model

Synaptics : SYNAPTICS/TM-01058-002

3.3 Keyboard

Function Feature:	Standard Notebook-Keybaord
Hardware Feature:	Simultaneously use of internal and external keyboard Easily to assemble or disassemble
Compatibility:	MS-Windows 2000/ XP
Dimensions:	211.70 (H) x 80.70 (V) (Unit: mm)
Type:	Key switch membrane
Total Travel:	1.5 +/- 0.2 (Unit: mm)
Key Top:	According to Attach Drawing
Language Versions:	English, Japanese, Chinese, Korean and European etc.

3.4 Battery

3.4.1 Main Battery

Purpose:	Main power supply battery
Gas-gauge:	SMBus interface
Chemistry:	Li-ion rechargeable battery
Voltage:	Nominal 7.4V
Capacity:	Typical 1300 mAH (Single-cell)
Power:	65.12 W-Hrs
Vendor:	新力盛
Duration:	About 3 hours (Depend on system configuration)
Charge Method:	Fast Charge: 2.5 hours (while System off) –85% up
Charging Source:	AC adapter
Gas-gauge:	

3.4.2 RTC Backup Battery

Purpose:	Backup the RTC/CMOS data While AC adapter off & Main Battery removed
Chemistry:	Coin cell 2032 Li-ion battery
Voltage:	Nominal 3V
Capacity:	200mAH
Vendor:	KTS

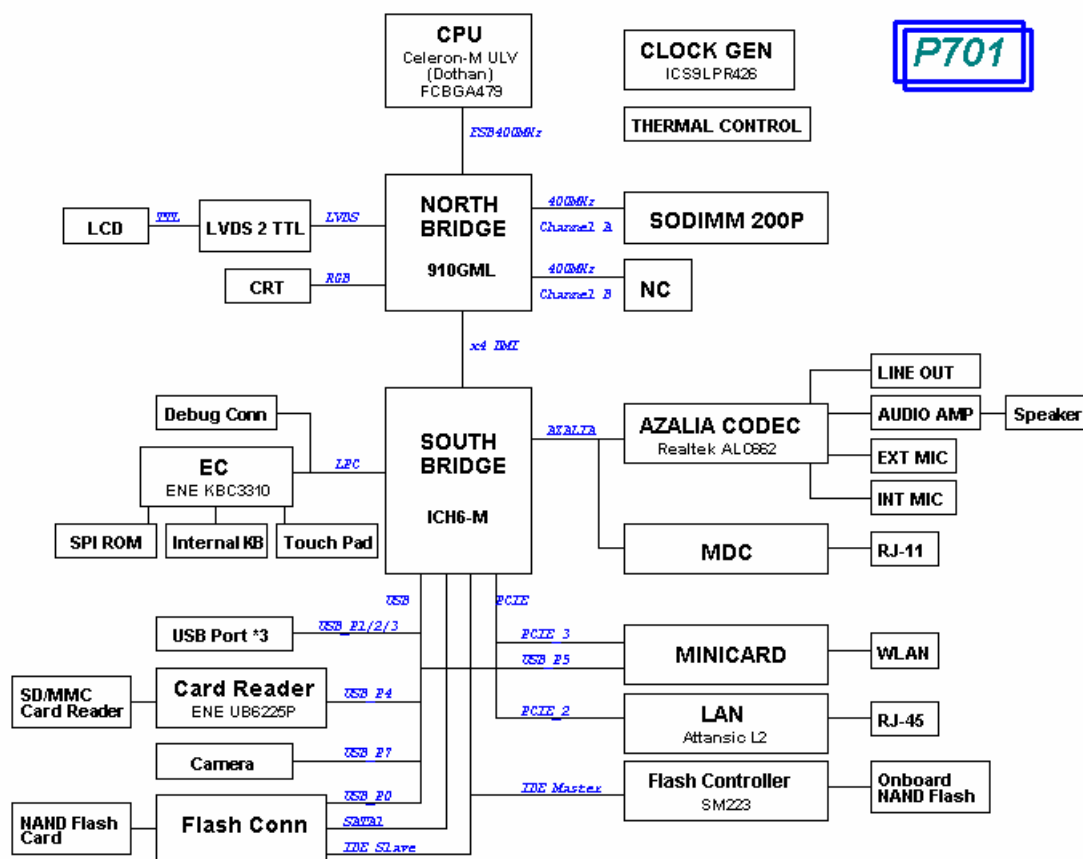
3.5 AC/DC Adapter

The notebook can be powered either by an external AC adapter or by an internal battery pack. The AC adapter is used as power source for the DC/DC converter and as constant current source for the battery pack.

Input Requirements:	
AC line voltage:	100V to 240V AC, Full Range
AC line current:	2.315A
AC line frequency	50 Hz to 60 Hz
Efficiency	85% min.
Output requirements:	
Output-Voltage	9.5V DC
Output-Current	max.2.315A
Ripple voltage	
Power cord:	Plug to the adapter
DC Cable length:	180 mm +/- 50mm
Regulatory:	
EMI:	FCC Class B
Safety:	CISPR 22 Class B
.Dimension:	(L) 108 x (W) 46 x (H) 29.5 mm

4 SYSTEM

4.1 System diagram



4.2 Main components block diagrams

TBD

4.3 System resource

4.3.1 IRQ Map

IRQ#	Description
IRQ 0	System Timer
IRQ 1	PS2 Keyboard
IRQ 8	System CMOS/RTC
IRQ 9	ACPI IRQ Holder
IRQ12	PS2 TP
IRQ13	Numeric data processor
IRQ14	Master IDE Controller
IRQ15	Primary IDE Controller
IRQ16	PCIE Root Port
IRQ16	USB Controller
IRQ16	Microsoft UAA
IRQ16	910GML Express Chipset Family
IRQ17	Lan Controller
IRQ17	PCIE Root Port
IRQ18	Wireless Network Adaptor
IRQ18	PCIE Root Port
IRQ18	USB Controller
IRQ19	USB Controller
IRQ23	USB Controller
IRQ23	USB2 Enhance Host Controller

4.3.2 ISA DMA Map

DMA Channel	Device
DMA 4	DMA Controller

4.3.3 PCI INT Map

N/A

4.3.4 PCI Bus Master Map

N/A

4.3.5 IDSEL

N/A

5 I/O PORT PIN ASSIGNMENT

No	FUNCTION	DESCRIPTION
	CRT	Display (Analog)
	Flash module	
	LCD	
	KEYBOARD	
	TOUCHPAD&LED	
	1 ST BATTERY	
	.DC IN	Adapter Input
	.AUDIO	Headphone, Microphone-In
	.FAN	
	.INVERTER	
	.MDC	
	.USB	Universal Serial Bus
	LAN & Modem	
	.Card Reader	Universal Serial Bus
	. WLAN	MINI PCIE

5.1 CRT

Vendor	Part No.	Pin No.
ALLTOP	C10511-11505-B	15 Pin (DIP)

No	Pin Assignment (by: sort)	Description
1	RED Video (analog)	Red this DAC analog output drives the CRT interface.
2	GREEN Video (analog)	Green this DAC analog output drives the CRT interface.
3	BLUE Video (analog)	Blue this DAC analog output drives the CRT interface.
4	MONITOR ID Bit 2	NC
5	GROUND	Ground
6	RED Return (ground)	Ground
7	GREEN Return (ground)	Ground
8	BLUE Return (ground)	Ground
9	Power	+5V
10	SYNC Return (ground)	Ground
11	MONITOR ID Bit 0	NC
12	MONITOR ID Bit 1	DDC monitor data
13	HSYNC	CRT Horizontal Sync this output is The Horizontal sync pulse for the CRT Monitor.
14	VSNC	CRT Vertical Sync this output is the Vertical sync pulse for the CRT Monitor.
15	MONITOR ID Bit 3	DDC monitor clock

5.2 Flash module pin assignment

Vendor	Part No.	Pin No.
		52 Pin (DIP)

Pin No.	Pin No.	Remark
1. IDE_DD0	2. IDE_DD15	
3. IDE_DD1	4. GND	
5. IDE_DD2	6. IDE_DD14	
7. IDE_DD3	8. IDE_DD13	
9. GND	10. IDE_DD12	
11. IDE_DD4	12. IDE_DD11	
13. IDE_DD5	14. IDE_DD10	
15. GND	16. IDE_DD9	
17. IDE_DD6	18. GND	
19. IDE_DD7	20. IDE_DD8	
21. GND	22. IDE_RST#1	
23. S_SATA_RXN0	24. IDE_DIOW#	
25. S_SATA_RXP0	26. IDE_PCSEL#1	
27. GND	28. IDE_DIOR#	
29. GND	30. IDE_DDACK#	
31. SATA_TXN0	32. IDE_DDREQ	
33. SATA_TXP0	34. GND	
35. GND	36. USBPN0	
37. IDE_DA0	38. USBPP0	
39. IDE_DA1	40. GND	
41. IDE_DA2	42. IDE_IORDY	
43. NC	44. IDE_IRQ	
45. IDE_DIAG#1	46. IDE_DCS#1	
47. +VCC_FLASH	48. IDE_DCS#3	
49. +VCC_FLASH	50. GND	
51. +VCC_FLASH	52. FLASH_LED#1	

5.3 LCD pin assignment

Vendor	Part No.	Pin No.
I-PEXV	WTOB_CON_20P	20 Pin (SMD)

No.	Signal	Description	Type
1	+3V_LCD		P
2	LCD_CSB_D		O
3	LCD_VSYNC		O
4	LCD_SCL		I/O
5	LCD_SDA		I/O
6	LVDD_EN		I
7	GND		P
8	LA_DATAN0		I/O
9	LA_DATAP0		I/O
10	LA_DATAN1		I/O
11	LA_DATAP1		I/O
12	GND		P
13	LA_DATAN2		O
14	LA_DATAP2		P
15	LA_CLKN		O
16	LA_CLKP		O
17	GND		P
18	BL_PWM_DA		I
19	BL_EN		I
20	+12V_LEDIN		P

5.4 Internal keyboard pin assignment

Vendor	Part No.	Pin No.
InnovACE	FPC_CON_28P	28 Pin (SMD)

No	Signal	Description	Type
1	KSO0		O
2	KSI0		I
3	KSO1		O
4	KSO2		O
5	KSI1		I
6	KSO3		O
7	KSI2		I
8	KSO4		O
9	KSI3		I
10	KSO5		O
11	KSI4		I
12	KSI5		I
13	KSO6		O
14	KSI6		I
15	KSI7		I
16	KSO7		O
17	KSO8		O
18	KSO9		O
19	KSO10		O
20	KSO11		O
21	KSO12		O
22	KSO1		O
23	KSO13		O
24	KSO14		O
25	KSO3		O
26	KB_KSO15		O
27	NC_KSO17		O

28	NC_KSO16		O
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5.5 Internal Touch Pad & LED Pin assignment

Vendor	Part No.	Pin No.
ENTERY	FPC_CON_12P	12 Pin (SMD)

No	Signal	Description	Type
1	GND	Ground	P
2	TP_L		P
3	TP_L		P
4	+5V_TP	Power	I
5	+5V_TP	Power	I
6	TP_DATA	Data	I/O
7	TP_DATA	Data	I/O
8	TP_CLK	Clock Signal	I
9	TP_CLK	Clock Signal	I
10	TP_R		P
11	TP_R		P
12	GND	Ground	I

5.6 1ST Battery pin assignment

No	Signal	Description	Type
1	BAT_IN#	Power	P
2	BAT		I
3	BAT		I
4	BAT_ID		O
5	GND	Ground	P
6	BAT_TS		O
7	BAT_CONFIG		O
8	NC		NC
9	GND	Ground	P

5.7 DC in Jack pin assignment

Vendor	Part No.	Pin No.
SINGATRON	DC_PWR_JACK_3P	3Pin (DIP)

No	Signal	Description	Type
1	A/D_DOCK_IN	Adapter input voltage	P
2	GND	Ground	P
3	GND	Ground	P

5.8 Audio Jack

5.8.1 Internal Speaker Jack

Vendor	Part No.	Pin No.
ACES	WtoB_CON_4P	4 Pin (SMD)

No	Signal	Description	Type
1	INTSPKR-	Internal speaker signal right channel negative	O
2	INTSPKR+	Internal speaker signal right channel positive	O
3	INTSPKL-	Internal speaker signal left channel negative	O
4	INTSPKL+	Internal speaker signal left channel positive	O

5.8.2 Headphone Jack

Vendor	Part No.	Pin No.
SUYIN	PHONE_JACK_6P	6 Pin (DIP)

No	Signal	Description	Type
1	GND_AUDIO	Ground	P
2	HEADPHONE_JACK_L	Headphone left sound	O
3	HEADPHONE_JACK_R	Headphone right sound	O
4	GND_AUDIO	Ground	P
5	EAR_SW#	S/PDIF/Headphone be plugged in	I
6	NC	NC	NC

5.8.3 Microphone Jack

Vendor	Part No.	Pin No.
SUYIN	PHONE_JACK_6P	6 Pin (DIP)

No	Signal	Description	Type
1	GND_AUDIO	Ground	P
2	MIC1_JACK_L	External microphone input	I/O
3	MIC1_JACK_R	External microphone input	I/O
4	GND_AUDIO	Ground	P
5	MIC_SW#	Control internal MIC	O
6	NC	NC	NC

5.9 Fan Pin Assignment

Vendor	Part No.	Pin No.
ACES	WtoB_CON_4P	4 Pin (SMD)

No	Signal	Description	Type
1	+5V	5V Power Supply	P
2	FAN_TACH	FAN speed signal output	O
3	FAN_PWM	FAN speed signal input	I
4	GND	Ground	P

5.10 MDC signal

Vendor	Part No.	Pin No.
TYCO	BTOB_CON_12P	12 Pin (SMD)

No	Signal	Description	Type
1	GND	Ground	P
2	None	None	NC
3	ACZ_SDOUT_MD C	Azalia data output signal	I

4	None	None	NC
5	GND	Ground	P
6	+3VAUX_MDC	3.3V power turned off during S4	P
7	ACZ_SYNC_MDC	Azalia sync signal	I
8	GND	Ground	P
9	ACZ_SDIN1_MDC	Azalia data input signal	O
10	GND	Ground	P
11	ACZ_RST#_MDC_R	Azalia reset signal	I
12	ACZ_BCLK_MDC	Azalia bit clock signal	I

5.11 USB pin assignment

Vendor	Part No.	Pin No.
SUYIN	USB_CON_1X4P	4 Pin (SMD)

No	Signal	Description	Type
1	+5V_USB12_CON	USB 5V power	P
2	USBPN1	USB port 1 negative signal	I/O
3	USBPP1	USB port 1 positive signal	I/O
4	GND	ground	P

Vendor	Part No.	Pin No.
SUYIN	USB_CON_1X4P	4 Pin (SMD)

No	Signal	Description	Type
1	+5V_USB34_CON	USB 5V power	P
2	USBPN2	USB port 2 negative signal	I/O
3	USBPP2	USB port 2 positive signal	I/O
4	GND	USB 5V ground	P

Vendor	Part No.	Pin No.
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SUYIN	USB_CON_1X4P	4 Pin (SMD)
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No	Signal	Description	Type
1	+5V_USB34_CON	USB 5V power	P
2	USBPN3	USB port 3 negative signal	I/O
3	USBPP3	USB port 3 positive signal	I/O
4	GND	USB 5V ground	P

5.12 LAN & Modem pin assignment

Vendor	Part No.	Pin No.
ALLTOP	MODULAR_JACK_12P	12 Pin (SMD)

No	Signal	Description	Type
1	None	None	NC
2	MODEM_TIP	Modem signal	I/O
3	MODEM_RING	Modem signal	I/O
4	None	None	NC
5	LAN_TXP	Transmit data positive signal	O
6	LAN_TXN	Transmit data negative signal	O
7	LAN_RXP	Receive data positive signal	I
8	LAN_CON45	Connect 75 ohm to ground	I
9	LAN_CON45	Connect 75 ohm to ground	I
10	LAN_RXN	Receive data negative signal	I
11	LAN_CON78	Connect 75 ohm to ground	I
12	LAN_CON78	Connect 75 ohm to ground	I

5.13 Card Reader pin assignment

Vendor	Part No.	Pin No.
PANASONIC	SD_SOCKET_9P	9 Pin (SMD)

Pin No	Signal	Remark
1.	UB_SD_DATA3	
2.	UB_SD_CMD	
3	GND	
4	+3V_SD	
5	UB_SD_CLK	
6	GND	
7	UB_SD_DATA0	
8	UB_SD_DATA1	
9	UB_SD_DATA2	

6 POWER MANAGEMENT

6.1 System power plane

Power Group	Power Control Pin	Controlled Devices
+12V	VSUS_ON	Other Control
+5V	SUSB_ON	LCD, Flash, Flash & Wlan LED, Fan, Camera, Codec, Audio, SB
+3V	SUSB_ON	NB IO, SB, LCD, Card reader, Codec, Audio
+1.8V_DUAL	SUSC_ON	NB, DDR2 power
+5VSB	VSUS_ON	SB, USB, Charge & Power LED
+3VSB	VSUS_ON	SB, Audio, Clock Generator, PCIE interface
+1.5V		SB Core, NB Core
+2.5V		SB Core, NB Core, Onboard VGA
+VTT_DDR		DDR2 Power
VCORE	H_CPURST#	CPU power
+3VA		LCD, EC, BIOS, Keyboard
+VCC_RTC		ICH6-M(RTC)
+VCCP	CPU_VRON	CPU power, SB Core, NB Core

6.2 Power management mode

6.2.1 Full-On mode

All system devices are not power managed and the system can respond to applications with maximum performance.

6.2.2 Doze mode

The CPU clock is slow down but all other devices are full on.

6.2.3 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, and the graphics frame buffer is powered and refreshed by the graphic chip. The system provides a 32KHz clock (SUSCLK) in this suspend mode to support refresh of these memory subsystems. Only an enabled “resume event” 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.

6.2.4 Suspend to RAM mode (STR)

A suspend state where all 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, and the graphics frame buffer is powered and refreshed by the graphics chip. The system provides a 32 kHz

clock (SUSCLK) in this suspend mode to support refresh of these memory subsystems. Only an enabled “resume event” can bring the platform out of the suspend to RAM (STR) state.

6.2.5 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 Power switch or RTC, can bring the platform out of the suspend to disk (STD) state.

6.2.6 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.

6.2.7 Mechanical off mode (MOFF)

All power except the RTC has been removed from the system.

6.3 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
Doze	Doze Time out	Predefined Memory/IO range access Ring Indicator Keystroke Mouse movement IRQ 1-15
Stand by	Stand by Time out Stand by hot key pressed	Predefined Memory/IO range access Battery Warning Battery Low Ring Indicator Keystroke Mouse movement Schedule Alarm
STR	Suspend Time out STR hot key pressed Suspend button Battery Low	Power Button Ring Indicator Keystroke (Int. KB) Schedule Alarm
STD	Suspend Time out STD hot key pressed Hibernate Battery Low	Power Button Schedule Alarm
Soft Off	Power button Execute Windows shutdown command	Power Button Schedule Alarm

6.3.1 Lid switch

Display mode	State	Lid close	Lid open
LCD	Full on	LCD OFF	No action
	Stand by	LCD OFF	No action
	STR/STD	LCD OFF	No action
CRT	Full on	No action	No action
	Stand by	No action	No action
	STR/STD	No action	No action
SIMUL	Full on	LCD OFF/CRT ON	No action
	Stand by	No action	No action
	STR/STD	No action	No action

LCD display will be shut down while closing LCD.

6.3.2 Power button

Power button function depends on the definition in Windows power setting or you can force off by pressing power button for 4 seconds. To reset the system, you need to press the reset button.

6.4 Device Power management

Power state of local devices table

Power State Component	Doze	Stand By	STR	STD/Soff
CPU	Quick Start	Stop Clock	Power Off	Power Off
North Bridge	ON	Stop Clock	Power Off	Power Off
South Bridge	ON	ON	Power Off (except +3VA, RTCVCC)	Power Off (except +3VA, RTCVCC)
DDR	ON	Self Refresh	Self Refresh	Power Off
Onboard FLASH	ON	Power down	Power Off	Power Off
KBC	ON	ON	Power down	Power Off
VGA	ON	Power down	Power Off	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 down

Modem	ON	Power down	Power Off	Power Off
WLAN	ON	Power down	Power Off	Power Off

6.4.1 Device PM control during Stand By mode

Device	Power Controlled by	Description
CPU	Hardware	
PCMCIA Controller	Software	Enter PCI PM D3Hot state
EC Chip	Working	
Keyboard Controller	Working	KB3310 support power down command
USB	Working	
Onboard FLASH	Software	support power down command
Audio AMP	Hardware	Controlled by Jack in detect
Modem	Software	Enter PCI PM D3Hot state
LAN	Software	Enter PCI PM D3Hot state
LCD Panel Back light	Hardware	
Clock Synthesizer	Hardware	
WLAN	Software	

6.4.2 Device PM control during STR mode

Device	Power Down Controlled by	Description
EC Chip	Hardware	Power Down
Onboard FLASH	Hardware	Power Off
Modem	Software	Power Off
LAN	Software	Power Down
USB	Hardware	Power Down
Audio CODEC	Software	Power Off
Audio AMP	Hardware	Power Off
WLAN	Software	Power Off
LCD Panel	Hardware	Power Off
LCD Back light	Hardware	Power Off
Clock Synthesizer	Hardware	Power Off
Keyboard Controller	Software	Controlled by KB3310 power down command

6.4.3 Device PM control during STD mode

Device	Power Down Controlled by	Description
Core Logic	Hardware	Power off (except Resume Well)
EC Chip	Hardware	Power off
VGA Chip	Hardware	Power off
Onboard FLASH	Hardware	Power off
PCMCIA Controller	Hardware	Power off
Modem	Hardware	Power off
LAN	Hardware	Power off
USB	Hardware	Power off
Audio Chip	Hardware	Power off
Audio AMP	Hardware	Power off
WLAN	Hardware	Power off
LCD Panel	Hardware	Power off
Back light	Hardware	Power off
Clock Synthesizer	Hardware	Power off
Keyboard Controller	Hardware	Power off

7 MODULE SPECIFICATION

7.1 Overall System

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

7.1.1 Board assembly

Processor	Upgradeable CPU (FCBGA 479)
Main Board	Main System board
Inverter Board	LCD Module Back-light
TOUCH PAD&AUDIO BOARD	DJ 4 LED Indicators, 2 Touch Pad Button, 5 Audio DJ button
SO-DIMM Module	Memory Expansion
Modem Board	MDC

7.2 Processor

Feature:	Celeron M CPU with on-die L2 cache. FCBGA 479
[CPU Cooling System]	Dothan Core
Function:	FAN is controlled by a thermal sensor and BIOS/ACPI OS.

7.3 Main board

7.3.1 Main system module spec

Feature:	CPU Celeron M, NB 910GML, SB ICH6M,
	Clock generator,
	SO-DIMM
	PC/AT compatible system (RTC, DMA, INT, Timer, ... etc)
	IDE controller with PIO Mode 4 & Ultra-33/66/100,
	PCMCIA /Cardbus controller & their sockets
	Audio CODEC,
	Audio amplifier,
	CPU thermal sensor,
	I/O connectors,
	Power management control circuit,
	Internal Graphic/Display controller,
	Keyboard Controller,
	Audio analog signal,
	Power control, DC/DC,
	Battery power
	Regulated power
	SM bus for Battery
	Indication Charger LED
	Indication Power LED
	Indication WLAN LED
	Indication FLASN Access LED
	...etc

7.3.2 DC/DC module spec

Controller: ISL6262CRZ, TPS51020, ISL6227CAZ,

Input voltage: 8-20V

Output voltage/current:

Voltage	Current	Regulation
+3VA	60mA	+5%
+3VSB	1.74A	+5%
+5VSB	1.38A	+5%
+1.5V	1.88A	+5%
+5V	1.09A	+5%
+3V	566Ma	+5%
+2.5V	100mA	+5%
+1.8V_DUAL	4.5A	+5%
VTT_DDR	121mA	+5%
+VCCP	2.07A	+5%
VCORE	2.96A	+5%

Support OVP

Support OCP

7.3.3 Charger

Charger spec

Controller: MAX8724ETI

Input voltage: 9.5~12V

Charger Method: CV.CC

Li-Ion Battery:

Full charger sense I min.: 250mA

Max. charge voltage : 4.2V/cell

Charger Voltage: 8.36

Charger current:

Input: Adapter			
Contain	Min	Typ.	Max

Charge current (4S2P)	2.4A	2.46A	2.6A
Charge current (4S1P)	1.3A	1.4A	1.5A
Ripple & Noise	100mV		
Efficiency	94%		

7.4 Inverter Board

Inverter spec

Input Voltage: 9~11V

Output Current: 160mA(max)

Start Voltage: 12V(min)

Efficiency: 86%(max)

Brightness control duty:

Brightness adjust by input voltage: 0~3V

Support output short protection

Frequency: 25~35KHz

Pin no	I/O	Description
1	Input/ Output	Return
2	Input/ Output	High voltage

Brightness control duty: 0-100%

7.5 Adapter spec

7.5.1 Input

Input voltage: 100~240VAC, Full range

Input frequency: 50~60Hz

Input current: 680Ma(max)/100VAC

Inrush current: 60A(max)/100VAC, 120A(max)/240VAC

Efficiency: 85%(min)

7.5.2 Output

22W power output

Output Voltage/Current: 9.5V/2.315A

Ripple: 500mV

7.5.3 Protection

OVP: 24V(max)

SCP: Yes

OCP: 19V/5A(max)

7.6 Main Battery spec

Battery pack capacity:

	Vendor	Cells	Voltage	Capacity	Watts
Li-Ion	新力盛	4	7.4V	2600mAh	

Battery warning and low percentage (Li-Ion):

Battery low = 7%

Battery low low= 0%

Gauge controller (BQ2060H) setting:

Charging voltage: 8.36V

Charging efficiency: 95%

Low temperature capacity: 70%

7.7 LAN Spec

Controller: Atheros L2

Interface: PCIE

Compliant to PCI 2.2

Support ACPI , PCI power management

Support for Wake-On-LAN during S3,S4

Integrated IEEE 802.3x 10BASE-T and 100 BASE-TX compatible PHY and transceiver in one chip

Full duplex and half duplex support at both 10 and 100Mbps

Low power 3.3V device

64-Pin LQFP package

7.8 Modem spec

Part Number: ASUS RD01-D480

Controller: Conexant software modem

Interface: AC-link

Support Caller ID

Support Ring wake up function

ITU-T V.90 Data Mode with auto-fall back to K56flex and V.34

V.80 Video ready

Modem Data speed: 56Kbps

FAX transfer speed: 14.4Kbps

Modem modulation format: V.90 PCM

8 MISCELLANEOUS

8.1 Indicators

Power LED

Feature:	Show System power status
Type:	LED
Color:	Yellow
Indication:	On: System in ON Mode Flash: System in SUSPEND Mode Off: System in OFF Mode
Location:	MB/TP BRD

Charging LED

Feature:	Show Battery status
Type:	LED
Color:	Red
Indication:	On: Battery in Charging Flash: Battery Low Off: Battery is fully charged or absent
Location:	TP BRD

WLAN

Feature:	Show Receive mail status
Type:	LED
Color:	Blue
Indication:	On: WLAN on Off: No status
Location:	TP BRD

FLASH Access LED

Feature:	On: While FLASH Read/Write access
Type:	LED
Color:	Yellow
Location:	MB

8.2 Power cord list TBD

Where	Description	Vendor
US		
UK		
Japan		
Europe		
Austria		
South Asia		

8.3 Safety/ EMI Appliance :

Agency Approval	EMC	CE Mark (Europe) BSMI (Taiwan)
	EMI	FCC Class B Certified (USA & Canada), VCCI (Japan) MIC, IDA
	Safety	UL, CSA or CUL, NEMKO-CB (Norway), TUV, CE Mark (Europe)
	Telecomm.	FCC Part 68 (USA), DOC (Canada), JATE (Japan), AUSTEL (Australia), TELEPERWIT (New Zealand), CTR-21 (EU)
Other Requirements	Industry Standards Compliance	SPA Energy Star Compliance Designed for Windows 95/98 and Windows NT Logo (Compliance with Microsoft PC98)