



8500 Service Manual

2-Feb-98

Specifications

The Notebook Computer is a state-of-the-art, high performance, portable system. It offers a host of features specially designed to enhance performance and usability.

CPU

- Intel P54C/LM.
- Intel P55C/LM with MMX technology.

Memory

- 3.3V power supply.
- Supports Fast Page Mode/EDO/SDRAM.
- 512KB secondary cache Pipeline Burst Synchronous RAM (PBSRAM).
- 8MB expandable up to 128MB.
- *8/16/32/64MB 144-pin SODIMM RAM modules (option).*
**(The x4 bit DRAM chips are not supported.)*

System BIOS

- 256KB flash ROM.
- PCI 2.1.
- Plug and Play 1.0a.

Display

- 15.1" TFT XGA (1024x768 pixels) LCD panel available.
- 13.8" DSTN XGA (1024x768 pixels) LCD panel available.
- 4MB display memory (EDO).
- Video Port Manager (VPM 1.10) for Zoomed Video (ZV) port.
- Simultaneous display with an external monitor.

Mass Storage

- 3.5" floppy diskette drive (interchangeable).
- 2.5" hard disk drive (12.7mm high or less).
- 5.25" CD-ROM.
- *2.5" (12.7mm high or less) or 3.0" (12.5mm high or less) secondary hard disk drive (option).*
- *100MB Zip drive (15mm high) (option).*

Audio

- Sound Blaster Pro compatible.
- 3D stereo sound effects.
- Stereo full duplex support.
- 1MB ROM wavetable.
- Built-in microphone.
- Built-in speakers.

PC Card Sockets

- CardBus support.
- ZV (Zoomed Video) port support.
- Two Type II PC cards or one Type III PC card.

Input/Output

- Built-in trackpad (PS/2).
- Dual USB ports.
- S-video jack for TV output.
- 120-pin Expansion port.
- RCA jack for video input.
- External monitor (CRT) port.
- Serial port.
- Parallel port.
- Dual PS/2 type ports.
- Speaker-out jack.
- Line-in jack.
- Microphone-in jack.

Infrared Wireless Communication

- IrDA (HPSIR).
- ASKIR.
- Fast IR.

Power Management

- APM 1.2.
- ACPI.
- Global Standby.
- Suspend and Resume.

AC Power Supply

- AC input: 100~240VAC, 47~63Hz.
- DC output: 20V.
- Total output: 50W.

Rechargeable Battery Pack

- Li-ION battery available.
- Battery low warning.

Size & Weight

- 357mm(w)x275mm(d)x50mm(h).
- 4.5kg.

I/O Address Map

Hex range	Device
000 – 00F	DMA controller-1
020 – 021	Interrupt controller-1
040 – 043	Timer 1
048 – 04B	Timer 2
060 – 06E	KB controller M38813 chip select
070 – 071	RTC and NMI mask
080 – 08F	DMA page register
0A0 – 0A1	Interrupt controller-2
0C0 – 0DF	DMA controller-2
1F0 – 1F7	Fixed disk select
3F6 , 3F7	
2F8 – 2FF	Serial port 2
378 – 37A	Parallel port 1
3B4 , 3B5	CRT controller index (mono)
3D4 , 3D5	CRT controller index (color)
3BA	Feature control
3C0 – 3DA	
3F2 – 3F7	Floppy disk controller
3F0 , 3F1	Configuration port
3F8 – 3FF	Serial port 1

System Memory Map

Address	Size	Function
000000 – 09FFFF	640KB	640KB Base Memory
0A0000 – 0BFFFF	128KB	Video RAM
0C0000 – 0CBFFF	48KB	VGA BIOS
0CC000 – 0DFFFF	80KB	Reserved
0E0000 – 0EFFFF	64KB	System BIOS for SCU, PCI, PnP, PMU
0F0000 – 0FFFFFF	64KB	System BIOS for Kernal
100000 –	16MB to 128MB	Extended Memory

Motherboard

The motherboard is designed mainly based on Pentium CPU and the Intel 430TX chipset; it includes the following features:

- ✓ 82439TX MTXC & 82371AB PIIX4 chipset solution from Intel.
- ✓ C&T 65555 Multimedia Flat Panel Controller.
- ✓ PCI Local Bus IDE interface.
- ✓ NS97338CR super I/O Controller.
- ✓ M38867 Keyboard Controller.
- ✓ Flash EPROM 256KB with SystemSoft system BIOS, VGA BIOS.
- ✓ DRAM Upgradable to 128MB.
- ✓ 7 DMA channels.
- ✓ 13 interrupt levels.
- ✓ Real Time clock / calendar, battery back up.
- ✓ Built-in 3D Stereo Audio subsystem.
- ✓ Built-in NTSC/PAL video-out S-jack.
- ✓ Built-in Video-in RCA-jack.
- ✓ IrDA infrared communication (Fast IR).
- ✓ Port connectors :
 - 9 pin serial (COM1).
 - 25 pin parallel printer port (LPT1).
 - 15 pin external VGA port.
 - 6 pin external keyboard port.
 - 6 pin PS2 mouse.
 - 120 pin expansion port for Port Replicator.
 - 4 pin USB port x 2.

Microprocessor

The Notebook Computer applied Intel Pentium SL-Enhanced or MMX (LM) microprocessor.

P54C, P55C-133/150/166/200/233 (LM) Microprocessor

The Intel Pentium Processor has an improved prefetch/BTB mechanism that is more accurate and aggressive than the P54C processor and the P55C CPU is built-in MMX (MultiMedia eXtension enable) Technology Architecture.

Features included:

- ✓ Superscalar architecture.
- ✓ Separate code and data caches.
- ✓ Branch prediction.
- ✓ High performances floating point unit.
- ✓ Enhanced 64 bits data bus.
- ✓ Data integrity features.
- ✓ SL technology power management features.
- ✓ Multiprocessing support.
- ✓ Performance monitoring.
- ✓ Memory page size feature.

Chips

Core Logic Chip – Intel 430TX 82439TX MTXC

- ✓ Support for Intel 586 CPU with bus speed up to 66MHz.
- ✓ Support for both symmetric and asymmetric type DRAM.
- ✓ High Performance Memory Controller.
- ✓ Enhanced hidden refresh.
- ✓ Support for Fast Page mode, EDO type, and Synchronous type DRAM.
- ✓ EDO RAM and SDRAM automatic detect mode.
- ✓ Support two bus mastering IDE channels.
- ✓ Serial IRQs supported.
- ✓ Synchronous SRAM Clock Control to reduce Power Consumption.
- ✓ Stop Grant, Stop Clock for 1X clock scaling.
- ✓ PCI local bus support.
- ✓ Flash EPROM support.
- ✓ Screen activity detect.
- ✓ Programmable suspend and resume.
- ✓ Automatic suspend timer.
- ✓ System activities and programmable clock speed control.
- ✓ Programmable system event.
- ✓ Programmable stop break event.

VGA Controller – Chips & Technology 65555

The C&T 65555 Multimedia Flat Panel Controller is a DRAM based, fully integrated LCD, CRT & TV 64 bits controller for PCI systems. It contains the following functions:

- ✓ Support displays with options for 2 and 4 MB.
- ✓ Support burst PCI and EDO/FPM memory.
- ✓ Support 16/24 bit color DSTNs up to 1024x768x16M color, and TFT panels up to 1280x1024x64K color.
- ✓ Support non-interlaced 1600x1200x256, 1280x1024x64K, 1024x768x16M, 800x600x16M, and 640x480x16M color on CRT.
- ✓ Simultaneous display in 24 bit color on flat panel and CRT.
- ✓ Internal buffer provides flicker reduction.
- ✓ RGB signals driven from the C&T 65555 LUT/DAC can directly interface with a standard off-the-shelf NTSC/PAL encoder. Composite synchronization signals support for standard home TV connection.
- ✓ Graphic functions optimized by a 64 bit internal data bus and a four-color hardware cursor/pop-up icon operation up to 128x128x2 pixel image.
- ✓ Provide flexible and extensive power management capabilities and support four states of VESA Display Power Management Signaling.
- ✓ Video Modes supported.

PC Card 95 (CardBus) Interface Controller – O₂ MICRO-6836

The CardBus Interface Controller 6860 implements the PCMCIA 2.0/JEIDA 4.1 standard. It contains the following features:

- ✓ Support 2 PCMCIA 2.1 & JEIDA 4.2 R2 cards or 2 CardBus cards.
- ✓ Yenta Registers-compatible.
- ✓ Support Zoom Video Mode.
- ✓ PCMCIA dual-socket interface.
- ✓ Dual-Slot plus MPEG three Zoomed Video Ports support.
- ✓ Bus Master Transfer capability.
- ✓ Support both 5V and 3.3V PC cards.
- ✓ Support PCMCIA_ATA Specification.
- ✓ 256 pin TQFP package.

ZV Port Custom Interface

The ZV (Zoomed Video) Port is a single source, point-to-point uni-directional video bus between a PC card socket and a VGA controller. The ZV Port complies with CCIR601 timing to allow NTSC decoders to deliver real-time digital video straight into the VGA frame buffer from a PC card. The ZV Port also allows an industry standard mechanism for transferring digital audio PCM data to a low cost DAC for conversion to an analog signal.

Super I/O Controller – NS97338CR

The NS's 97338CR super I/O is optimized for motherboard applications. It provides:

- ✓ Intelligent Auto Power Management.
- ✓ 16 Bit Address Qualification.
- ✓ 2.88MB Super I/O Controller
 - Support Vertical Recording Format.
 - 16 Byte Data FIFO.
 - Enhanced Digital Data Separator. Data rate up to 1Mb/s.
- ✓ Multi-Mode Parallel Port with ChiProtect Circuitry
 - Standard Mode
IBM PC/AT and PS/2 compatible bi-directional Parallel port.
 - Enhanced Mode
Enhanced Parallel Port (EPP) compatible.
 - High Speed Mode
Microsoft and Hewlett Packard Extended Capabilities Port (ECP) compatible.
- ✓ Serial Port
 - Two high speed NS16C550A compatible UARTs with Send/Receive 16 Byte FIFOs.
 - Programmable Baud Rate Generator.
 - Modem Control Circuitry.
 - Infrared-IrDA, HPSIR, ASKIR, Fast IR (4Mbps IrDA), Consumer IR Support.

High Quality Audio Chip – ESS ES1879

- ✓ Integrated 3D audio effects.
- ✓ Stereo full-duplex using two DMA channels.
- ✓ Single, mixed-signal, 16-bit stereo VLSI chip for digital audio.
- ✓ High-quality, 20-voice ESFM music synthesizer patents pending.
- ✓ Support ES978 Expansion audio Mixer chip.
- ✓ Full Plug and Play (PnP).

RGB to NTSC/PAL Encoder – Chromtel CH7002

- ✓ TrueScal rendering engine supports underscan.
- ✓ Advanced 3-line digital flicker filtering.
- ✓ Programmable power management.
- ✓ Support both NTSC and PAL TV format.

Real PCI to USB (UHCI) Chip – Intel 82371AB PIIX4

- ✓ Two USB 1.0 ports for serial transfers at 12 or 1.5Mbit/sec.
- ✓ Support legacy keyboard and mouse.
- ✓ Support UHCI design guide revision 1.1 interface.

Keyboard Controller – M38867M8

- ✓ Memory size: 1024 bytes (RAM).
- ✓ Timers: 8 bit prescaler x 4 + 8 bit timer x 3.
- ✓ Comparator: 4 bit x 8 channels.
- ✓ Bus interface: 2 bytes.
- ✓ Key on wake-up: 8 channels.
- ✓ Interrupts: 8 external, 7 internal, and 1 software.
- ✓ A-D converter: 8 channels.
- ✓ D-A converter: 2 channels.
- ✓ PWM: 2 channels.
- ✓ System bus interface: 8042 type.

L2 Cache Size

Cache Size	Data RAM	Tag RAM	Cacheable Size (8-bits tag)
512KB	64Kx32x2	32Kx8	64MB

L2 Cache Speed

Pipeline burst SRAM

Cache Configuration	60MHz (tag/data)	66MHz (tag/data)
Read 3-1-1-1 Write 3-1-1-1	12ns/9ns	12ns/9ns

DRAM Speed

The speed ratings of DRAM for various CPU external clock rates are listed below (using 1Mx16 or 2Mx8 memory):

DRAM Speed	60MHz (clocks)	66MHz (clocks)
60ns	read x-4-4-4	write x-4-4-4
60ns	read x-3-3-3	write x-3-3-3
60ns	write x-2-2-2	write x-2-2-2

FPM/EDO : use 60ns or faster DRAM

SDRAM : use 75MHz or faster DRAM

Pin Configurations

Floppy Disk Drive Interface

Pin	Description	Pin	Description
1	VCC	31	VCC
2	MTR0#	32	INDEX#
3	3MODE#	33	DRVO#
4	TRK0#	34	DSKCHG#
5	HDSEL#	35	DIR#
6	RDATA#	36	STEP#
7	WP FD#	37	WDATA#
8	WGATE#	38	N.C
9	GND	39	GND
10	N.C	40	N.C
11	N.C	41	N.C
12	N.C	42	N.C
13	N.C	43	N.C
14	N.C	44	N.C
15	N.C	45	N.C
16	N.C	46	N.C
17	N.C	47	N.C
18	N.C	48	N.C
19	N.C	49	N.C
20	N.C	50	N.C
21	N.C	51	N.C
22	N.C	52	N.C
23	N.C	53	N.C
24	N.C	54	N.C
25	N.C	55	N.C
26	N.C	56	N.C
27	N.C	57	N.C
28	N.C	58	N.C
29	N.C	59	N.C
30	N.C	60	N.C

Hard Disk Drive Interface

The Notebook PC has a standard PC/AT interface (IDE) which can directly interface with any hard disk drive with an embedded controller supporting the same PC/AT interface through the use of a 50-pin B/B connector. The connector has the following pin configurations:

Pin	Description	Pin	Description
1	GND	26	GND
2	GND	27	GND
3	HDRST#	28	GND
4	DDP7	29	DDP8
5	DDP6	30	DDP9
6	DDP5	31	DDP10
7	DDP4	32	DDP11
8	DDP3	33	DDP12
9	DDP2	34	DDP13
10	DDP1	35	DDP14
11	DDP0	36	DDP15
12	GND	37	N.C
13	PDREQ	38	GND
14	PDIOW#	39	GND
15	PDIOR#	40	GND
16	PIORDY	41	SEL
17	PDAK	42	GND
18	IRQ14	43	N.C
19	PDA1	44	N.C
20	PDA0	45	PDA2
21	CS1P#	46	CS3P#
22	HDD#	47	GND
23	HD VCC	48	HD VCC
24	GND	49	N.C
25	N.C	50	N.C

RS-232C Serial Interface

The Notebook PC has one RS-232C serial port which enables users to connect a serial printer, a serial mouse, a plotter, a modem, etc. The key features of the serial port are listed as follows:

- ✓ IBM PC/AT compatible.
- ✓ Compatible with NS16C550.
- ✓ Individual modem control/signals for each channel.
- ✓ Programmable serial interface characteristics:
 - 5-, 6-, 7-, or 8-bit characters.
 - Even, odd, or no parity bit generation and detection.
 - 1, 1 ½, or 2 stop bit generation.
 - Tri-state TTL drives capabilities for bi-directional data bus and control bus.

The RS-232C serial port uses a 9-pin D-sub male connector which has the following pin configurations:

Pin	Description
1	DCD (DATA Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmitted Data)
4	DTR (Data Terminal Ready)
5	GND (Signal Ground)
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

Parallel Interface

The parallel interface is implemented through using a 25-pin D-sub female connector which has the following pin configurations:

Pin	Description	Pin	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	ACK#
11	Busy	12	Paper Empty
13	Select	14	Auto Linefeed#
15	Error#	16	Initialize#
17	Select In	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

Expansion Memory Socket

The Notebook PC has two 144-pin SODIMM type Expansion memory sockets with the following pin configurations:

Socket 1:

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	2	GND	3	MD0	4	MD32
5	MD1	6	MD33	7	MD2	8	MD34
9	MD3	10	MD35	11	MEM-VCC	12	MEM-VCC
13	MD4	14	MD36	15	MD5	16	MD37
17	MD6	18	MD38	19	MD7	20	MD39
21	GND	22	GND	23	ICAS#0	24	ICAS#4
25	ICAS#1	26	ICAS#5	27	MEM-VCC	28	MEM-VCC
29	IMA0	30	IMA3	31	IMA1	32	IMA4
33	IMA2	34	IMA5	35	GND	36	GND
37	MD8	38	MD40	39	MD9	40	MD41
41	MD10	42	MD42	43	MD11	44	MD43
45	MEM-VCC	46	MEM-VCC	47	MD12	48	MD44
49	MD13	50	MD45	51	MD14	52	MD46
53	MD15	54	MD47	55	GND	56	GND
57	N.C	58	N.C	59	N.C	60	N.C
61	MEMCLK1	62	ICKEA	63	MEM-VCC	64	MEM-VCC
65	SRAS#A	66	SCAS#A	67	IMWE#A	68	ICKEA
69	IRAS#0	70	IMA12	71	IRAS#1	72	IMA13
73	GND	74	MEMCLK2	75	GND	76	GND
77	N.C	78	N.C	79	N.C	80	N.C
81	MEM-VCC	82	MEM-VCC	83	MD16	84	MD48
85	MD17	86	MD49	87	MD18	88	MD50
89	MD19	90	MD51	91	GND	92	GND
93	MD20	94	MD52	95	MD21	96	MD53
97	MD22	98	MD54	99	MD23	100	MD55
101	MEM-VCC	102	MEM-VCC	103	IMA6	104	IMA7
105	IMA8	106	IMA11	107	GND	108	GND
109	IMA9	110	IMA12	111	IMA10	112	N.C
113	MEM-VCC	114	MEM-VCC	115	ICAS#2	116	ICAS#6
117	ICAS#3	118	ICAS#7	119	GND	120	GND
121	MD24	122	MD56	123	MD25	124	MD57
125	MD26	126	MD58	127	MD27	128	MD59
129	MEM-VCC	130	MEM-VCC	131	MD28	132	MD60
133	MD29	134	MD61	135	MD30	136	MD62
137	MD31	138	MD63	139	GND	140	GND
141	SDA RA	142	SCL RA	143	MEM-VCC	144	MEM-VCC

Socket 2:

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	2	GND	3	MD0	4	MD32
5	MD1	6	MD33	7	MD2	8	MD34
9	MD3	10	MD35	11	MEM-VCC	12	MEM-VCC
13	MD4	14	MD36	15	MD5	16	MD37
17	MD6	18	MD38	19	MD7	20	MD39
21	GND	22	GND	23	ICAS#0	24	ICAS#4
25	ICAS#1	26	ICAS#5	27	MEM-VCC	28	MEM-VCC
29	IMA0	30	IMA3	31	IMA1	32	IMA4
33	IMA2	34	IMA5	35	GND	36	GND
37	MD8	38	MD40	39	MD9	40	MD41
41	MD10	42	MD42	43	MD11	44	MD43
45	MEM-VCC	46	MEM-VCC	47	MD12	48	MD44
49	MD13	50	MD45	51	MD14	52	MD46
53	MD15	54	MD47	55	GND	56	GND
57	N.C	58	N.C	59	N.C	60	N.C
61	MEMCLK3	62	ICKEA	63	MEM-VCC	64	MEM-VCC
65	SRAS#B	66	SCAS#B	67	IMWE#B	68	ICKEA
69	IRAS#2	70	IMA12	71	IRAS#3	72	IMA13
73	GND	74	MEMCLK4	75	GND	76	GND
77	N.C	78	N.C	79	N.C	80	N.C
81	MEM-VCC	82	MEM-VCC	83	MD16	84	MD48
85	MD17	86	MD49	87	MD18	88	MD50
89	MD19	90	MD51	91	GND	92	GND
93	MD20	94	MD52	95	MD21	96	MD53
97	MD22	98	MD54	99	MD23	100	MD55
101	MEM-VCC	102	MEM-VCC	103	IMA6	104	IMA7
105	IMA8	106	IMA11	107	GND	108	GND
109	IMA9	110	IMA12	111	IMA10	112	N.C
113	MEM-VCC	114	MEM-VCC	115	ICAS#2	116	ICAS#6
117	ICAS#3	118	ICAS#7	119	GND	120	GND
121	MD24	122	MD56	123	MD25	124	MD57
125	MD26	126	MD58	127	MD27	128	MD59
129	MEM-VCC	130	MEM-VCC	131	MD28	132	MD60
133	MD29	134	MD61	135	MD30	136	MD62
137	MD31	138	MD63	139	GND	140	GND
141	SDA RB	142	SCL RB	143	MEM-VCC	144	MEM-VCC

Port Replicator Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	GND	2	GND	3	GND
4	USBP1+	5	GND	6	USBP1-
7	GND	8	USBP0+	9	GND
10	USBP0-	11	VCC	12	VCC
13	GND	14	XLUMA	15	GND
16	XCRMA	17	GND	18	VIDEO IN
19	GND	20	BRED	21	BBLUE
22	BGREEN	23	GND	24	DVSYNC
25	GND	26	DHSYNC	27	GND
28	DDCDA	29	DDCLK	30	N.C
31	A++	32	A++	33	A++
34	N.C	35	N.C	36	PD0
37	PD1	38	PD2	39	PD3
40	PD4	41	PD5	42	PD6
43	PD7	44	PSTB#	45	PSLIN#
46	PSLCT	47	PINIT#	48	PATFD#
49	PACK#	50	PBUSY	51	PPE
52	PPERR#	53	N.C	54	FB0Q
55	FB0	56	FB0	57	N.C
58	N.C	59	GND	60	GND
61	GND	62	GND	63	GND
64	RTA	65	DTRA	66	CTSA
67	SOUTA	68	RTSA	69	GND
70	SINA	71	DSRA	72	DCDA
73	N.C	74	N.C	75	CCO
76	CCO	77	CCO	78	N.C
79	SOUT2	80	RTS2#	81	DTR2#
82	COM2RI	83	COMEN	84	DSR2#
85	RI2#	86	CTS2#	87	SIN2
88	DCD2#	89	N.C	90	N.C
91	A++	92	A++	93	A++
94	N.C	95	N.C	96	GND
97	AC3	98	GND	99	EKDA
100	EKCLK	101	GND	102	GND
103	EMDA	104	EMCLK	105	VCC
106	VCC	107	SWA	108	SWB
109	SWC	110	SWD	111	GND
112	GND	113	GTA	114	GTB
115	GTC	116	GTD	117	DPWROK
118	GND	119	GND	120	GND

Internal Trackpad Interface

There is a connector used to interface with the internal trackpad. It will be disabled when external mouse has been installed. The trackpad is hardware-connected to PS/2 port, hardware-compatible to Microsoft PS/2 mouse and software-compatible to Microsoft mouse mode. The following is the pin configurations for the connector:

Pin	Description
1	VCC
2	PS/2 DATA
3	PS/2 CLK
4	GND

External Monitor Interface

Pin	Description
1	BRED
2	BGREEN
3	BBLUE
4	N.C
5	GND
6	GND
7	GND
8	GND
9	N.C
10	GND
11	N.C
12	DDCDA
13	DHSYNC
14	DVSYNC
15	DDCLK

RGB Out

Output Impedance : 75Ω
RGB peak voltage : 0.7Vpp

External Keyboard Interface

Pin	Description
1	EKDA
2	N.C
3	GND
4	VCC
5	EKCLK
6	N.C

External PS2 Mouse Interface

Pin	Description
1	EMDA
2	N.C
3	GND
4	VCC
5	EMCLK
6	N.C

External S-video TV-out Interface

Pin	Description
1	GND
2	CVBS
3	XLUMA
4	XCRMA
5	GND
6	GND
7	GND
8	GND

Video-in Interface

Pin	Description
1	Video-in
2	GND

External USB (Universal Serial Bus) Interface

Port A:

Pin	Description
1	USB VCCA
2	USBP0-
3	USBP0+
4	GND

Port B:

Pin	Description
1	USB VCCB
2	USBP1-
3	USBP1+
4	GND

PCMCIA CardBus Interface

Socket A:

Pin	Description	Pin	Description	Pin	Description
A1	GND	A35	GND	A69	GND
A2	A CD3	A36	A CA5	A70	A CA19
A3	A CD4	A37	A CA4	A71	A CA20
A4	GND	A38	GND	A72	GND
A5	A CD5	A39	A CA3	A73	A CA21
A6	A CD6	A40	A CA2	A74	A VCC P
A7	GND	A41	GND	A75	GND
A8	A CD7	A42	A CA1	A76	GND
A9	A CE1#	A43	A CA0	A77	A VCC P
A10	GND	A44	GND	A78	A CA22
A11	A CA10	A45	A CD0	A79	GND
A12	A OE#	A46	A CD1	A80	A CA23
A13	GND	A47	GND	A81	A CA24
A14	A CA11	A48	A CD2	A82	GND
A15	A CA9	A49	A WP#	A83	A CA25
A16	GND	A50	GND	A84	A VS2
A17	A CA8	A51	GND	A85	GND
A18	A CA13	A52	A CD1#	A86	A RESET
A19	GND	A53	A CD11	A87	A WAIT#
A20	A CA14	A54	GND	A88	GND
A21	A WE#	A55	A CD12	A89	A INPACK
A22	GND	A56	A CD13	A90	A REG#
A23	A RDYBY#	A57	GND	A91	GND
A24	A VCC P	A58	A CD14	A92	A BVD2#
A25	GND	A59	A CD15	A93	A BVD1#
A26	GND	A60	GND	A94	GND
A27	A VCC P	A61	A CE2#	A95	A CD8
A28	A CA16	A62	A VS1	A96	A CD9
A29	GND	A63	GND	A97	GND
A30	A CA15	A64	A IORD#	A98	A CD10
A31	A CA12	A65	A IOWR#	A99	A CD2#
A32	GND	A66	GND	A100	GND
A33	A CA7	A67	A CA17		
A34	A CA6	A68	A CA18		

Socket B:

Pin	Description	Pin	Description	Pin	Description
A1	GND	A35	GND	A69	GND
A2	B CD3	A36	B CA5	A70	B CA19
A3	B CD4	A37	B CA4	A71	B CA20
A4	GND	A38	GND	A72	GND
A5	B CD5	A39	B CA3	A73	B CA21
A6	B CD6	A40	B CA2	A74	B VCC P
A7	GND	A41	GND	A75	GND
A8	B CD7	A42	B CA1	A76	GND
A9	B CE1#	A43	B CA0	A77	B VCC P
A10	GND	A44	GND	A78	B CA22
A11	B CA10	A45	B CD0	A79	GND
A12	B OE#	A46	B CD1	A80	B CA23
A13	GND	A47	GND	A81	B CA24
A14	B CA11	A48	B CD2	A82	GND
A15	B CA9	A49	B WP#	A83	B CA25
A16	GND	A50	GND	A84	B VS2
A17	B CA8	A51	GND	A85	GND
A18	B CA13	A52	B CD1#	A86	B RESET
A19	GND	A53	B CD11	A87	B WAIT#
A20	B CA14	A54	GND	A88	GND
A21	B WE#	A55	B CD12	A89	B INPACK
A22	GND	A56	B CD13	A90	B REG#
A23	B RDYBY#	A57	GND	A91	GND
A24	B VCC P	A58	B CD14	A92	B BVD2#
A25	GND	A59	B CD15	A93	B BVD1#
A26	GND	A60	GND	A94	GND
A27	B VCC P	A61	B CE2#	A95	B CD8
A28	B CA16	A62	B VS1	A96	B CD9
A29	GND	A63	GND	A97	GND
A30	B CA15	A64	B IORD#	A98	B CD10
A31	B CA12	A65	B IOWR#	A99	B CD2#
A32	GND	A66	GND	A100	GND
A33	B CA7	A67	B CA17		
A34	B CA6	A68	B CA18		

LCD Interface

Connector A:

Pin	Description	Pin	Description
1	GND	31	GND
2	GND	32	GND
3	PP0	33	PP1
4	PP2	34	PP3
5	PP4	35	PP5
6	PP6	36	PP7
7	PP8	37	PP9
8	PP10	38	PP11
9	PP12	39	PP13
10	PP14	40	PP15
11	PP16	41	PP17
12	PP18	42	PP19
13	PP20	43	PP21
14	BATCHA	44	BATFULL
15	GND	45	GND
16	PP22	46	PP23
17	VCC	47	VCC
18	VCC	48	VCC
19	PP24	49	PP25
20	PP26	50	PP27
21	VCC3	51	VCC3
22	VCC3	52	VCC3
23	M	53	LP
24	LCDVCC	54	FLM
25	CONTADJ	55	LCD ADJ
26	LCDVDD	56	LCDVDD
27	LCDVDD	57	LCDVDD
28	SHFCLK	58	SHFCLK
29	GND	59	GND
30	ACIN	60	ENAVEE

Connector B:

Pin	Description	Pin	Description
1	GND	31	GND
2	GND	32	GND
3	DEDGE	33	CEEDGE
4	TxVCC	34	TxVCC
5	TxVCC	35	TxVCC
6	TEST	36	HALFCK
7	TxAVCC	37	TxAVCC
8	TxAVCC	38	TxAVCC
9	VMA3	39	VMA4
10	100DVCC	40	100DVCC
11	VMA5	41	VMA6
12	TxPVCC	42	TxPVCC
13	EXT RES	43	EXT RES
14	BAT BEEP	44	BATON
15	GND	45	GND
16	SUPV	46	PD
17	AA VCC	47	AA VCC
18	AA VCC	48	AA VCC
19	PP28	49	PP29
20	PP30	50	PP31
21	PP32	51	PP33
22	PP34	52	PP35
23	AB VCC	53	AB VCC
24	AB VCC	54	AB VCC
25	ENABKL	55	BRIGADJ
26	N.C	56	N.C
27	B+	57	B+
28	B+	58	B+
29	MIC	59	LID
30	AGND	60	GND

Internal ISA Interface (for *Optional* Modem/LAN)

Pin	Description	Pin	Description
1	RSTDRV	31	MODEM
2	SD0	32	SD1
3	SD2	33	SD3
4	SD4	34	SD5
5	SD6	35	SD7
6	N.C	36	AGND
7	VCCS	37	AUXBR
8	VCCS	38	AGND
9	VCCS	39	VCCA
10	AGND	40	VCCA
11	MIC IN	41	N.C
12	AGND	42	+12V
13	IORD#	43	AEN
14	IOWR#	44	IRQ10
15	IRQ3	45	IRQ11
16	IRQ4	46	IRQ12
17	IRQ5	47	GND
18	IRQ9	48	OSC4
19	SA0	49	SA1
20	SA2	50	SA3
21	SA4	51	SA5
22	SA6	52	SA7
23	SA8	53	SA9
24	SA10	54	SA11
25	SA12	55	SA13
26	SA14	56	SA15
27	GND	57	GND
28	N.C	58	N.C
29	N.C	59	N.C
30	N.C	60	N.C

Inverter Board

1. 15.1" LCD Panel : 8500H and 8500V Inverter module.
2. 13.8" LCD Panel : 8500H Inverter module.
3. 8500V : Delete LED and REED Switch.
4. DIP 15-pin connector: (Pin Assignment)
 1. B+ : DC Input
 2. GND
 3. BRIGADJ : Brightness Adjustment
 4. BKLO : Backlight On/Off Control
 5. BATFULL : LED1 Green
 6. BATCHA : LED1 Red
 7. BAT_BEEP : LED1 Red Blinking
 8. ACIN : LED2 Red
 9. BAT ON : LED2 Green
 10. LID : PIN2 to GND
5. Lamp Current
2.5V \pm 0.5 mA ~ 6.0 \pm 0.4 mA rms
6. Lamp Voltage
510 Vrms @ IL = 4 mA
590 Vrms @ IL = 6 mA
7. Starting Voltage
1300 Vrms @ 0°C
8. Freq. 30 ~ 60 KHz
9. BRIGADJ (Brightness) : 0 ~ 2.5V
10. B+ : 8 ~ 21V
11. BKLO : 3.3V (On) ; 0V (Off)
12. Temperature Rise:
Temperature Rise under 30°C
Max. operation temperature 65°C
13. HI-Voltage Insulation

Setting DIP Switch

Locate the 10-pole DIP Switch to set the correct configuration for:

-  CPU core frequency (MHz)
-  Flash ROM BIOS update

CPU Core Frequency

Pentium CPU at 3.3V I/O Voltage										
CPU Frequency	1	2	3	4	5	6	7	8	9	10
133 MHz	Off	Off	On	Off	Off	Off	Off	X	X	X
150 MHz	On	Off	On	On	Off	Off	Off	X	X	X
166 MHz	Off	Off	On	On	Off	Off	Off	X	X	X
200 MHz	Off	Off	Off	On	Off	Off	Off	X	X	X
233 MHz	Off	Off	Off	Off	Off	Off	Off	X	X	X

* X = Not Applied.

Pentium CPU at 2.5V I/O Voltage										
CPU Frequency	1	2	3	4	5	6	7	8	9	10
166 MHz	Off	Off	On	On	On	On	Off	X	X	X
200 MHz	Off	Off	Off	On	On	On	Off	X	X	X
233 MHz	Off	Off	Off	Off	On	On	Off	X	X	X
266 MHz	Off	Off	On	On	Off	On	Off	X	X	X

* X = Not Applied.

Flash ROM BIOS

The DIP Switch needed to be set **On** when you are going to update the existing system BIOS. But you should set them back **Off** after updating BIOS is complete.

Flash ROM BIOS	1	2	3	4	5	6	7	8	9	10
Existing BIOS	X	X	X	X	X	X	X	X	Off	Off
Updating BIOS	X	X	X	X	X	X	X	X	On	On

* X = Not Applied.

CPU Core Voltage

Locate the 8-pole DIP Switch to set the correct configuration for CPU core voltage.

CPU Core Voltage	1	2	3	4	5	6	7	8
1.8 V	On	Off	Off	Off	Off	Off	Off	Off
2.0 V	On	On	Off	Off	Off	Off	Off	Off
2.1 V	On	On	On	Off	Off	Off	Off	Off
2.35 V	On	On	On	On	Off	Off	Off	Off
2.45 V	On	On	On	On	On	Off	Off	Off
2.8 V	On	On	On	On	On	On	Off	Off
2.9 V	On	On	On	On	On	On	On	Off
3.3 V	On	On	On	On	On	On	On	On

CPU I/O Voltage

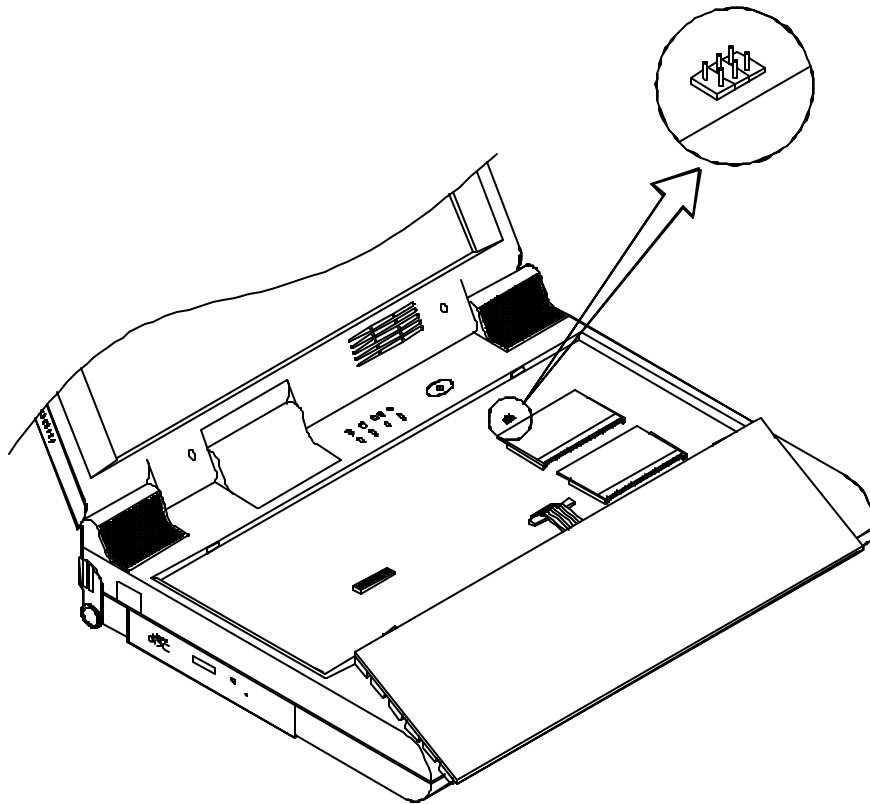
Locate the 2-pole DIP Switch to set the correct configuration for CPU I/O voltage.

CPU I/O Voltage	1	2
2.5 V	Off	On
3.3 V	On	On

Jumper Setting

You need to adjust the jumper settings for different CPU types.

Jumper Setting				
	1-3	2-4	3-5	4-6
P54C	Short	Short	Open	Open
P55C	Open	Open	Short	Short



System Resource Allocation

IRQ:

IRQ 0: System timer

IRQ 1: Keyboard

IRQ 2: Cascade to 2nd 8259

IRQ 3: COM2

IRQ 4: COM1

IRQ 5: Audio

IRQ 6: Floppy

IRQ 7: Printer

IRQ 8: RTC alarm

IRQ 9: SCI. (ACPI), PCIIRQ router (PCI interrupt) (may share with SCI)

IRQ 10: Legacy PCMCIA CSC/functional interrupt, PCI router (PCI interrupt)

IRQ 11: Legacy PCMCIA CSC/functional interrupt, PCI router (PCI interrupt)
or USB controller

IRQ 12: PS2 mouse

IRQ 13: FPU

IRQ 14: Primary IDE (HDD)

IRQ 15: Secondary IDE (CD-ROM/2nd HDD/LS-120/Zip/MO)

DMA:

DMA1, 5: Audio chip (full duplex)

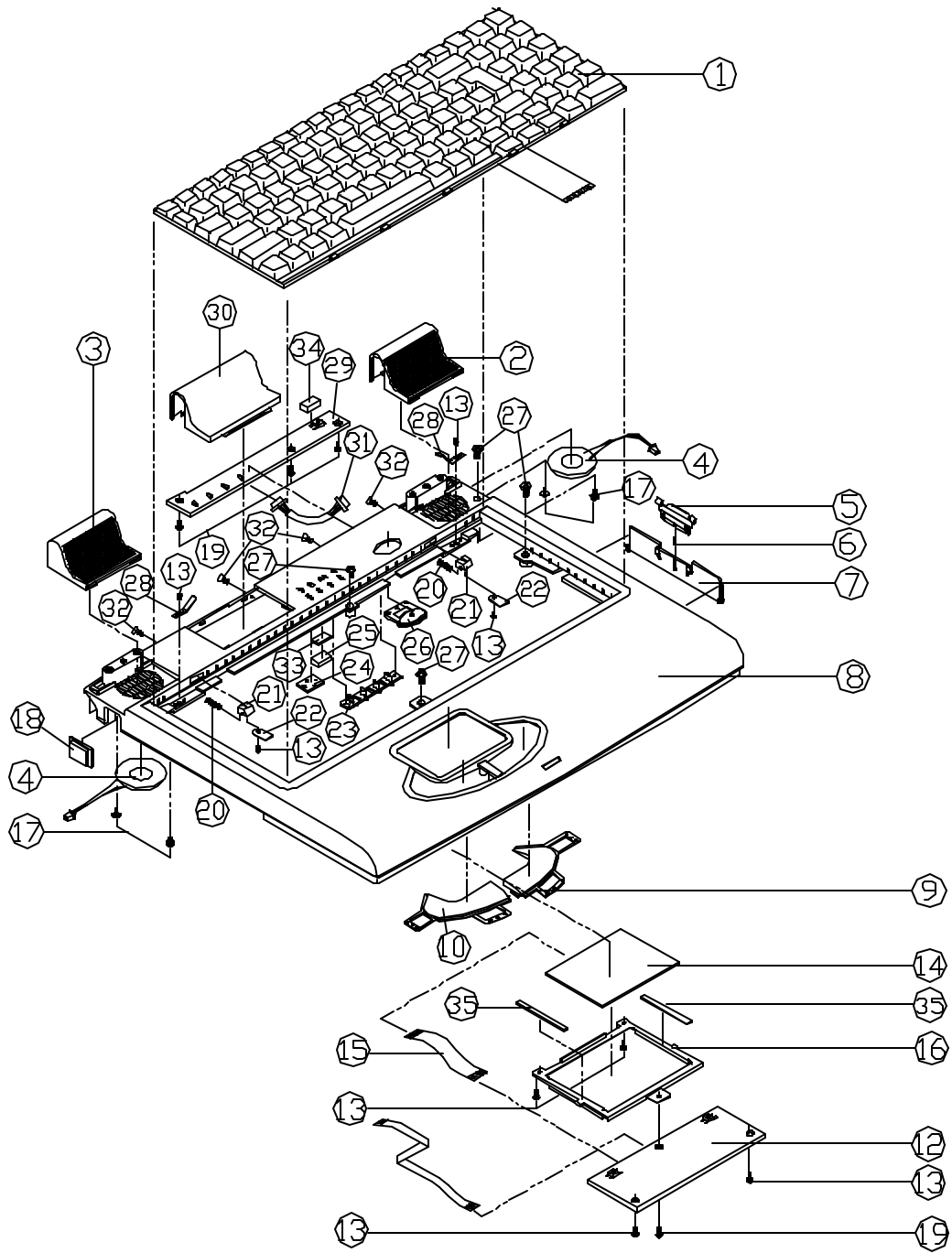
DMA 0: LPT (ECP mode)

DMA 2: FDC

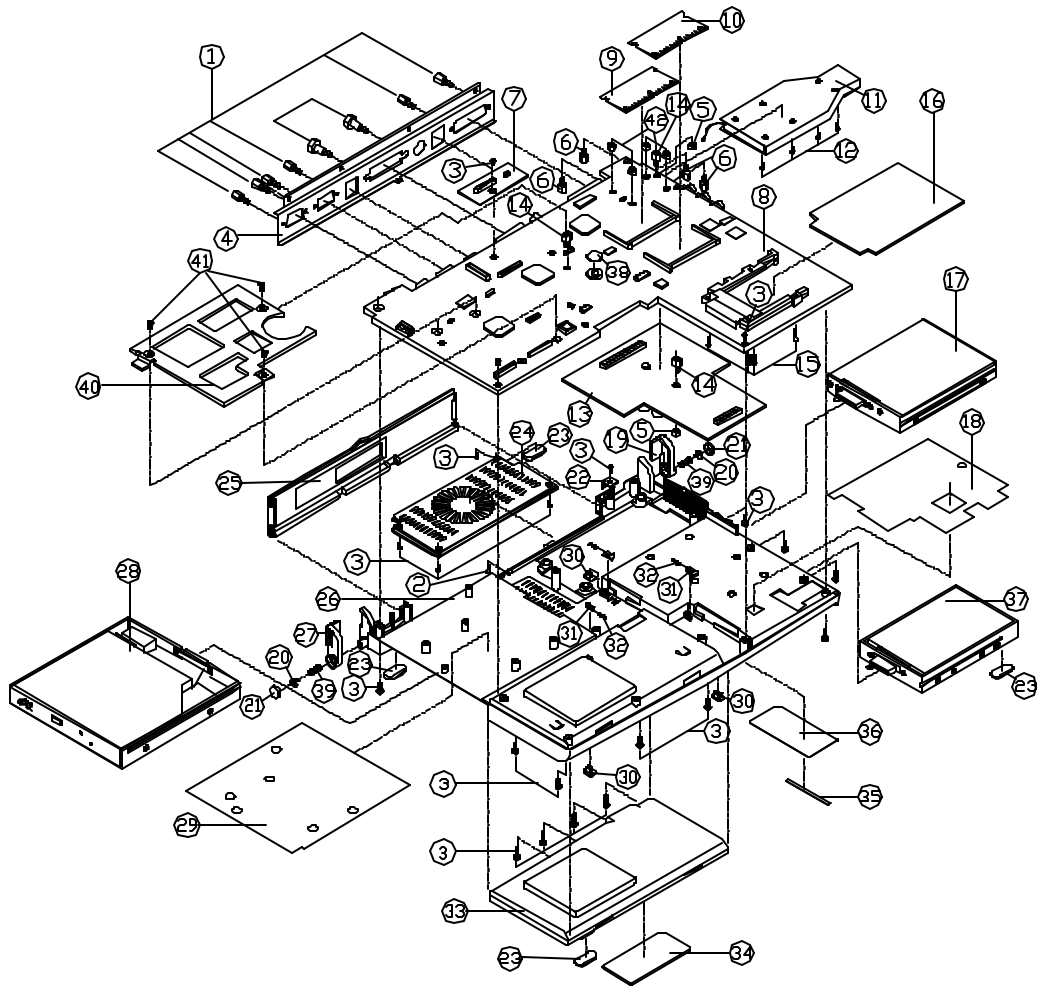
DMA 3: FIR

DMA 6, 7: DMA PC card of PCMCIA controller (PC/PCI DMA)

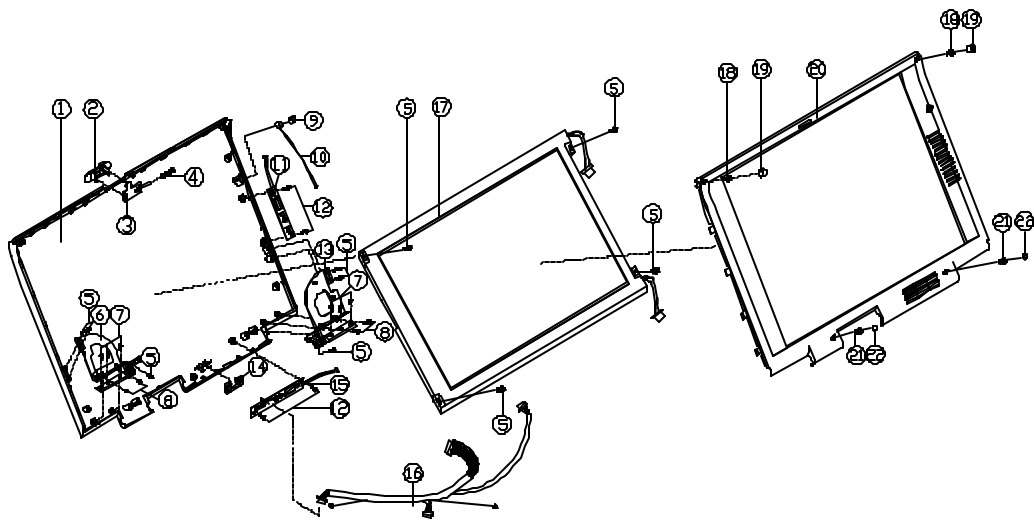
System Block Diagram



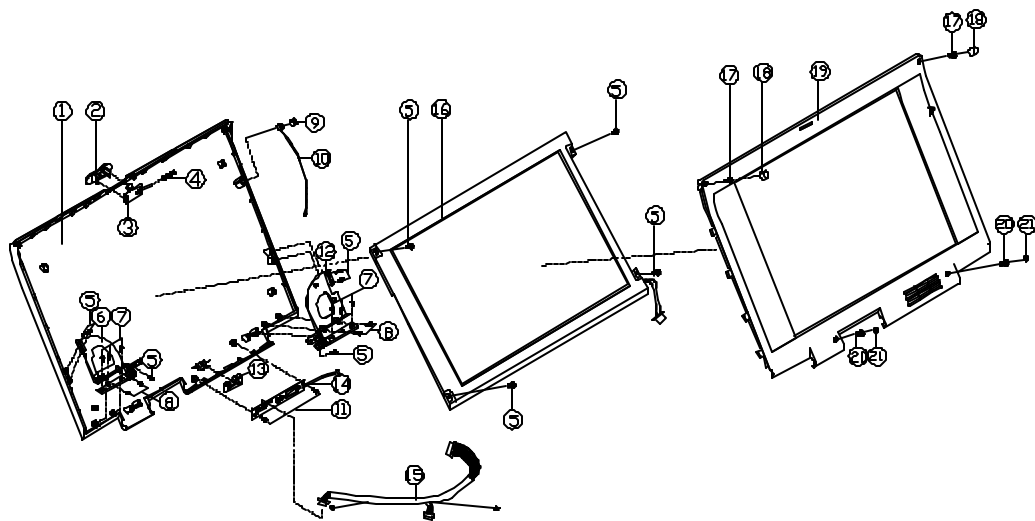
ITEM	PART NAME	PART NO	REMARK
1	KEYBOARD FOR 8500	80-85008-7G0	
2	SPEAKER COVER (R)+NET	33-8500T-A10	
3	SPEAKER COVER (L)+NET	33-8500T-A20	
4	SPEAKER	23-C4020-801	
5	COVER KNOB POM	42-62082-010	
6	SPRING FOR COVER KNOB	38-62020-020	
7	CARD BUS COVER	42-8507P-010	
8	TOP CASE	39-85012-01C	
9	GLIDE POINT KNOB (R)	42-85082-011	
10	GLIDE POINT KNOB (L)	42-85082-021	
11	FFC CABLE	27-9350C-850	
12	SWITCH BOARD	77-8500S-D02	
13	SCREW	35-41120-3RA	
14	GLIDE POINT LOGTECH	87-62070-080	
15	FFC CABLE	27-9350C-F50	
16	GLIDE PAD HOLDER	33-85002-010	
17	SCREW	35-41025-4RA	
18	IR LENS	42-85012-010	
19	SCREW	35-06120-6RA	
20	SPRING FOR K/B LOCK KNOB	38-00R26-010	
21	K/B LOCK KNOB	42-85082-030	
22	K/B LOCK BRACKET	33-66002-020	
23	LED LENS(L)	42-85001-020	
24	MAGNET HOLDER	42-35032-010	
25	MAGNET	34-72002-011	
26	POWER KNOB	42-85084-010	
27	SCREW	35-06125-6R0	
28	K/B SPRING PLATE	38-35020-010	
29	LED BOARD	77-85004-D01	
30	CONNECTOR COVER	42-85072-010	
31	CABLE	28-77B10-450	
32	SCREW	35-26130-6R0	
33	SPONGE FOR HOLDER	47-85092-050	
34	SPONGE FOR LED BOARD	47-85092-040	
35	SPONGE FOR GLIDE PAD BRACKET	47-85092-060	



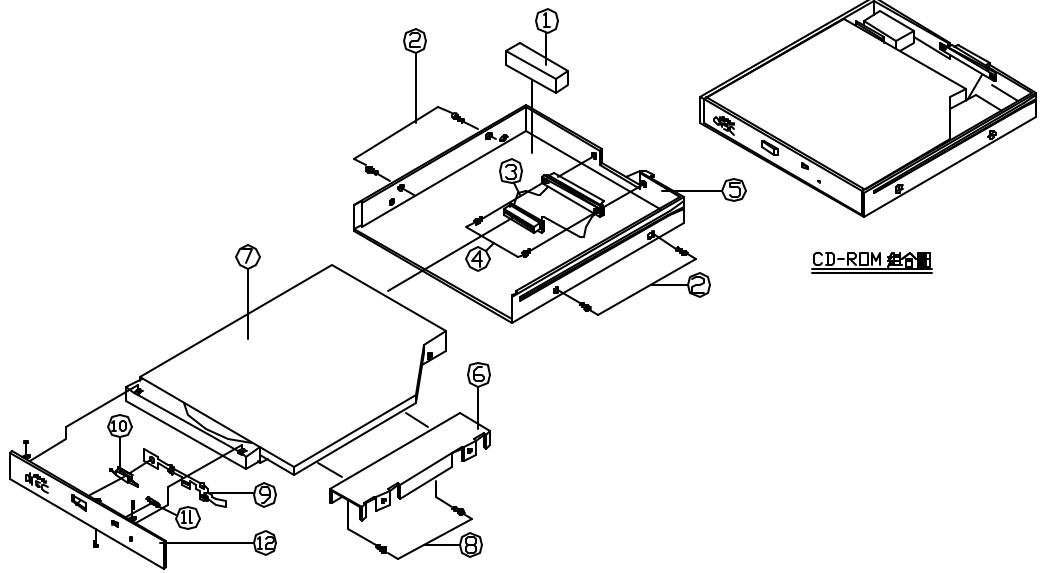
ITEM	PART NAME	PART NO	REMARK
1	HEX STUD	34-07009-011	
2	SCREW	35-26130-6R0	
3	SCREW	35-06125-6R0	
4	REAR BRACKET	33-8500Q-010	
5	NUT NI M2.5	36-01111-250	
6	HEX STUD	34-62M0S-010	
7	DATA BOARD 15.1T	77-850TZ-D01	HDSIDEN
7	DATA BOARD 13.8DSTN	77-8500Z-D01	KYOCERA
8	MAIN BOARD	77-85000-D01	
9	EDO RAM CARD 8M 3.3V	77-7202T-270	
9	EDO RAM CARD 16M 3.3V	77-7202T-470	
9	EDO RAM CARD 32M 3.3V	77-7207T-870	
9	EDO RAM CARD 64M 3.3V	77-7207T-A70	
10	SDRAM CARD 8M	77-7202U-273	
10	SDRAM CARD 16M	77-7202U-473	
10	SDRAM CARD 64M	77-3508U-A70	
11	HEAT SINK ASS'Y	31-8500N-010	
12	SCREW	35-B1125-4R0	
13	DC/DC	77-8500C-D01	
14	HEX STUD	34-8500S-020	
15	SCREW	35-41120-14A	
16	MYLAR FOR CARD BUS	40-85053-030	
17	FDD ASS'Y 8500	79-8502J-010	参考操作圖 (99-85005-050)
18	MYLAR(B)	40-85053-020	
19	FOOT(R)	42-85063-010	
20	SCREW	35-41025-4RA	
21	FOOT RUBBER	47-85013-010	
22	LOCK BRACKET	33-72003-010	
23	BOTTOM CASE RUBBER PAD	47-35023-010	
24	CPU COVER	42-85073-010	
25	REAR COVER ASS'Y	42-8507Q-001	
26	BOTTOM CASE	39-85013-01C	
27	FOOT(L)	42-85063-020	
28	CD-ROM ASS'Y 8500	79-8502Z-010	参考操作圖 (99-85005-070)
29	MYLAR (A)	40-85053-010	
30	BATTERY LOCK KNOB	42-6208M-010	
31	HDD LOCK	42-85083-010	
32	LOCK KNOB SPRING	38-62026-010	
33	BATTERY PACK ASS'Y	79-3500M-416	
33	BATTERY PACK ASS'Y	79-350SM-416	
34	LABEL FOR BATTERY	45-3500M-010	
35	FCC DDC LABEL	45-85003-020	
36	FCC DDC LABEL 8500	45-85003-010	
37	HDD ASS'Y 8500	79-8502I-010	参考操作圖 (99-85005-060)
38	MYLAR FOR BATTERY	40-8505M-010	
39	FOOT SPRING	38-85026-010	
40	K/B SUPPORTER	33-85007-010	
41	SCREW	35-26125-5RA	
42	NUT NI M2.5	36-05111-250	



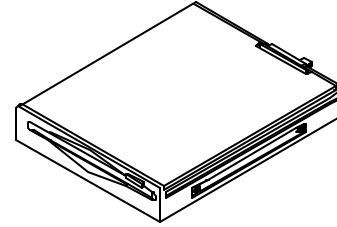
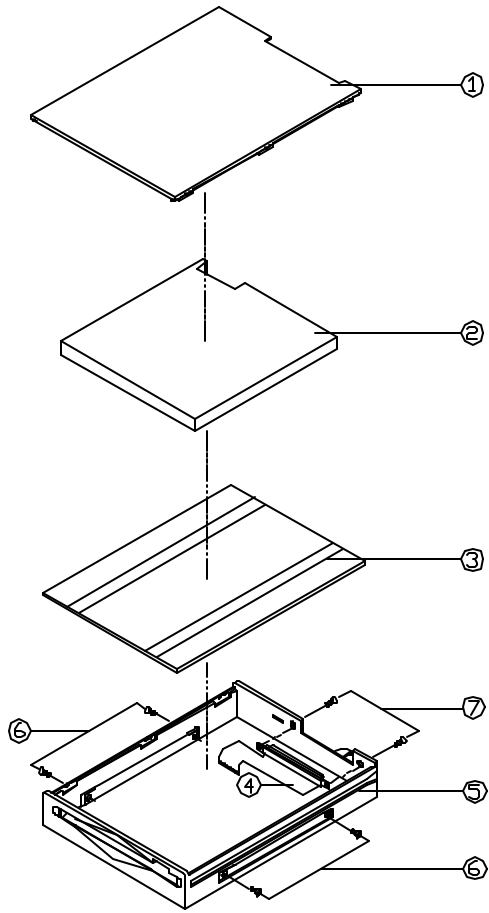
ITEM	PART NAME	PART NO	REMARK
1	DISPLAY BACK PANEL(15.1T)	39-85201-02A	HOSIDEN
2	HOOK KNOB	42-35081-010	
3	DISPLAY HOOK	42-850A1-010	
4	SPRING FOR HOOK	38-100R4-020	
5	SCREW	35-41130-6RA	
6	HINGE (L)	79-8500Y-020	
7	SCREW	35-46130-6RA	
8	SCREW	35-41120-4RA	
9	MIC RUBBER	47-91023-010	
10	MIC + CABLE	23-E0610-22M	
11	INVERTER MODULE(15.1T)	76-850TR-V10	TFT-V
12	SCREW	35-41120-3RA	
13	HINGE (R)	79-8500Y-010	
14	LED LENS FOR BACK PANEL	42-85001-010	
15	INVERTER MODULE(15.1T)	76-850TR-H10	TFT-H
16	CABLE	28-77B31-N40	
17	LCD (15.1')	50-L6710-63H	HOSIDEN
18	SCREW	35-01120-4R0	
19	DISPLAY RUBBER PAD (UP)	47-52021-010	
20	DISPLAY FRONT PANEL(15.1T)	39-85201-01A	
21	SCREW	35-06130-6RA	
22	DISPLAY RUBBER PAD (BOTTOM)	47-85021-010	



ITEM	PART NAME	PART NO	REMARK
1	DISPLAY BACK PANEL<13.8D>	39-85001-02A	KYOCERA
2	HOOK KNOB	42-35081-010	
3	DISPLAY HOOK	42-850A1-010	
4	SPRING FOR HOOK	38-100R4-020	
5	SCREW	35-41130-6RA	
6	HINGE (L)	79-8500Y-020	
7	SCREW	35-46130-6RA	
8	SCREW	35-41120-4RA	
9	MIC RUBBER	47-91023-010	
10	MIC + CABLE	23-E0610-22M	
11	SCREW	35-41120-3RA	
12	HINGE (R)	79-8500Y-010	
13	LED LENS FOR BACK PANEL	42-85001-010	
14	INVERTER MODULE<15.1" >	76-850TR-D10	TFT-H
15	CABLE	28-77B51-131	
16	LCD (13.8")	50-K5810-63K	KYOCERA
17	SCREW	35-01120-4R0	
18	DISPLAY RUBBER PAD (UP)	47-52021-010	
19	DISPLAY FRONT PANEL<13.8D>	39-85001-01A	
20	SCREW	35-06130-6RA	
21	DISPLAY RUBBER PAD (BOTTOM)	47-85021-010	

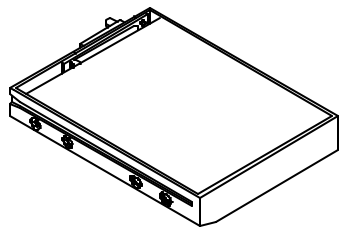
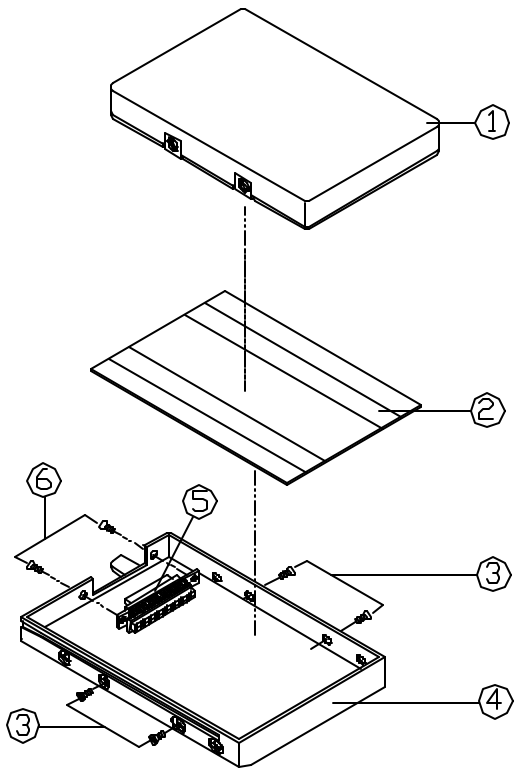


ITEM	PART NAME	PART NO	REMARK
1	SPONGE FOR CD-ROM	47-8509Z-010	
2	SCREW	35-46120-3RA	
3	FPC CABLE 20X	28-79R50-440	TEAC
4	SCREW	35-B4125-4RA	
5	CD-ROM CASE	42-8507Z-010	
6	CD-ROM BRACKET	33-8500Z-010	
7	CD-ROM 20X	87-62010-053	TEAC
8	SCREW	35-01120-2RE	
9	SPRING PLATE	38-62012-020	
10	CD-ROM EJECT BUTTON	42-6207Z-320	
11	CD-ROM LENS	42-52P7Z-110	
12	CD-ROM PANEL	42-6207Z-310	



FDD 組合圖

ITEM	PART NAME	PART NO	REMARK
1	FDD TOP CASE	42-8507J-010	
2	3.5' FDD	85-23211-567-C	TEAC
3	FDD MYLAR	40-8505J-010	
4	FPC CABLE	28-59R60-290	TEAC
5	FDD BOTTOM CASE	42-8507J-020	
6	SCREW	35-B4125-4RA	
7	SCREW	35-B4125-5RA	



2.5" HDD 組合圖

ITEM	PART NAME	PART NO	REMARK
1	2.5"HDD	85-12211-514	IBM
1	2.5"HDD	85-12211-542	SEAGATE
1	2.5"HDD	85-12211-59T	TOSHIBA
1	2.5"HDD	85-12211-5ET	TOSHIBA
2	HDD MYLAR	40-6205I-010	
3	SCREW	35-B6130-4R0	
4	HDD CASE	42-8507I-010	
5	FPC CABLE	28-79R50-260	
6	SCREW	35-B4125-5RA	