

Notebook Specification

This appendix provides the technical specification of the M785 notebook:

A.1 System Specification

MICRO PROCESSOR	
CPU Type	Intel DT Pentium-4 Northwood Processor
Clock Speed	DT Pentium-4 CPU at 2.0/2.2/2.26/2.4/2.53GHz
Internal L1 Cache	64KB
Internal L2 Cache	512 KB
CPU Package	uFCPGA packaging
SYSTEM LOGIC CHIPSET	
Chipset Type	<ul style="list-style-type: none"> SIS 650 - North Bridge SIS 962 - South Bridge
Thermal controller	Integrated in South Bridge
MEMORY MODULE	
Package	DDR-SO-DIMM (1.25")
Size	128 / 256 / 512MB
Mode	DDR SDRAM
Frequency	266 MHz (Northwood)
Data Path	64 Bit
Refresh	CBR Refresh
Supply Voltage	2.5V
Extension	Upgradable to max. 1024MB using 512 MB SODIMM x 2
Parity Support	No parity bit for all memory

BIOS ROM	
ROM Type	512K x 8 CMOS Flash Memory – 49LF040A (SST)
ROM Size	4M-bit
Boot Code Sector	64KB Top Sector
Package	32-pin lead PLCC Package
Erase / Program	<ul style="list-style-type: none"> 70 ms (typical) Chip-Erase Time 18 ms (typical) Sector-Erase / Block-Erase Time 14 us (typical) Byte-Program Time 8 seconds (typical) Chip-Rewrite Time Single-Pulse Program or Erase
Program Voltage	3.0V~3.6V
Supply Current	<ul style="list-style-type: none"> Active = 6mA (typical) Standby = 10uA (typical)

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VIDEO SUBSYSTEM	
Video Chipset	SIS 650 (Integrate in North Bridge)
Video RAM	Shared from System Memory of 8MB up to 64MB
Bus Interface	<ul style="list-style-type: none"> • 66Mhz Host-to-PCI Bridge • A.G.P. v2.0 Compliant
Addressing	Linear Addressing
3D engine clock speed	Up to 143 Mhz
Maximum Resolution at CRT	1800 x 1400 at 32-bit color (16 million colors)
Maximum Color at CRT	32-bit color (16 million colors)
External CRT connector	15-pin D-Sub female
I/O SUBSYSTEM	
I/O Controller	SMSC LPC47N267
Parallel / Printer Port (LPT1)	25-pin D-sub female connector (with EPP/ECP support)
Serial / COM Port (COM1)	<ul style="list-style-type: none"> • Type: 9-pin D-sub male RS-232 connector • Baud Rate: 300 – 38400 bps (UART 16C550A) • Drivers / Receiver: Maxim MAX3243 (SSOP, 28-pin)
KEYBOARD SUBSYSTEM	
Keyboard Controller	ENE KB38867
Firmware Version	Version: 1.47
Package	64-pin TQFP
Host Interface	8042-style host interface
Keyboard Scan	Local 16 x 8 keyboard switch matrix
External PS/2 Keyboard	Mini-DIN PS/2 connector
SOUND SUBSYSTEM	
Audio Controller	Integrated in South Bridge
Audio Codec	ALC 201 CODEC (Analog Devices)
Compatibility	Sound Blaster 16 (Pro) & AC'97 Revision 2.2
Wavetable Function	Software
Connection	Full-Duplex
Volume	Analog H/W Volume
Built-in Speaker	2-way (left and right) mini stereo 1W 8 Ω speakers
Built-in Microphone	Mono
Line-Out Jack	1 x line-out jack with 50mW/20ohm driving capability supported S/PDIF out
Microphone Jack	1 x 3.5p microphone jack with 50mW/20ohm driving capability
POINTING DEVICE SUBSYSTEM	
Chipset Controller	Mitsubishi M38867E4HP Version 1.47
Package	64-pin TQFP
Touchpad Type	Synaptics TM41PDG351-1 Glide Point
Interface	PS/2
External PS/2 Mouse	Mini-DIN PS/2 connector (share with PS/2 keyboard)

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PCMCIA SUBSYSTEM	
Chipset Controller	ENE CB1410 PCI-cardbus bridge
PCMCIA Slot Configuration	1 Type I or Type II
Bus Type	32-bit PCI CardBus
Compatibility	Yenta™ PCI to PCMCIA CardBus Bridge Registers
Compliance	ACPI-PCI Bus Power Management Interface Spec Rev 1.1
POWER MANAGEMENT UNIT (PMU)	
PMU Controller	Mitsubishi M38859FFHP (PMU08)
PMU Modes	Video Timeout, Hard Disk Timeout, Suspend to RAM (STR) mode, Suspend to Disk (STD) mode
Others	LCD Cover-Switch STR, ACPI, DMI 2.0, Thermal Control
STATUS LED INDICATORS	
Number of LEDs	7 LEDs
Power Status LED	Green color when powering on Green color blinking when in STR or STD Amber color in Battery Low.
Battery Charge LED	Green color in charging status Lights off when the battery is fully charged or no battery installed
Internet / Mail LED	Green color blinking when a new mail is arriving
HDD LED	Green color when accessing the HDD
FDD LED	Green color when accessing the FDD
Num Lock LED	Green color for Num Lock activate on keyboard
Caps Lock LED	Green color for Caps Lock activate on keyboard
Scroll Lock LED	Green color for Scroll Lock activate on keyboard

HOT-KEY DEFINITION	
Number of hot-keys	8 <Fn> key combinations
Display Mode	Fn + F3 (LCD/ CRT/ TV/ LCD&CRT)
PC Speaker On / Off (Mute)	Fn + F6
Brightness Up	Fn + F8
Brightness Down	Fn + F9
Internet Function Key	Internet Button
Mail Function Key	Mail Button

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A.2 Display Specification

14.1" XGA TFT LCD (HYDIX)	
LCD Model	HT141X14-101
LCD Type	14.1" XGA TFT
Display Area	H285.696 x V214.272 [mm]
Display Pixels	H1024 x V768 pixels
Pixel Pitch	H0.279 x H0.279 [mm]
Display colors	262K Colors
Module Size	298.5(W) x 227.5(H) x 5.8(D) [mm]
Weight	Approx. 550g
Contrast Ratio	200:1 (typ.)
Power Supply	3.3V
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius
15.0" SXGA TFT LCD (HANNSTAR)	
LCD Model	HSD150PX14-A
LCD Type	15.0" SXGA+ TFT
Active Area	H304.1 x V228.1 [mm]
Display Pixels	H1400 x V1050 pixels
Pixel Pitch	0.218 [mm]
Display colors	262K Colors
Module Size	315.7(W) x 240.5(H) x 7(D) [mm]
Weight	Approx. 650g
Contrast Ratio	250:1 (typ.)
Brightness	150 (cd/m ²)
Viewing Angle (U/D/L/R)	10/30/45/45
Power Supply	3.3V
Response Time	40ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius

A.3 DVD/CD-RW Combo Drive Specification

Drive Manufacturer	QSI SBW-161
Physical Dimension	128.0 x 12.7 x 129 [mm] (W * H * D)
Weight	300g
Loading	Manual tray loading
Ejection	Manual eject using the eject button Auto eject using the eject command on software
Host Interface	Enhanced IDE (ATAPI)
Access Time (1/3 stroke)	DVD-ROM 180ms Typ. CD-ROM 130ms Typ.

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Data Transfer Rate (ATAPI Interface)	16.7 MByte/s (PIO Mode 4) 16.7 MByte/s (Multi word DMA transfer mode-2) 33.3 MByte/s (Ultra DMA transfer mode-2)
Data Transfer Rate (sustained)	Max. 10,800Kbyte/s (DVD); Max.3,600Kbyte/s(CD)
Data Write Rate	Max. 1,200Kbyte/s (CD-R) ; Max.600Kbyte/s(CD-RW)
Starting Time	Max. 15 sec (Except Multi Session)
Stop Time	Max. 6 sec (Except DVD-RAM)
Data Buffer Capacity	2MB
Supply Voltage	+5VDC +/- 0.25V
MTBF	60,000H (Duty 20%)

A.4 Keyboard Specification

Keyboard Type	JME K9801
Type of key switch	Membrane (PE) Switch
Number of keys	87 keys with embedded numeric keypad
Compatibility	Enhanced 101/102 emulation
Travel	3.0 mm ± 0.3 mm
Keyboard Height	6.8 ± 0.3 mm 7.0 ± 0.3 mm (SPACE Key)
Keycap Pull Off Force	≥ 500g
Supply Voltage	6V
Operating Temperature	-10 to 60 degrees Celsius

A.5 Touch Pad Specification

Touch Pad Type	Synaptics GlidePoint TM41PDG351-1
Interface	PS/2 (compatible with Microsoft Mouse Driver)
Supply Voltage	5V
Supply Current	4.0mA (Max) Operating
Dimension	W65 x H49 x D2.82 (D1.07 PCB) mm
Weight	8g.
Operating Temperature	0 to 60 degrees Celsius
Storage Temperature	-40 to 65 degrees Celsius

A.6 Internal Modem Specification

Modem Type	MDC FAX/MODEM UNIT
Chipset	Lucent Mars3 1648
Modem Chipset Interface	MDC
Wake Up Function	Supports Ring-in Resume Wake Up function
Connection Mode	V.90 Kbps
Speakerphone	Full duplex speakerphone (FDSP)
Fax Transmission Way	Half Duplex
Modem Speed	56 Kbps

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Modulation Format	V.90 PCM
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A.7 Internal LAN Specification

LAN Type	ICS 1893AF
LAN Chip Interface	On-Board
Speed	10/100 Mbps Auto-Negotiation
Wake Up Function	Supports Wake-on-LAN (WOL) & LAN-BOOT function

A.8 Power Supply

AC POWER ADAPTER (LITEON)	
Adapter Type	ADP-65DB
Input Voltage	100 to 240VAC
Input Frequency	50 to 60 Hz
Input Current	1.5A Max at 110VAC 0.7A Max at 220VAC
Efficiency	83% Min with the AC input set at 115v/50Hz
In-Rush Current (Cold Start)	50A Max at 100 VAC 100A Max at 240 VAC
Output Power	90W
Output Voltage	+19Vdc (main)
Output Current Limit	5.2A~6.0A
Over Voltage Protection	25V Max
Over Temperature protection	110~130 degree C
LED Display	Green LED (On / Off)
Dimension	L133 x W58 x H29 [mm]
LITHIUM ION (LI-ION) BATTERY PACK	
Model	Sanyo Li-Ion Rechargeable Smart Battery
Cell Number	8
Rating (Nominal) Voltage	14.8V
Typical Capacity	4000 mAH
Watts	51.84 W
Charging Voltage	16.8V
Charging Efficiency	100%
EVD1	14.0V
EVDF	12.0V

A.9 Inverter Specification

Input Voltage	5.0V
Start Voltage	1200Vrms (min)
Output Current	6mA (max)
Frequency	30~70KHz

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Efficiency	75% (min)
Brightness Control Voltage	0.94~1.86V

A.10 DC/DC Specification

Controller	MAX1631
Input Voltage	8 ~ 20V
Output Current	7A (5V) / 4.5A (3.3V) / 120mA (12V)
Frequency	200KHz
Support Mode	OVP / OCP

A.11 Charger Specification

LITHIUM ION (LI-ION) BATTERY PACK	
Max. Temperature	60 degrees
Controller	Mitsubishi 3886X
Input Voltage	18.5 ~ 20V
Max. Charger Voltage	4.35V / cell
Charger Entry Temperature	0 – 50 degrees
Max. Timer	300 minutes
Trickle Charger Detect	0 < V < 3V / cell
Output Current (system off)	1.6A (Min) / 1.7A (Typ) / 1.8A (Max)
Output Current (system on)	constant power
Trickle Charger Current	120mA
Ripple & Noise	500mV
Efficiency	90%

A.12 Mechanical Specification

Unit Dimensions (W x D x H) in millimeters	330 x 280 x 42 mm (Front)
Unit Weight	Approximately 3.5Kg (8 lbs) with 14.1" LCD System with HDD, FDD, CD-Rom & One Li-Ion Battery Pack

A.13 Environmental Requirements

Temperature Operating Temperature Storage Temperature	0°C to 40°C -20°C to 60°C
Humidity Operating & Storage	40°C / 85% RH Over 48 hours

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Shock (Non-operating) Unpacked	Acceleration: 50G Duration Time: 11ms No. of Times: 3 Times Direction: 6 face
Drop Package	Drop Height: 91cm (under 10Kg) 76cm (over 10Kg) Drop Phase: 1 corner, 3 line, 6 face
Electro-Static Discharge (ESD)	Contact: +/- 6KV Air: +/- 10KV