

Notebook Specification

This appendix provides the technical specification of the A440 Series notebook:

A.1 System Specification

MICROPROCESSOR	
CPU Type	Pentium-III / Celeron
Clock Speed and Voltage	<ul style="list-style-type: none"> Pentium-III CPU at 650 / 700 / 750 / 800 / 850 MHz Celeron CPU at 500 / 533 / 566 / 600 / 633 / 667 MHz
External L2 Cache	256 KB (Pentium-III) / 128KB (Celeron)
CPU Package	FC-PGA
SYSTEM LOGIC CHIPSET	
Chipset Type	<ul style="list-style-type: none"> VIA VT8601 - North Bridge VIA VT82C686A - South Bridge
Thermal controller	Integrated in South Bridge chip
SYSTEM CLOCK	
System Clock	ICWork W156
Package	SSOP
Clock Summary	<ul style="list-style-type: none"> CPUCLK = 66/100 MHz PCICLK = 30/33 MHz South Bridge / VGA = 14.318 MHz North Bridge = 48 MHz
Supply Current	Icc Max = 90mA (CPU = 66.6 MHz, PCI = 33 MHz)
MEMORY MODULE	
Memory DRAM Module	PQI / Pan RAM / Kingmax
Package	PC100 SODIMM 144-pin
Operation Mode	Synchronous Dynamic Mode
Refresh	Auto and Self Refresh
Slow Refresh	4096 refresh cycle / 64ms
Supply Voltage	3.3V
Configuration	<ul style="list-style-type: none"> Standard SODIMM DRAM Module – 2 pieces 640KB Conventional RAM 128KB BIOS Shadow 256KB reserved for Power Management usage 7168KB Extended RAM Upgradable to max. 256MB using 16, 32, 64, 128 MB SODIMM
Parity Support	No parity bit for all memory

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BIOS ROM	
ROM Type	256K x 8 CMOS Flash Memory – 28SF040-15 (SST)
ROM Size	4M-bit
Boot Code Sector	Top Sector
Package	PLCC 32-lead
Erase / Program	<ul style="list-style-type: none"> • 8 second typical chip erase • 3.6 second chip program • 100,000 erase/program cycles minimum
Program Voltage	5V
Supply Current	<ul style="list-style-type: none"> • Icc Max = 30mA (operating) • Iccsb Max = 1uA (standby)
VIDEO SUBSYSTEM	
Video Chipset	Trident CyberBladei1 (Integrated in North Bridge chip)
Video RAM	4MB or 8MB using Shared Memory Architecture (SMA)
Bus Interface	32-bit PCI Local Bus
Addressing	Linear Addressing
Simul Scan	Yes
Maximum Resolution at CRT	1204 x 1024 at 24-bit color (16 million colors)
Maximum Color at CRT	24-bit color (16 million colors)
External CRT connector	15-pin D-Sub female
I/O SUBSYSTEM	
I/O Controller Chip	Integrated in South Bridge chip
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 16C550) • Drivers / Receiver: Maxim MAX3243 (SSOP, 28-pin)
SIR Port (COM2)	<ul style="list-style-type: none"> • Type: IrDA • Communication: Full-Duplex • Operating Distance: 1 meter • Data Rate: 2.4 to 115.2Kbps (SIR)
KEYBOARD SUBSYSTEM	
Keyboard Controller	Mitsubishi M38867
Package	QFP 80-Pin
Host Interface	8042-style host interface
Keyboard Scan	Local 16 x 8 keyboard switch matrix
External PS/2 Keyboard	Mini-DIN PS/2 connector

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SOUND SUBSYSTEM	
Audio Chip	Integrated in South Bridge (AC-97)
Bus Interface	32-bit PCI Bus
Compatibility	Sound Blaster (Pro) & 3D Surround Sound
Wavetable Function	Software
Connection	Full-Duplex
Built-in Speaker	2-way (left and right) mini speakers
Built-in Microphone	Mono
Line-In Jack	1 x line-in jack
Line-Out Jack	1 x line-out jack
Microphone Jack	1 x 3.5p microphone jack
POINTING DEVICE SUBSYSTEM	
Chipset Controller	Mitsubishi M38867
Package	QFP 80-Pin
Touchpad Type	ALPS Glide Point
Interface	PS/2
External PS/2 Mouse	Mini-DIN PS/2 connector (share with PS/2 keyboard)
PCMCIA SUBSYSTEM	
Chipset Controller	Texas Instrument (TI) PCI1225
PCMCIA Slot Configuration	2 Type I or Type II at the same time, or 1 Type III
Bus Type	32-bit PCI CardBus
Compatibility	Register Compatible with Intel 82365SL
ZV Port Support Slots	Support Zoomed Video (ZV) port on top slot
POWER MANAGEMENT UNIT (PMU)	
PMU Modes	Doze mode, 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 for system power on Green color and blinking when system enters STR mode Amber color when battery low warning
Battery Charge LED	Amber color when charging Off when fully charged or not charging
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

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HOT-KEY DEFINITION	
Number of hot-keys	11 <Fn> key combinations
LCD/CRT Simul	Fn + F3 (toggle)
Suspend mode	Fn + F4
Display Stretch / Normal	Fn + F5 (toggle)
PC Speaker On / Off (Mute)	Fn + F6 (toggle)
Brightness Up	Fn + F8
Brightness Down	Fn + F9
Contrast Up	Fn + F10 (DSTN only)
Contrast Down	Fn + F11 (DSTN only)
Scroll Lock	Fn + F12 (US / Canada is supported by direct key)
Save to Disk	Fn + Power Button

A.2 Display Specification

12.1" SVGA TFT LCD (SANYO)	
LCD Model	Sanyo TM121SV-02L03A
LCD Type	12.1" SVGA TFT
Display Area	H246 x V184.5 [mm]
Display Pixels	H800 x V600 pixels
Pixel Pitch	H 0.3075 x V 0.3075
Pixel Arrangement	RGB vertical stripe
Display colors	262K Colors
Module Size	H275 x V199 x t6.9 MAX [mm]
Weight	Approx. 440g
Contrast Ratio	150:1 (typ.)
Power Supply	3.3V
Power Consumption	3.3W
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius
12.1" SVGA TFT LCD (LG)	
LCD Model	LG LP121S3-A LCD
LCD Type	12.1" SVGA TFT
Display Area	H246 x V184.5 [mm]
Display Pixels	H800 x V600 pixels
Pixel Pitch	H 0.3075mm x V 0.3075mm
Pixel Arrangement	RGB stripe arrangement
Display colors	262K Colors
Module Size	H275 x V199 x T6.5 MAX [mm]
Weight	Approx. 450g
Contrast Ratio	150:1 (Typ.)

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Power Supply	3.3 V
Power Consumption	1.4 W
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius
13.3" XGA TFT LCD (ADT)	
LCD Model	ADT L133X 1-3
LCD Type	13.3.1" XGA TFT
Display Area	H270.336 x V202.752 [mm]
Display Pixels	H1024 x V768 pixels
Pixel Pitch	0.264(per one triad) X 0.264 [mm]
Pixel Arrangement	RGB vertical stripe
Display colors	262K Colors
Module Size	292(W) x 215(H) x 6.5(D) typ., 6.8(D) max
Weight	Approx. 515g
Contrast Ratio	150:1 (typ.)
Power Supply	3.3V
Power Consumption	4.0 W (w/o Inverter, All Black Pattern)
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius
14.1" XGA TFT LCD	
LCD Model	LG LP141X5-B1NC
LCD Type	14.1" XGA TFT
Display Area	H285.7 x V214.3 [mm]
Display Pixels	H1024 x V768 pixels
Pixel Pitch	H 0.279 x V 0.279
Pixel Arrangement	RGB vertical stripe
Display colors	262K Colors
Module Size	H298.5 x V227.5 x t6.9 MAX [mm]
Weight	Approx. 610g
Contrast Ratio	200:1 (typ.)
Power Supply	3.30V
Power Consumption	3.3W
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius
14.1" XGA TFT LCD (CPT)	
LCD Model	CPT CLAA141XB01
LCD Type	14.1" XGA TFT
Display Area	H285.696 x V214.272 [mm]
Display Pixels	H1024 x V768 pixels

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Pixel Pitch	H0.279 x H0.279 [mm]
Pixel Arrangement	RGB vertical stripe
Display colors	262K Colors
Module Size	298.5(W) x 227.0(H) x 6.5(D) [mm]
Weight	Approx. 575g
Contrast Ratio	200:1 (typ.)
Power Supply	3.3V
Power Consumption	4.7(W)
Response Time	30ms (max)
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius

A.3 Floppy Disk Drive Specification

Drive Manufacturer	Mitsubishi MF355H-347MN
Floppy Diskette Type	3.5" Double Sided, High Density
Physical Dimension	126 x 96 x 12.7 [mm]
Weight	160g
Capacity	1.44MB / 1.2MB / 720KB High Density (Formatted) 2MB / 1MB (Unformatted)
Transfer Rate	500 / 250 Kbits/sec
Recording Method	MFM / FM
Track to Track Seek Time	3 ms
Seek Settling Time	15 ms
Average Access Time	94 ms
Disk Revolution	300 rpm
FDD Indicator	LED on drive and Media Access LED on LED Indicator
MTBF	30,000
Operating Temperature	4 to 46 degrees Celsius

A.4 CD-ROM Drive Specification

Drive Manufacturer	TEAC CD-224E-A92
Physical Dimension	128.0 x 129.0 x 12.7 [mm]
Weight	280g or less
Loading	Manual tray loading
Ejection	Manual eject using the eject button Auto eject using the eject command on software
Host Interface	IDE (ATAPI)
Average Access Time	130msec. average (x24-speed)
Full Stroke Access Time	300msec (x24-speed)
Disc Speed	5,136rpm typ.
Data Transfer Rate (burst)	16.7 Mbytes/sec. Max.
Data Transfer Rate (sustained)	1,545 ~ 3,600KB/sec

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Starting Time	12 sec. Max.
Data Buffer Capacity	128 KB
Supply Voltage	+5VDC
MTBF	60,000POH or more

A.5 DVD-ROM Drive Specification

TOSHIBA SD-C2302	
Drive Manufacturer	TOSHIBA SD-C2302
Physical Dimension	128.0 x 12.7 x 126.1 [mm] (W * H * D)
Weight	265g (Net)
Loading	Manual tray loading
Ejection	Manual eject using the eject button Auto eject using the eject command on software
Host Interface	IDE (ATAPI)
Average Access Time	120ms(DVD)/95 ms(CD)
Full Stroke Access Time	300msec (x24-speed)
Disc Speed	3,400 rpm(DVD); 5,100 rpm(CD)
Data Transfer Rate (burst)	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. 8,112Kbyte/s (DVD) ; Max.3,600Kbyte/s(CD)
Starting Time	Typical 9 sec / Max 18 sec (from stand by to ready)
Data Buffer Capacity	128 KB
Supply Voltage	+5VDC
MTBF	60,000POH or more
MKE SR-8174-CPK	
Drive Manufacturer	MKE SR-8174-CPK
Physical Dimension	128.0 x 12.7 x 129 [mm] (W * H * D)
Weight	290g (Net)
Loading	Manual tray loading
Ejection	Manual eject using the eject button Auto eject using the eject command on software
Host Interface	IDE (ATAPI)
Average Access Time	120ms (Typical) 180ms (Average) (CD) 170ms (Typical) 270ms (Average) (DVD)
Full Stroke Access Time	210ms (Typical) 270ms (Average) (CD) 320ms (Typical) 480ms (Average) (DVD)
Disc Speed	N/A
Data Transfer Rate (burst)	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. 8,115Kbyte/s (DVD) ; Max.3,600Kbyte/s(CD)
Starting Time	Typical 4 sec / Max 10 sec (from stand by to ready)

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Data Buffer Capacity	512 KB
Supply Voltage	+5VDC
MTBF	60,000POH or more

A.6 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	2.5 mm
Keyboard Height	6.5 ± 0.3 mm 7.0 ± 0.3 mm (SPACE Key)
Keycap Pull Off Force	≥ 800g
Supply Voltage	6V
Operating Temperature	-10 to 60 degrees Celsius

A.7 Touchpad Specification

Touchpad Type	ALPS GlidePoint KGDDBA941A-2
Interface	PS/2 (compatible with Microsoft Mouse Driver)
Supply Voltage	5V
Supply Current	4.0mA (Max) Operating
Dimension	W56 x H40 x D0.69 (2.5 w/ PCB) mm
Weight	20g max.
Operating Temperature	0 to 50 degrees Celsius
Storage Temperature	-20 to 60 degrees Celsius

A.8 Internal Modem Specification

Modem Type	Software Modem (Integrated in South Bridge)
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
Modulation Format	V.90 PCM

A.9 Internal LAN Specification

LAN Type	Intel 82559
LAN Chip Interface	Mini-PCI Bus
Speed	10/100 Mbps
Wake Up Function	Supports Wake-on-LAN (WOL) function

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A.10 Power Supply

AC POWER ADAPTER	
Adapter Type	Delta ADP-50MB
Input Voltage	100 to 240VAC
Input Frequency	50 to 60 Hz
Input Current	1.5A Max at 90VAC 0.75A Max at 180VAC
Efficiency	80% Min
In-Rush Current (Cold Start)	60A Max at 115 VAC 100A Max at 230 VAC
Output Power	60W
Output Voltage	+19Vdc (main)
Output Current	3.16A (Max)
Over Voltage Protection	28V Max
Over Current Protection	19V / 4A (max)
LED Display	Green LED (On / Off)
Dimension	L107 x W60.5 x H30 [mm]
Weight	250g
LITHIUM ION (LI-ION) BATTERY PACK	
Model	Panasonic Li-Ion Rechargeable Smart Battery
Cell Type	CGR18650
Cell Number	8
Rating (Nominal) Voltage	14.4V
Typical Capacity	3000 mAh
Watts	43.2 W
Charging Voltage	17V
Charging Efficiency	100%
EVD1	13.9V
EVDF	12.0V
NICKEL-METAL HYDRIDE (NIMH) BATTERY PACK	
Model	Panasonic NiMH Rechargeable Smart Battery
Cell Type	HHR380A
Cell Number	8
Rating (Nominal) Voltage	9.6V
Typical Capacity	4500 mAh
Watts	43.2 W
Charging Voltage	14V
Charging Efficiency	95%
EVD1	8.8V
EVDF	8.0V

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A.11 Charger Specification

Controller	TMP47C440M (GR11)
Input Voltage	18.5 ~ 20V
NICKEL-METAL HYDRIDE (NIMH) BATTERY PACK	
Full Charger Sense	3 degree / 4 minute
Max. Temperature	60 degrees
Max. Charger Voltage	1.8V / cell
Charger Entry Temperature	0 – 50 degrees
Max. Timer	512 minutes
Trickle Charger Detect	0 < V < 1V / cell
Recharge Spec	Battery gauge capacity < 95%
Output Current (system off)	1.3A (Min) / 1.4A (Typ) / 1.5A (Max)
Output Current (system on)	1.3A (Min) / 1.4A (Typ) / 1.5A (Max)
Trickle Charger Current	1/16 Hz 1.4A 100 min.
Ripple & Noise	500mV
Efficiency	90%
LITHIUM ION (LI-ION) BATTERY PACK	
Full Charger Sense	1 min : 150mA
Max. Temperature	60 degrees
Max. Charger Voltage	4.4V / cell
Charger Entry Temperature	0 – 50 degrees
Max. Timer	512 minutes
Trickle Charger Detect	0 < V < 3V / cell
Recharge Spec	Battery gauge capacity < 95%
Output Current (system off)	1.3A (Min) / 1.4A (Typ) / 1.5A (Max)
Output Current (system on)	1.3A (Min) / 1.4A (Typ) / 1.5A (Max)
Trickle Charger Current	1/16 Hz 1.4A 100 min.
Ripple & Noise	500mV
Efficiency	90%

A.12 Mechanical Specification

Unit Dimensions (W x D x H) in millimeters	350 x 250 x 39 mm
Unit Weight	Under 6.6 lbs

A.13 Environmental Requirements

Temperature	
Operating Temperature	5°C to 35°C
Storage Temperature	-20°C to 60°C

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Humidity Operating Storage	10% to 80% RH without condensation 5% to 90% RH without condensation
Altitude Operating / Non-operating	10,000 feet / 40,000 feet
Shock (Non-operating) Unpacked Packed	240 G, 1/2 sine wave, 2p3 ms 40 G, 1/3 sine wave, 10p3 ms
Drop Packed Loose Cargo	10 drops (6 faces, 3 edges, 1 corner) at 42 inches height, after 6 hours at -10.5°C and 50.5°C 11800 impact at 1/16"
Electro-Static Discharge (ESD) Under 8KV 8.5KV to 15KV	No soft error is allowed for 10 discharges No component damaged for 5 discharges