

# Appendix A

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# Features and Specifications

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This appendix lists the features of the Satellite Pro 480CDT computer and summarizes its specifications.

## Built-in Features

This section lists the Satellite Pro 480CDT features.

## Technology and Processor

### Microprocessor

233 MHz, 3.3 volt/2.45 volt Intel Tillamook processor with MMX Technology, 16 KB write-back internal cache (8 KB instruction, 8 KB data)

### LSI and CMOS

Large scale integrated and complementary metal-oxide semiconductor technology, providing minimum size and weight, low power usage and high reliability

### Memory

32 MB EDO DRAM, delivers high performance with a 60 nanosecond (ns) access time, hyperpage mode, 64-bit data bus width

Video Graphics  
Controller

Chips & Technologies B65555 SVGA graphics controller with a 64-bit VESA local bus supports BitBLT accelerator, supports high-resolution, high-color video modes listed in Appendix D "Video Modes" on page 391; 2 MB VRAM using 3.3 volt, 50 nanosecond DRAM memory

ECP

The parallel port is an IEEE 1284 8-bit Enhanced Capability Port (ECP-compliant port), providing increased performance when you're using an ECP-compatible parallel device

## Power

Computer

AC power adapter

Main Battery

Removable, rechargeable Li-Ion battery pack

Backup Battery

Nickel-metal hydride (NiMH) battery provides power for special memory features, such as Resume Mode

RTC battery

NiMH battery provides power for the internal real-time clock and calendar

Intelligent power supply

Detects low battery charge and displays the time remaining

Automatic power off features

Save battery power by automatically turning off the display, hard disk and system when they have not been accessed for a set length of time

## Storage Capacity

3.5-inch diskette drive

Accommodates both 1.44 MB, high-density (2HD) and 720 KB, double-density (2DD) diskettes

Hard disk

2.5-inch integrated Enhanced IDE drive and controller provides nonvolatile storage for 3.8 GB

## Ports

Parallel port

Selectable, ECP-compatible parallel port that provides a Centronics-compatible connection to a printer or other parallel output or bi-directional device

Serial port

9-pin, RS-232-C-compatible high-speed buffered 16550UART serial port lets you connect an external modem, mouse, serial printer or other serial device

IrDA port

IrDA 1.1 compliant, fast infrared port supports 4Mbps transfer rate

Monitor port

15-pin, analog SVGA port lets you connect an external VGA or SVGA monitor (color or monochrome)

PS/2 port

PS/2-compatible port allows you to connect a 101/102-key keyboard or a PS/2 mouse. You can purchase a "Y" cable that allows you to connect a PS/2 keyboard and a PS/2 mouse simultaneously

#### NoteDock port

240-pin port lets you connect an optional NoteDock III Enhanced Port Replicator that duplicates the ports on the computer and provides the following additional features: a line-out jack, a joystick/MIDI port, and two Type III CardBus compliant PC Card slots

#### External diskette drive port

Lets you connect the 3.5-inch diskette drive externally, when it is not installed in the SelectBay

#### Microphone jack

3.5 mm jack lets you connect an external microphone or other audio input device

#### Headphone jack

3.5 mm jack lets you connect stereo headphones or other audio output device, such as external speakers

#### Line-in jack

3.5 mm jack lets you play and record stereo sound from an external audio device, such as a stereo system

#### Modem port

RJ-11 jack lets you connect the computer's built-in fax/modem to a standard voice-grade telephone line

#### Cellular cable port

Cellular cable port lets you connect the computer's built-in fax/modem to a cellular telephone

#### USB port

Universal Serial Bus port provides a USB connection

## Standard Hardware

#### Memory

32 MB, 3.3 volt, 64-megabit EDO (Extended Data Output) dynamic RAM chips

#### Display

12.1-inch (measured diagonally) TFT color LCD displays up to 16 M colors simultaneously at 800 x 600 resolution.

#### Keyboard

Enhanced 84-key (86-key in Europe) keyboard emulates the IBM PS/2 keyboard and includes embedded numeric and cursor control overlays and dedicated cursor control keys

#### Sound

Yamaha OPL3-SA3 sound chip is compatible with SoundBlaster Pro V3.01, Windows Sound System V2.0

#### AccuPoint and buttons

Provides the complete function of a mouse or other pointing device from within the keyboard

#### PC Card slots

Let you install one Type III or up to two Type II PC Cards. These slots are Zoomed Video (ZV) and CardBus compatible. Maximum slot thickness: 10.5 mm

#### Headset

Koss stereo headset lets you experience your computer's sound capabilities without disturbing those around you

#### CD-ROM Drive

Bundled 5.25 inch with 10X (average) speed, enhanced IDE (ATAPI) interface with a data transfer rate of 1500 KB per second.

## Standard Software

#### Operating System

Microsoft Windows 95 OSR2.0

#### Configuration Programs

The MaxTime Control Panel, the Toshiba System Control Panel, and TSETUP let you change configuration options and set preferences

#### Power

APM and the Toshiba Access Panel monitor the battery charge and provide access to the computer's power-saving features

#### CD Management

The magiCDisc program lets you keep track of CDs you've used on your computer

File Transfer and Remote Printing

IntelliSync program lets you transmit files or print to another computer via the serial, parallel or infrared port

Faxing and Telecommunications

Microsoft Fax and HyperTerminal (Windows 95)

### Special Features

Resume Mode

Electronic bookmark that records what you're doing when you turn the computer off and returns you to the same place when you turn the power back on

Advanced Power Management

Determines the system's power needs and automatically configures the computer for maximum power savings

Security

Instant and power-on passwords help protect your files

## Optional Accessories and Devices

This section lists the options available for the Satellite Pro 480CDT computer.

### SelectBay Modules

Hard disk drive module

2.5-inch, Enhanced IDE drive module provides storage for an additional 2.16 billion bytes (2.02 gigabytes)

Battery module

Rechargeable Li-Ion battery module

### Power Devices

Battery charger

Charges extra battery packs

Additional battery packs

Use as spare or replacement packs to extend the time you can operate the computer away from a live wall outlet

### Memory Cards

8 MB

Expands the computer's memory to 40 MB

16 MB

Expands the computer's memory to 48 MB

32 MB

Expands the computer's memory to 64 MB

48 MB

Expands the computer's memory to 80 MB

128 MB

Expands the computer's memory to 160 MB

## Port Replicator

NoteDock III  
Enhanced Port  
Replicator

Optional docking station that provides access to the following: headphone jack, external diskette drive port, PS/2 mouse port, PS/2 keyboard port, two type III PC Card slots, audio line-in jack, audio line out jack, serial port, video port, parallel port, MIDI/joystick port, AC in and security lock slot

## Others

Carrying case

Sturdy fabric or leather carrying case protects the computer while traveling

## Security

Cable

Kensington Cable Lock to deter computer theft

## Specifications

### Physical Dimensions

Weight

6.9 lbs

Size

width x depth x height

11.95 inches x 9.4 inches x 2 inches

## Environmental Conditions

### Operating

Temperature 5°C (41°F) to 35°C (95°F)

### Non-operating

Temperature -20°C (-4°F) to 65°C (149°F)

Relative Humidity 20% to 80% noncondensing

Relative Humidity 10% to 90% noncondensing

Altitude (relative to sea level) -60 to 3,000 m

Altitude (relative to sea level) -60 to 10,000 m

Shock 10G; 1.5G with CD-ROM drive installed

Shock 60G; 50G with CD-ROM drive installed

Vibration 0.5G; 0.25G with CD-ROM drive installed

Vibration 1G; 1G with CD-ROM drive installed

# Appendix C

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# System Resources

This appendix lists the preassigned IRQ levels, DMA channels and I/O port addresses.

## IRQ Level Assignments

The direct line to the CPU is called an Interrupt ReQuest (IRQ) level or channel. You'll hear both terms used by technical experts. They mean the same thing. The following table lists the IRQ level assignments for the Satellite Pro 480CDT computer:

<i>IRQ</i>	<i>Use</i>	<i>Notes</i>
0	Timer	
1	Keyboard	
2	PIC #2	
3	COM2	
4	COM1, COM4	IrDA, PC Card
5	COM3, COM4, or LPT2	IrDA, PC Card
6	3.5-inch diskette drive	Choice for Sound System, IrDA, ECP, or PC Card

<i>IRQ</i>	<i>Use</i>	<i>Notes</i>
7	LPT1, COM3, or COM4	Choice for Sound System, IrDA, ECP, or PC Card
8	Real-time clock	
9	Software redirect to INT 0Ah,	Choice for Sound System, or PC Card
10	Reserved	Choice for Sound System (default), CD-ROM drive or PC Card
11	Reserved	PC Card
12	PS/2 Mouse/AccuPoint or PC Card	
13	Numeric Data Processor	
14	Hard disk or PC Card	
15	CD-ROM drive (default if installed) or PC Card	

## DMA Channel Assignments

Direct Memory Access (DMA) allows some devices to transfer data to and from memory at high speeds, without using the CPU. Such devices are each assigned a unique DMA channel. The Satellite Pro 480CDT computer has two DMA controllers with four channels on each controller, a total of eight DMA channels.

The following table lists the Satellite Pro 480CDT computer's DMA channel assignments.

<i>DMA</i>	<i>Use</i>	<i>Notes</i>
0	Reserved	Choice for Sound System
1	Reserved	This is the Sound System default, or ECP
2	3.5-inch diskette drive, or ECP	
3	Reserved	Choice for Sound or ECP (default)
4	Cascade from DMAC 1	
5	Reserved	

- 6 Reserved
- 7 Reserved

## Input/Output Port Address Assignments

The CPU accesses input/output devices, such as modems, by reading from them or writing to them. Each command to read or write must specify the address (in memory) for the port. Each device that communicates with the CPU must have a unique I/O port address.

The following table lists the device names and their assigned I/O port addresses for the Satellite Pro 480CDT computer.

<i>Port address(h)</i>	<i>Device/function</i>	<i>Notes</i>
000-01F	82C37: DMA Controller 1	
020-03F	82C59: PIC 1	
040-05F	82C54: Timer	
060-06F	Keyboard Controller	060 and 064 are KBC 061 is system status port
070	NMI mask register	
070-07F	Real Time Clock	
080-09F	DMA page register	
0A0-0BF	82C59: PIC 2	
0C0-0DF	82C37: DMA Controller 2	
0E0-0EF	Special Register	
0F0-0F7	Math Coprocessor	
100-1EF	VGA	
1F0-1FF	Hard Disk Controller	
201	Joy Stick	
202-21F	Not used	
220-22F	Not used	
230-23F	Not used	
240-24F	Not used	
250-25F	Not used	

Sound System default  
Available for Sound System  
Available for Sound System  
Available for Sound System

<i>Port address(h)</i>	<i>Device/function</i>	<i>Notes</i>
260-277	Not used	
278-27F	LPT2	
280-2E7	Not used	
2E8-2EF	Serial Port or Infrared Port (COM4)	
2F0-2F7	Not used	
2F8-2FF	Serial Port or Infrared Port (COM2)	
300-33F	Not used	
340-35F	Not used	
360-377	Not used	
378-37F	LPT1	
380-387	Not used	
388-38B	Sound System OPL3 (MIDI)	
38C-38F	Not used	
390-39F	Not used	
3A0-3AF	Bisynchronous 1	
3B0-3BF	LPT3	
3C0-3DF	CGA, EGA, VGA,	
3E0-3E7	Not used	
3F0-3F7	3.5-inch diskette drive controller	I/O ports 3F6 and 3F7 are used for the HDC also
3E8-3EF	Serial Port or Infrared Port (COM3)	
3F8-3FF	Serial Port or Infrared Port (COM1)	
400-47F	Not used	
480-49F	DMA High-Page Register	



# Appendix D

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# Video Modes

This appendix lists the video modes supported by the display adapter, and identifies the characteristics of each mode.

The columns of the following tables are defined as follows:

*Mode* is the mode number in hexadecimal, and is generally used by programmers to specify video modes in programs.

*Type* identifies the display adapter that first supported the mode, and specifies whether the mode is text or graphics.

*Resolution* is the measure of the screen's dimensions in terms of horizontal and vertical pixels (in graphics modes), or rows and columns of characters (in text modes).

*Grid* is the default number of pels per character.

*LCD Colors* is the maximum number of simultaneous colors, or shades of gray, that the mode can display on the built-in screen.

*CRT Colors* is the maximum number of simultaneous colors, or shades of gray, that the mode can display on an external monitor.

Scan Freq hor/vert is the horizontal and vertical scanning frequency in Hertz. This is for external monitors only.



**TECHNICAL NOTE:** All SVGA modes are supported with help from the SVGA driver.

Multiple refresh rates for external monitor are supported by help from the SVGA video driver with Chips CPL.

## Satellite Pro 480CDT Video Modes

This table lists the video modes for the Satellite Pro 480 Series computers:



**NOTE:** 640 x 480 modes will not use the entire area of the built-in display. In DOS, there will be a blank band at the upper and lower edges of the screen using these modes.

Mode (hex)	Type	Resolution	Internal LCD		External Monitor		Scan Freq hor/vert
			Grid (pelxpel)	Colors	Grid (pelxpel)	Colors	
0, 1	VGA Text	40 x 25	8 x 8	16/256K	8 x 8	16/256K	31.5KHz/70Hz
2, 3	VGA Text	80 x 25	8 x 8	16/256K	8 x 8	16/256K	31.5KHz/70Hz
0*, 1*	VGA Text	40 x 25	8 x 14	16/256K	8 x 14	16/256K	31.5KHz/70Hz
2*, 3*	VGA Text	80 x 25	8 x 14	16/256K	8 x 14	16/256K	31.5KHz/70Hz
0+, 1+	VGA Text	40 x 25	8 x 16	16/256K	9 x 16	16/256K	31.5KHz/70Hz
2+, 3+	VGA Text	80 x 25	8 x 16	16/256K	9 x 16	16/256K	31.5KHz/70Hz
4, 5	VGA Graph	320 x 200	8 x 8	4/256K	8 x 8	4/256K	31.5KHz/70Hz

Mode (hex)	Type	Resolution	Internal LCD		External Monitor		Scan Freq hor/vert
			Grid (pelxpel)	Colors	Grid (pelxpel)	Colors	
6	VGA Graph	640 x 200	8 x 8	2/256K	8 x 8	2/256K	31.5KHz/70Hz
7	VGA Text	80 x 25	8 x 14	Mono	9 x 14	Mono	31.5KHz/70Hz
7+	VGA Text	80 x 25	8 x 16	Mono	9 x 16	Mono	31.5KHz/70Hz
D	VGA Graph	320 x 200	8 x 8	16/256K	8 x 8	16/256K	31.5KHz/70Hz
E	VGA Graph	640 x 200	8 x 8	16/256K	8 x 8	16/256K	31.5KHz/70Hz
F	VGA Graph	640 x 350	8 x 14	Mono	8 x 14	Mono	31.5KHz/70Hz
10	VGA Graph	640 x 350	8 x 14	16/256K	8 x 14	16/256K	31.5KHz/70Hz
11	VGA Graph	640 x 480	8 x 16	2/256K	8 x 16	2/256K	31.5KHz/60Hz
12	VGA Graph	640 x 480	8 x 16	16/256K	8 x 16	16/256K	31.5KHz/60Hz
13	VGA Graph	320 x 200	8 x 8	256/256K	8 x 8	256/256K	31.5KHz/70Hz
30	SVGA Graph	640 x 480	8 x 16	256/256K	8 x 16	256/256K	31.5KHz/60Hz 37.6KHz/75Hz 43.2KHz/85Hz
32	SVGA Graph	800 x 600	8 x 16	256/256K	8 x 16	256/256K	37.9KHz/60Hz 46.9KHz/75Hz 53.7KHz/85Hz
34	SVGA Graph	1024 x 768	8 x 16	256/256K (virtual)	8 x 16	256/256K	35.5KHz/87Hz* 48.5KHz/60Hz 60.0KHz/75Hz 68.8KHz/85Hz
38	SVGA Graph	1280 x 1024	8 x 16	256/256K (virtual)	8 x 16	256/256K	35.5KHz/87Hz*
40	SVGA Graph	640 x 480	8 x 16	32K/32K	8 x 16	32K/32K	31.5KHz/60Hz 37.6KHz/75Hz 43.2KHz/85Hz
41	SVGA Graph	640 x 480	8 x 16	64K/64K	8 x 16	64K/64K	31.5KHz/60Hz 37.6KHz/75Hz 43.2KHz/85Hz

Mode (hex)	Type	Resolution	Internal LCD		External Monitor		Scan Freq hor/vert
			Grid (pixels)	Colors	Grid (pixels)	Colors	
42	SVGA Graph	800 x 600	8 x 16	32K/32K	8 x 16	32K/32K	37.9KHz/60Hz 46.9KHz/75Hz 53.7KHz/85Hz
43	SVGA Graph	800 x 600	8 x 16	64K/64K	8 x 16	64K/64K	37.9KHz/60Hz 46.9KHz/75Hz 53.7KHz/85Hz
44	SVGA Graph	1024 x 768	8 x 16	32K/32K (virtual)	8 x 16	32K/32K	35.5KHz/87Hz* 48.5KHz/60Hz
45	SVGA Graph	1024 x 768	8 x 16	64K/64K (virtual)	8 x 16	64K/64K	35.5KHz/87Hz* 48.5KHz/60Hz
50	SVGA Graph	640 x 480	8 x 16	16M/16M	8 x 16	16M/16M	31.5KHz/60Hz 37.6KHz/75Hz 43.2KHz/85Hz
52	SVGA Graph	800 x 600	8 x 16	16M/16M	8 x 16	16M/16M	37.9KHz/60Hz

\*These modes are interlaced. All others are non-interlaced.