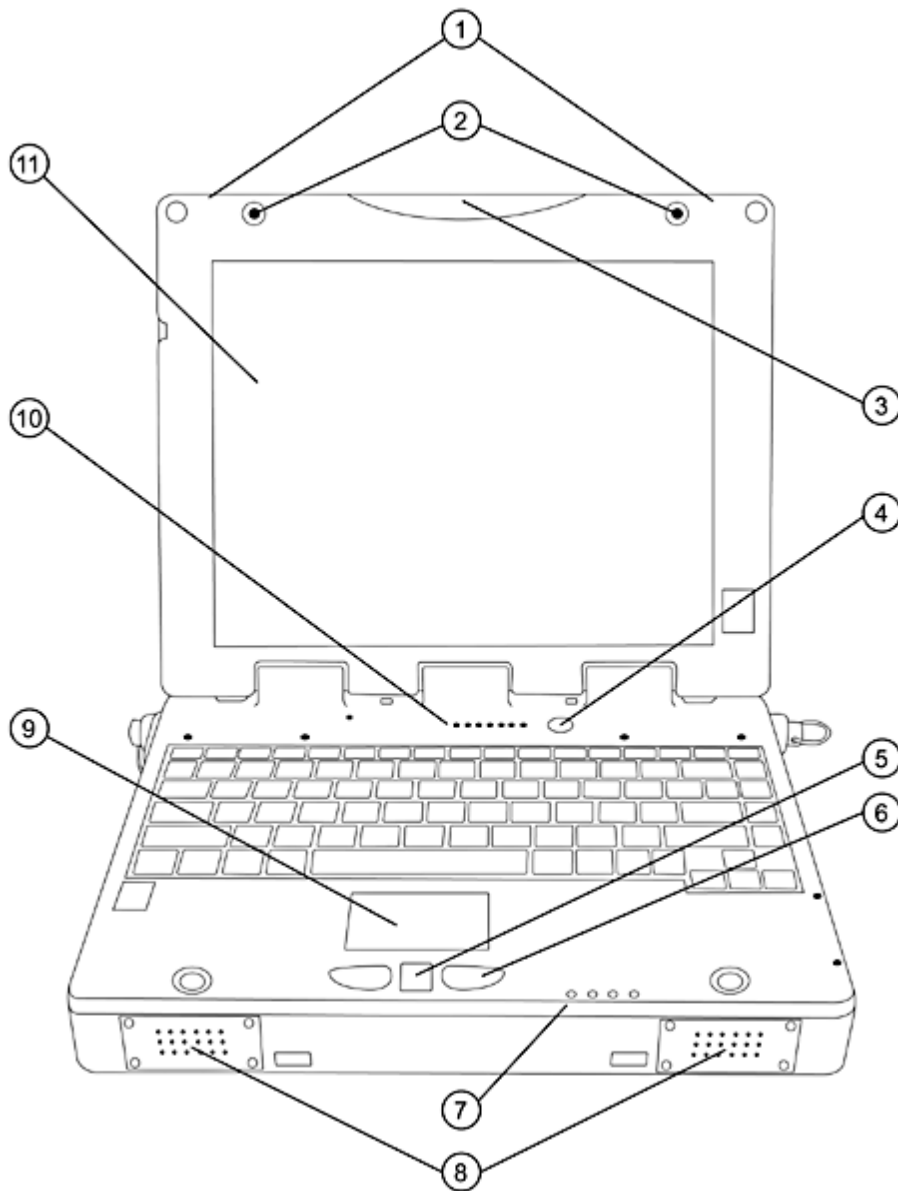


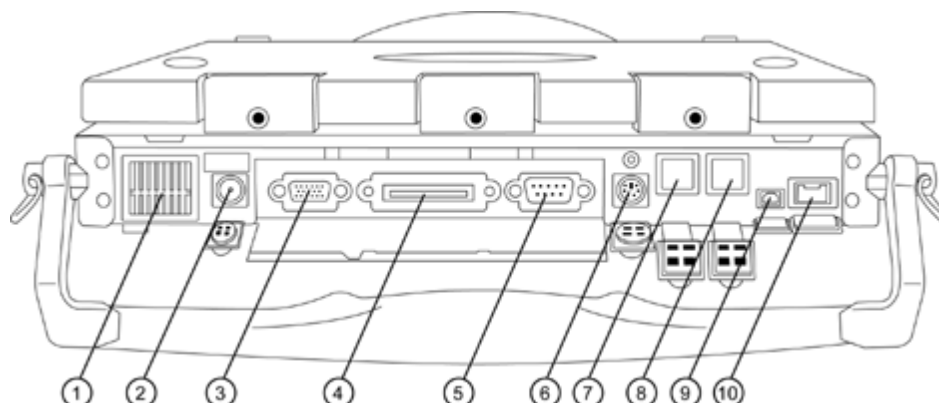
Overview



- 1. Wide-area Network Antennas
- 2. Display Latches
- 3. GPS and/or Bluetooth antenna
- 4. Power Button
- 5. Scrolling Button
- 6. Touchpad Buttons

- 7. Power/Wireless Modem Indicators
- 8. Speakers
- 9. Touchpad
- 10. Activity Indicators
- 11. Activity Indicators

Overview



- | | |
|--------------------------|-----------------------|
| 1. Cooling Fan | 6. PS2 Port |
| 2. Power Jack | 7. RJ-11 Modem Jack |
| 3. 15-Pin VGA Port | 8. RJ-45 Network Jack |
| 4. 68-Pin Multi-I/O Port | 9. IEEE 1394 Port |
| 5. 9-Pin Serial Port | 10. USB 2.0 Port |

NOTE: This document covers features which could potentially be found in this notebook platform, please see sku specific information on what specific features are found in the standard models that HP offers.

At A Glance

- Genuine Windows XP Professional Edition.
- Die-cast magnesium for all structural components.
- 12.1" TFT XGA Outdoor transmissive display with Touchscreen.
- Shock mounted standard 40GB Ruggedized removable hard disk drive.
- Mobile Intel® Pentium® -M Processor 745 (1.8 GHz clock speed, 2MB L2 cache, and 400MHz FSB.)
- Up to 3 RF modems can be integrated at one time. Combinations of GPRS, Wireless WAN (CDMA, EDGE), Wireless LAN, or Bluetooth.
- 512 up to 2048MB PC2700DDR SDRAM supported in two SODIMM slots.
- GPS optional - mounted in the top edge of the display for optimum performance.
- Swappable media bay accepts internal 24X CD-ROM, 8X DVD-ROM, DVD/CDRW combo, second battery or 3.5" floppy disk drive.
- ATI MOBILITY™ RADEON™ 9000 with on chip 64MB DDR SDRAM and 128 bit memory bandwidth.
- 56K Kbps high speed fax/modem MDC module and 10/100M bit Ethernet LAN standard.
- Complete set of system ports.
- Multi I/O port allows for system expansion with docking solutions (parallel, serial, USB, 10/100Mb LAN.)
- Weighs 8.2 lb (3.7 kg) (Base Configuration.)
- Protected by a three-year warranty - certain restrictions and exclusions apply.

What's Special

- Meets the rigid military standard (MIL STD 810F) and complies with Ingress Protection rating of IP54 for dust and rain.
- Common Radio Module Architecture (CRMA™) with fully integrated, rugged, user replaceable radio modules. Supports PCMCIA and OEM radio modules.
- Fully waterproof NiteVue® glow-in-the-dark keyboard, constructed from phosphorescent plastic.
- Vehicle docking, power, and antenna solutions.
- Two integrated pointing devices include passive Touchscreen and Touchpad.
- Backlit keyboard with adjustable brightness (optional.)

Standard Features

Processors	Mobile Intel Pentium-M Processor 745 (1.8 GHz clock speed, 2MB L2 cache, and 400MHz FSB) NOTE: Intel's numbering is not a measurement of higher performance.	
Operating System	Pre-installed	Genuine Windows XP Professional Edition
Display	Internal	12.1" TFT XGA Outdoor transmissive display with Touchscreen. XGA LCD supports XGA resolution with a 768 vertical by 1024 horizontal pixel array, a pixel pitch of 0.24mm and presents a palette of more than 262,144 colours.
Memory	512 to 2048MB PC2700 (333MHz) DDR SDRAM Standard Maximum 2048MB DDR (333MHz) SDRAM (with two slots of 1024MB) NOTE: Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.	
Graphics	<ul style="list-style-type: none">• ATI MOBILITY™ RADEON™ 9000 with 64MB dedicated on chip memory• AGP 4X platform• Support for Direct X 8.1 and Open GL• Integrated MPEG-2 decode including iDCT, motion compensation, and hardware sub-picture decoder• ATI VIDEO IMMERSION™ II deinterlacing and frame rate conversion algorithms• SMOOTHVISION™ Anti Aliasing for sharper more detailed video images• ATI FULLSTREAM™ removes blocky artifacts from streaming video• ATI POWERPLAY™ III enables advanced notebook power management supports external VGA display: 640x480, 800x600, 1024x768, 1152x864, 1280x800, 1280x1024, 1680x1050, 1600x1200, 1792x1344, 1800x1440, 1920x1200, 1920x1440, 2048x1536 resolutions up to 160-Hz refresh rate, dependent upon monitor capability, resolution and colour depth settings.	
Audio	18-bit full duplex stereo ADC, DACs	
Communications	Standard 56K Kbps high-speed fax/modem MDC module with 10/100Mbit Ethernet LAN NOTE: Designed only to allow faster downloads from 56K high speed modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. NOTE: Communication availability is subject to country regulatory approval.	
Keyboard	Fully waterproof NiteVue® glow-in-the-dark keyboard, constructed from phosphorescent polymer. Backlit keyboard option. Available for US.	
Pointing Device	Ships standard with two integrated pointing devices. The first is a resistive touch screen that can be operated with the included stylus which resides in the left side of the display or other non-abrasive devices such as a clean finger. The second integrated pointing device is a touchpad with standard 3 button mouse controls.	

Standard Features

Storage	Optional Diskette Drives	3.5" floppy disk drive
	Hard Drive	Shock mounted 2.5" 40GB (standard) ruggedized removable hard disk drive. Optional shock mounted 2.5" 80GB ruggedized removable hard disk drive available with optional heater for cold environments. NOTE: The Software recovery partition utilizes approximately 1.4GB hard drive space.
	NOTE:	The Software recovery partition utilizes approximately 1.4GB hard drive space.
	Optional Optical Drives	24x24x24x + 8x DVD/CDRW combo Drive Supports 24x Write, 24x Rewrite, 24x Read, and 8x DVD-ROM Read Speed 8X DVD-ROM Drive

Multimedia

External volume controls via keystroke combination
Internal microphone and (2) speakers. PCI Audio with AC-97 compliance.
Optional optical drives:
24x24x24x + 8x DVD/CDRW combo Drive
24X CD-ROM Drive
8X DVD-ROM Drive
ATI MOBILITY RADEON 9000 with 64MB dedicated on chip memory

- Integrated MPEG-2 decode including iDCT, motion compensation, and hardware sub-picture decoder
- Includes ATI's VIDEO IMMERSION™ II deinterlacing and SMOOTHVISION™ Anti Aliasing for sharper more detailed video images
- Includes ATI's FULLSTREAM™ for sharper image quality during streaming video playback

Interfaces

PC Card Slot	PC card slot for (1) Type I, II, or III card with 32-bit card bus
Parallel Port	Optional adapter for parallel port connector
Serial Port	9-pin high speed serial port
External Monitor	Standard VGA 15-pin high density D-sub
Headphone/Line-out	2.5mm receptacle
Microphone in	2.5mm receptacle
AC Power	2.5mm centre pin
NIC	RJ-45
Modem	RJ-11
USB Port	1 external series A connector
LED Status Indicators	11
IEEE 1394 Firewire 400	1

Security

Setup Password
Power-On Password
Removable Hard Disk Drive
Kensington Lock

Standard Features

Software	Pre-installed Software	Preinstalled with Windows Logo Compliance HP Online Help Radio Drivers and Software (where applicable) Synaptics Touchpad Driver Semtech Touchscreen Driver Hard Disk Recovery Utility Device drivers also available online						
System Recovery	Restore to original factory image from Hard Disk Drive Recovery partition or from optional Recovery CDs.							
Power Supply	External AC 90 Watt Adapter (only 0.83 lb/0.38 kg, 6-foot/1.8 metre). Power cord included based on country of destination. Total length including External AC adapter is 12 feet/3.66 metres.							
Battery	<p>Standard 9-cell 6600mAh Lithium Ion battery pack. Short circuit, overcharge, over-discharge protected and integrated Gas Gauge IC with SMBus interface. Utilizes SMBus to communicate smart battery parameters with the system. Gas gauge can be calibrated through system via CMOS set-up screen application.</p> <p>NOTE: Actual results may vary with product model, configuration, and individual usage. Runtime results of 5:04 hours were achieved running the BatteryMark™ Test version 4.0 LifeTest on a nr3610 with a 1.8GHz Mobile Intel® Pentium® M, 12.1-inch XGA panel, 2 x 512-MB DDR SDRAM, 80-GB-HDD, standard 9-cell Lithium-Ion battery. System parameters were set according to Ziff Davis recommendations: panel brightness 50%, hard drive, standby and video idle time set to never, laptop power management scheme.</p> <p>NOTE: This test was performed without independent verification by eTesting Labs Inc. eTesting Labs Inc. makes no representations or warranties as to the result of the test. BatteryMark is a trademark of Ziff Davis Publishing Holdings Inc., and affiliate of eTesting Labs Inc., in the U.S. and other countries.</p> <p>Battery Life (hrs:min) up to 5:04 on standard main pack. Up to 7:40 hours can be achieved using the second media bay battery.</p> <table><tr><td>Battery Re-Charge Time</td><td>System in OFF mode or Standby</td><td>3:50 to 100% from 0%</td></tr><tr><td></td><td>System ON (depending on system power consumption)</td><td>4:05 to 100% from 0%</td></tr></table>		Battery Re-Charge Time	System in OFF mode or Standby	3:50 to 100% from 0%		System ON (depending on system power consumption)	4:05 to 100% from 0%
Battery Re-Charge Time	System in OFF mode or Standby	3:50 to 100% from 0%						
	System ON (depending on system power consumption)	4:05 to 100% from 0%						
Power Conservation	Enhanced Intel SpeedStep technology (Real-time dynamic switching of voltage and frequency between maximum performance and battery-optimized operation, based on CPU demand, for longer battery life) Hibernation Instant-on via Standby Energy saving setting available via Microsoft Windows Control Panel 'Power Options' ACPI compliant							
Performance	Ziff Davis 3D Winbench 2000 = 208 FutureMark 3DMark = 1069							

Standard Features

Media Bay

Media Bay devices may be swapped with the system powered on (hot) under Microsoft Windows XP Professional. Media Bay devices can be swapped with system power off under any supported operating system.

Vehicle & Office Docking/System Expansion

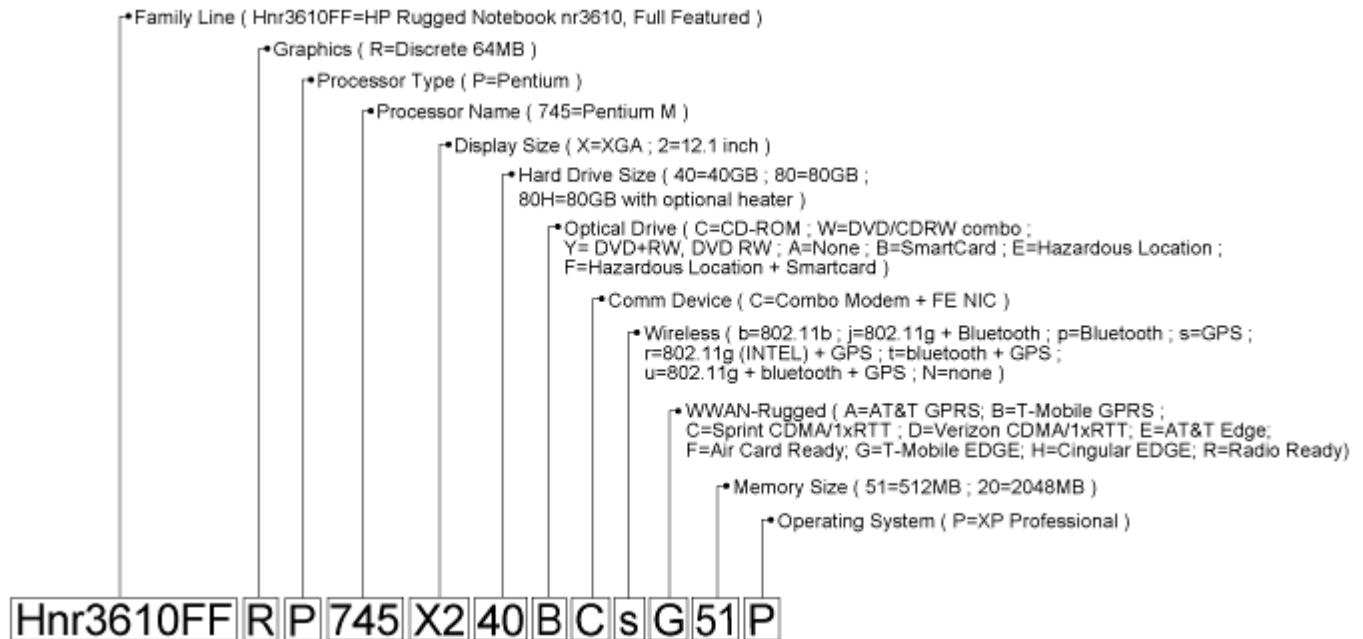
Optional 70W Vehicle power supply available.
Optional Vehicle dock: Semi-permanently mounted dock in vehicles such as service vans, emergency and utility vehicles with mechanical key lock for security. Vehicle dock is wired into the automobile's electrical system to provide adequate power to run and charge the unit simultaneously. Allows for expanded I/O space with (2) externally available USB interconnects. Also contains an RF coaxial connection to the laptop for external vehicle-mounted antennas.

Service and Support

3-Year Warranty: Case Parts, Electrical Components, Connectors
1-Year Warranty: Consumables: Battery, Chargers, Carrying straps
90-Day Software Warranty: Media
Warranty Extensions: Return Service, Return Service Plus and Statement of Work
NOTE: Certain restrictions and exclusions apply.

Naming Convention

The Etymology of a Model name:



Standard Features

Configuration: #1
683AW#ABA

Processor	1.8 GHz Intel Pentium M processor
Operating System	Genuine Windows XP Professional
Display	12.1" Transmissive XGA Outdoor display with Touchscreen
Media Bay	Swappable media bay: Empty Second battery, FDD, CD, DVD, Combo (See media bay options)
Cache Memory	2048 K L2 Cache
Memory	Standard 512-MB SDRAM Maximum 2048-MB SDRAM
Hard Drive	Shock mounted 2.5" 40GB Ruggedized removable hard disk drive
Audio	Internal microphone and (2) speakers. PCI Audio with AC-97 compliance
Graphics	ATI MOBILITY RADEON 9000 with 32 bpp colour rendering and 3D graphics and integrated 64MB DDR SDRAM
Communications WLAN	None
Communications WWAN	None
Input Device	NiteVue glow-in-the-dark keyboard
Modem	56K Kbps high-speed fax/modem MDC module with 10/100M bit Ethernet LAN

Configuration: #2
684AW#ABA

Processor	1.8 GHz Intel Pentium M processor
Operating System	Genuine Windows XP Professional
Display	12.1" Transmissive XGA Outdoor display with Touchscreen
Media Bay	Swappable media bay: Empty Second battery, FDD, CD, DVD, Combo (See media bay options)
Cache Memory	2048 K L2 Cache
Memory	Standard 512-MB SDRAM Maximum 2048-MB SDRAM
Hard Drive	Shock mounted 2.5" 80GB Ruggedized removable hard disk drive
Audio	Internal microphone and (2) speakers. PCI Audio with AC-97 compliance
Graphics	ATI MOBILITY RADEON 9000 with 32 bpp colour rendering and 3D graphics and integrated 64MB DDR SDRAM
Communications WLAN	Wireless LAN 802.11 b/g (See wireless options)
Communications WWAN	None
Input Device	NiteVue glow-in-the-dark keyboard
Modem	56K Kbps high-speed fax/modem MDC module with 10/100M bit Ethernet LAN

Standard Features

Configuration: #3
685AW#ABA

Processor	1.8 GHz Intel Pentium M processor
Operating System	Genuine Windows XP Professional
Display	12.1" Transmissive XGA Outdoor display with Touchscreen
Media Bay	Swappable media bay: Empty Second battery, FDD, CD, DVD, Combo (See media bay options)
Cache Memory	2048 K L2 Cache
Memory	Standard 512-MB SDRAM Maximum 2048-MB SDRAM
Hard Drive	Shock mounted 2.5" 40GB Ruggedized removable hard disk drive
Audio	Internal microphone and (2) speakers. PCI Audio with AC-97 compliance
Graphics	ATI MOBILITY RADEON9000 with 32 bpp colour rendering and 3D graphics and integrated 64MB DDR SDRAM
Communications WLAN	Wireless LAN 802.11 b/g (See wireless options)
Communications WWAN	None
Input Device	Backlit keyboard with adjustable brightness
Modem	56K Kbps high-speed fax/modem MDC module with 10/100M bit Ethernet LAN

Configuration: #4
686AW#ABA

Processor	1.8 GHz Intel Pentium M processor
Operating System	Genuine Windows XP Professional
Display	12.1" Transmissive XGA Outdoor display with Touchscreen
Media Bay	Swappable media bay: Empty Second battery, FDD, CD, DVD, Combo (See media bay options)
Cache Memory	2048 K L2 Cache
Memory	Standard 512-MB SDRAM Maximum 2048-MB SDRAM
Hard Drive	Shock mounted 2.5" 80GB Ruggedized removable hard disk drive
Audio	Internal microphone and (2) speakers. PCI Audio with AC-97 compliance
Graphics	ATI MOBILITY RADEON 9000 with 32 bpp colour rendering and 3D graphics and integrated 64MB DDR SDRAM
Communications WLAN	Wireless LAN 802.11 b/g, Bluetooth, GPS (See wireless options)
Communications WWAN	None
Input Device	Backlit keyboard with adjustable brightness
Modem	56K Kbps high-speed fax/modem MDC module with 10/100M bit Ethernet LAN

Standard Features

Configuration: #7
PR540AW#ABA

Processor	1.8 GHz Intel Pentium M processor
Operating System	Genuine Windows XP Professional
Display	12.1" Transmissive XGA Outdoor display with Touchscreen
Media Bay	Swappable media bay: Empty Second battery, FDD, CD, DVD, Combo (See media bay options)
Cache Memory	2048 K L2 Cache
Memory	Standard 512-MB SDRAM Maximum 2048-MB SDRAM
Hard Drive	Shock mounted 2.5" 80GB Ruggedized removable hard disk drive
Audio	Internal microphone and (2) speakers. PCI Audio with AC-97 compliance
Graphics	ATI MOBILITY RADEON 9000 with 32 bpp colour rendering and 3D graphics and integrated 64MB DDR SDRAM
Communications WLAN	Wireless LAN 802.11 b/g (See wireless options)
Communications WPAN (Bluetooth)	Yes
Communications WWAN	Aircard Ready
Global Positioning System (GPS)	YES
Input Device	Backlit keyboard with adjustable brightness
Modem	56K Kbps high-speed fax/modem MDC module with 10/100M bit Ethernet LAN

Options

Memory	Combinations of the following upgrades may be used up to a maximum of 2048 in two 1024MB SODIMM modules.	
	RAM 512MB 266DDR 1DM Memory Upgrade	PR784AA
	RAM 1024MB 266DDR 1DM Memory Upgrade	PR785AA
	NOTE: Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.	
Media Bay Drives	3.5" floppy diskette drive	DW382A
	8X DVD-ROM Drive	DW380A
	24X CD-ROM Drive	DW379A
	24x24x24x + 8x DVD/CD-RW Combo Drive. Supports 24x Write, 24x Rewrite, 24x Read, and 8x DVD-ROM Read Speed	DW381A
	Secondary 6-cell media bay battery pack (see Power section below)	PA054A
Power	Platform battery, 9-cell 6600 mAh Lithium-Ion battery. Additional primary batteries provide the ability to double your work time on the Rugged PC	PR783AA
Common Power Solutions	Optional Vehicle Dock/Cradle	DW390A
Cases	Cases Cargo Pouch	DW389A
HP Care Pack Services	HP CPe 1 Yr Emerald Service	FP-NREEC-12
	HP CPe 3 Yr Emerald Service	FP-NREEC-36
	HP CPe 1 Yr Ruby Service	FP-NREEC-12
	HP CPe 3 Yr Ruby Service	FP-NREEC-36

Memory

HP nr3610 Rugged Notebook

Standard Memory

0-MB of memory on system board

2 SODIMM slots total

Default configuration:

1 - 512-MB SODIMM installed in Slot 1

1 - Additional open Memory Slot

Memory	Slot 1	Slot 2
	512-MB	Empty

Standard Memory with Optional Memory Upgrades

Support for up to 2048MB of PC2700 (333MHz) DDR SDRAM is available with the installation of optional memory module upgrades.

Up to	Slot 1	Slot 2
512MB	512MB	Empty
1024MB	512MB	512MB
1024MB	1024MB	Empty
1536MB	1024MB	512MB
2048MB	1024MB	1024MB

NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Following are memory options available from HP:

512-MB PC2700 (333-MHz) DDR SDRAM Memory module Upgrade

PR784AA

1024-MB PC2700 (3333MHz) DDR SDRAM Memory module Upgrade

PR785AA

NOTE: Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Storage

Drive Support

System Drive Support

Removable Media

DVD/CD-RW Combo Drive

DVD-ROM Drive

CD-ROM Drive

1.44-MB Diskette Drive (optional)

Quantity Supported

Up to 1

Up to 1

Up to 1

Up to 1

Drive Bay Supported

Media Bay

Media Bay

Media Bay

Media Bay

NOTE: Only one media device may be plugged in at one time.

Technical Specifications

System Unit	Dimensions (LxWxD)	12.1-inch panel display	12 x 9.8 x 2.36 in (30.5 x 24.9 x 6 cm)
	Weight	Minimum	8.2 lb (3.7 kg)
Stand-Alone Power Requirements	Nominal Operating Voltage	Nominal Operating Voltage	19VDC
		Average Operating Power	22W while running aggressive test software not charging battery
	Peak Operating Power	39W not charging battery	
	Operating	-10° to 140° F (-23° to 60° C)	
Temperature	Non-operating (Storage)	-67° to 167° F (-55° to 75° C)	
	Relative Humidity	Operating, disk accessing	MIL-STD-810F, Method 507.4: Humidity cycles between 30° C @ 85%RH non-condensing and 60° C @ 95%RH non-condensing for ten 24 hour cycles
Non-operating		5% to 90% relative humidity, 140° F (75° C) maximum wet bulb temperature	
Shock (vehicle)	Operating	SAE J1455, pothole shock; 22G top and bottom, 15G front to back, 7G side to side, 20 msec durations.	
Shock (drop)	Non-operating	Drop Testing to MIL-STD-810F Method 516.5, Procedure IV Modified -twenty-six 3 Foot drops to 2-inch plywood over concrete. 2 units to pass.	
Vibration	Operating	ASTM 4169-99 Truck Assurance Level II Schedule E. 90 mins each axis. With disk access.	
	Non-operating	MIL-STD-810F Method 514.5 Procedure I Category 24 Figure 17 and Figure 18.	
Maximum Altitude (unpressurized)	Operating	0 to 10,000 ft (3,048 m) 14.7 to 10.1 psia	
	Non-operating	0 to 30,000 ft (9,144 m) 14.7 to 4.4 psia	
Industry Standard Certifications	Bi-Nat CSA 60950-00/ UL - 60950, 3rd Edition Design Manual, Version 3.1 EN 55022:1994+A1:1995 +A2:1997, Class B CISPR 22:1993 +A1:1995 +A2:1996, Class B AS/NZS 3548: 1995 +A1:1997 +A2:1997, Class B FCC Part 15, subpart B, Class B ANSI C63.4-1992 ICES-003:1997, Class B Modems: FCC Part 68, Industry Canada CS03, and European TBR 21		

Technical Specifications

12.1-inch TFT XGA Outdoor Enhanced Transmissive Colorvue® display with Touchscreen	Dimensions (H x W)	10.3 x 7.8 in (26.1 x 19.9 cm)		
	Diagonal Size	12.1 in (30.7 cm)		
	Mounting	Internal		
	Number of Colours	262,144		
	Contrast Ratio	150:1 Minimum, 400:1 Typical		
	Refresh Rate	60 Hz		
	Brightness	300 nit typical		
	Pixel Resolution	Pitch	0.24 x 0.24 mm	
		Format	1024 x 768	
		Configuration	RGB Stripe	
	Backlight	CCFL		
	Character Display	80 x 25		
	Total Power Consumption	4.4 W		
	Viewing Angle	±30° degrees Horizontal, +10°/-20° Vertical (typical)		

External AC Adapter	Dimensions	6 ft (1.8 m) Adapter length		
		Total length including power cord is 12 ft (3.66 m).		
	Weight	0.83 lb (0.38 kg)		
	Input Characteristics	Operating Voltage	90 to 264 VAC RMS Single Phase	
		Operating Current	1.5 ARMS @ 90VAC, 0.75ARMS @ 180VAC	
		Operating Frequency Range	47 to 63 Hz AC	
		Efficiency	85% min @ 115VAC, Full load	
	Output Characteristics	Output Voltage	19 VDC	
		Maximum load	4.74A max	
		Minimum load	0A	
Regulation		±5%		

Main Internal Lithium-Ion Battery Pack	Weight	1.04 lb (0.47 kg)		
	Cells	9-cell Lithium-Ion		
	Energy	Voltage	11.1 V	
		Amp-hour capacity	6600 mAh	
		Watt-hour capacity	73.2 Wh	
	Temperature	Operating		
		Discharging	-4° to 140° F (-20° to 60° C)	
		Charging	32° to 113° F (0° to 45° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF mode or Standby	4:10 (hrs:min) from 0% to 100%	
System ON (depending on system power consumption)		4:10 (hrs:min) from 0% to 100%		

Technical Specifications

	Lifecycle	80% capacity after 300 full charge/discharge cycles, or 600 half discharge followed by a full charge cycles.		
Media Bay Lithium-Ion Battery Pack (6-cell) (Optional)	Weight	0.8 lb (0.36 Kg)		
	Energy	Voltage	11.1 V	
		Amp-hour capacity	3200mAh	
		Watt-hour capacity	35.5 Wh	
	Temperature	Operating		
		Discharging	-4° to 140° F (-20° to 60° C)	
		Charging	32° to 113° F (0° to 45° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours	
		System ON (depending on system power consumption)	2.5 hours	
	Lifecycle	80% capacity after 300 full charge/discharge cycles, or 600 half discharge followed by a full charge cycles.		
24X/24X/24X/8X DVD/CD-RW Combo Drive	Media Bay Drive	Dimensions (H x W x D)	0.82 x 5.21 x 5.27 in (2.08 x 13.23 x 13.39 cm)	
		Weight	0.59 lb (269 g)	
	Centre Hole Diameter	1.5 cm		
	Disk Diameter	12 cm/8 cm		
	Access Times (typical reads, including settling)	Random CD	< 150 ms	
		Full-Stroke CD	< 280 ms	
	Audio Output Level	Line-out	0.7 Vrms	
	Data Buffer	2MB		
	Data Transfer Rate (typical, including settling)	CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
		CD-RW (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
		CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)	
		DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)	
		Normal PIO Mode 4 (single burst)	16.6 MB/s	
Start-up Time	< 14 seconds			
Stop Time	< 8 seconds			

Technical Specifications

8X DVD-ROM Drive	Media Bay Drive	Dimensions (H x W x D)	0.82 x 5.21 x 5.27 in (2.08 x 13.23 x 13.39 cm)
		Weight	0.59 lb (269 g)
	Centre Hole Diameter	1.5 cm	
	Disk Diameter	12 cm/8 cm	
	Access Times (typical reads, including settling)	Random (typical)	< 130 ms DVD Media
		Full-Stroke (typical)	< 200 ms DVD Media
		Random (typical)	< 95 ms CD Media
		Full-Stroke (typical)	< 180 ms CD Media
	Data Buffer	512 KB	
	Data Transfer Rate (typical, including settling)	Max 24X CD	3600 KB/s (150 KB/s at 1X CD rate)
		Max 8X DVD	10,800 KB/s (1352 KB/s at 1X DVD rate)
		Normal PIO Mode 4 (single burst)	16.6 MB/s
	Start-up Time	< 19 seconds	
Stop Time	< 6 seconds		

24X CD-ROM Drive	Media Bay Drive	Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.50 lb (0.22 kg)
	Applicable Disk	CD-ROM (Mode 1, 2 and 3), CD-XA ready (Mode 2, Form 1 and 2), CD-I ready (Mode 2, Form 1 and 2), CD-R (read only), CD Plus, Photo CD (Single and Multi-session), CD-Extra, Video CD, CD-WO (fixed packets only), CD-Bridge	
	Centre Hole Diameter	15 mm	
	Disk Diameter	12 cm/8 cm	
	Disk Thickness	1.2 mm	
	Track Pitch	1.6 μ m	
	Access Times (typical reads, including settling)	Random (typical)	< 150 ms
		Full-Stroke (typical)	< 300 ms
	Audio Output Level	Line-out	0.7 Vrms
	Cache Buffer	128 KB	
	Data Transfer Rate (typical, including settling)	Sustained (16X)	2400 KB/s
		Variable	1500 to 3600 KB/s (10X to 24X)
		Normal PIO Mode 4 (single burst)	16.66 MB/s
	Start-up Time	< 8 seconds	
Stop Time	< 4 seconds		

Technical Specifications

Media Bay 3.5-inch Diskette Drive	Media Bay Drive	Dimensions (H x W x D)	0.82 x 5.21 x 5.27 in (2.08 x 13.23 x 13.39 cm)
		Weight	0.59 lb (269 g)
	Diskette Size	3.5 in	
	Bytes per Sector	512	
	Sectors per track	High density	18 (1.44 MB)/15 (1.2 MB)
		Low density	9
	Tracks per side	High density	80 (1.44 MB)/80 (1.2 MB)
		Low density	80
	Read/Write heads	2	
	Access Times	Track-to track (high/low)	3 ms/6 ms
		Average (high/low)	94 ms/174 ms
Settling time		15 ms	

Audio	Features:		
	SigmaTel Audio Stereo Codec	18-bit full duplex stereo ADC, DACs	
		High performance aD technology	
		Conforms to Audio Codec 97 Component Specification Rev 2.1	
	I/O	Mono Inputs	Internal Microphone
			External Mic input – 20K Impedance
	Audio Output Amplifier Quality	Stereo Outputs	Analog
		Frequency Response	20 Hz – 20 kHz
		Signal to Noise Ratio	>94dB
		Total Harmonic Distortion	0.01%
		Noise Floor	-120dB
		Play/Record Sampling Rate(s)	7 kHz – 48 kHz
		AD/DA Resolution	18 bit
	Speaker	Amplifier Power	2-Watts RMS
Speaker Impedance		4-Ohms	

Technical Specifications

Video

Features:

ATI MOBILITY RADEON 9000, model S64

Highly optimized 128-bit engine

AGP 4X bus interface

Support for Direct X 8.1 and Open GL

Integrated MPEG-2 decode including iDCT, motion compensation, and hardware sub-picture decoder

ATI VIDEO IMMERSION II deinterlacing and frame rate conversion algorithms

SMOOTHVISION Anti Aliasing for sharper more detailed video images

ATI FULLSTREAM removes blocky artifacts from streaming video

ATI POWERPLAY III enables advanced notebook power management

Dedicated on chip 64MB DDR SDRAM with 128-bit memory interface

32-bit per pixel colour rendering

Support for two asynchronous display paths

Acceleration in 8/15/16/32bpp modes

Supports external VGA display: 640x480, 800x600, 1024x768, 1152x864, 1280x800, 1280x1024, 1680x1050, 1600x1200, 1792x1344, 1800x1440, 1920x1200, 1920x1440, 2048x1536 resolutions up to 160-Hz refresh rate, dependent upon monitor capability, resolution and colour depth settings.

Supports up to QXGA resolution (2048X1536) through external VGA connector

WLAN Intel PRO/Wireless 802.11b/g	Form Factor	MiniPCI Type III
	Antenna	Internal
	Wi-Fi Alliance	Wi-Fi CERTIFIED* for 2.4 GHz band and WPA
	WLAN Standard	IEEE 802.11g and IEEE 802.11b
	Architecture	Infrastructure or ad hoc (peer-to-peer)
	Roaming	802.11g and 802.11b compliant for seamless roaming between respective access points (802.11b, 802.11g, 802.11b/g)
	Security	Authentication LEAP, WPA, 802.1X, EAP-TLS Encryption CKIP, TKIP, 128-bit and 64-bit WEP, Cisco- Compatible Extensions (CCX) v1

Technical Specifications

GPS	Form Factor	Integrated serial module
	Antenna	Display-mounted, internal quadrifilar helix
	Frequency	L1, 1575.42 MHz
	C/A code	1.023 MHz chip rate
	Channels	12
	Position	10 metres, 2D RMS 7 metres 2D RMS, WAAS corrected
	Altitude	<+ 35m Vertical in term of 95%
	Velocity	0.1 metres/second
	Default	WGS-84
	Reacquisition	0.1 sec., average
	Snap start	2 sec., average
	Hot start	8 sec., average
	Warm start	38 sec., average
	Cold start	45 sec., average
	Altitude	18,000 metres (60,000 feet) max.
	Velocity	515 metres/second (1000 knots) max
	Acceleration	4g, max
	Jerk	20 metres/second ³ , max
	Protocol messages	SiRF binary and NMEA-0183, version 2.20 with baud rate selection. SiRF binary-position, velocity, altitude, status and control NMEA - GGA, GLL, GSA, GSV, RMC and VTG
	Standard internal high speed 56K modem	Form Factor
OS Support (with all released Service Packs)		Windows XP (Home, Professional), DOS Application Support under Windows
Power Management Support		ACPI and wake on ring
Approvals/Certifications		UL, CSA, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, C.I.S.P.R.22, CE Mark, Other Countries
Modem Device Driver Name		Lucent Win Modem Smart Link 56k Voice Modem
Data Mode Capabilities		56kbps (K56Flex and high-speed 56K modem (a-law, mu-law)) V.44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) V.34 (file date: 10/964.8kbps to 33.6kbps) Virtual com port with a throughput of up to 460.8kbps
		Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.32bis (4.8kbps to 14.4kbps) V.22bis (50bps to 2.4kbps) V.32, V.23, V.22, V.21 Bell 212A, Bell 103J

Technical Specifications

Fax Modem Standard Send and receive rates up to 14.4kbps, V.17, V.29, V.27ter

Bluetooth

Form Factor Integrated USB
Frequency Band 2402 to 2480 MHz
Carrier Spacing 1 MHz
Channel 79
Duplexing TDD
Symbol Rate 1 Mbps
Modulation method GFSK, 1 Mbps, 0.5 BT Gaussian
Maximum data rate Asynchronous: 723.2 kbps / 57.6 kbps
Transmission power (Max +18) +16 to -12 dBm (Power control 6 stage).
Hopping 1600 hops/s, 1 MHz channel space
Receiving signal range -82 to -20 dBm
Receiver IF frequency 1.5 MHz centre frequency
Compliance Bluetooth Specification Ver 1.1
USB specification Ver 1.1

Sierra Wireless AirCard® 750 GSM/GPRS

Form Factor Type II PC Card (not extended)
Connectivity support EDGE MS Class 12 capability (up to 4Tx, 4Rx, 5 total-network service dependent)
Command Set EDGE, GPRS, SMS circuit switched data
 SMS
 (send and receive)
 Support for multiple APN's
 NDIS driver host interface
 Dial-up networking
 Voice and fax support

Quad-Band EDGE/GPRS

GSM 850 MHz band	Transmit Frequency	824 to 849 MHz
	Receive Frequency	869 to 894 MHz
	Output power	500mW (+27dBm) 2W (+33 dBm)
GSM 900 MHz band	Transmit Frequency	880 to 915 MHz
	Receive Frequency	925 to 960 MHz
	Output power	500mW (+27 dBm) 2W (+33 dBm)
DCS 1800 MHz band	Transmit Frequency	1710 to 1785 MHz
	Receive Frequency	1805 to 1880 MHz
	Output power	400mW (+26dBm) 1000mW (+30dBm)
PCS 1900MHz band	Transmit Frequency	1850 to 1910 MHz
	Receive Frequency	1930 to 1990 MHz
	Output power	400mW (+26 dBm) 1000mW (+30 dBm)

Technical Specifications

		Channel spacing	200kHz
		Closed Loop Frequency Stability	0.1 ppm
	Standby current	16mA	
	Approvals	Compliant with GSM Release 99 SMG 31 Phase 2+	
	Software support	Watcher™ for Aircard 775	

Sony Ericsson GC82 EDGE/GSM/GPRS	Form Factor	Type II PC Card	
	Connectivity support	Multislot Class 10 capability	
	Frequency Bands	GSM 850 GSM 1900	
	Command Set	EDGE, GPRS, SMS circuit switched SMS (send and receive) Support for multiple APN's NDIS driver host interface Dial-up networking Speech services are not supported, CSD, Fax	
	Modulation Coding Schemes	MCS-1 to MCS-9	
	EDGE features	Link Adaption Incremental Redunancy	
	Concatenated SMS	Yes	
	SMS Cell Broadcast	Supported in GC82 Manager and by AT Commands (excluding Cell ID)	
	SMS Immediate Display	Supported in GC82 Manager and by AT Commands	
	SMS interface	GC82 Manager, Communications Suite, AT Command	

Sierra Wireless AirCard 550 CDMA 1xRTT	Form Factor	PCMCIA Type II		
	Connectivity	CDMA 1xRTT Fax, Circuit switched Data SMS (2 way messaging)		
	CDMA Network Carriers	Sprint PCS in the United States		
	CDMA	PCS transmit: 1850 to 1910MHz PCS receive: 1930 to 1990MHz		
	Power consumption	Operating voltage	5V	
		Transmit current (max power)	680mA	
		Quiescent current	150mA	
	Approvals	Compliant with IS98D, IS-707A, IS-707A-1 CDMA Development Group FCC		

Technical Specifications

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