

## IBM ThinkPad Power Series 820 and 850 Deliver High Performance and Graphics Capability to Mobile Users

Powered by the PowerPC 603e™ 100MHz microprocessor, these powerful notebooks provide world-class workstation performance in a small, lightweight, mobile system in an innovative industrial design that offers palm-rest space.

The ThinkPad™ Power Series 820™ and ThinkPad Power Series 850™ systems include:

- Large 32MB standard memory, expandable up to 48MB for the 820 and up to 96MB for the 850
- 10.4-inch (maximum viewable area when measured diagonally) color displays — active matrix Thin Film Transistor (TFT) with black matrix and 640 x 480 (820 only) or 800 x 600 resolution
- G10 Graphics Adapter or the G10 Graphics with Motion Video Adapter, which is standard for the 850
- Built-in stereo speakers and microphone
- User-removable, large-capacity hard disks — 810MB or 1.2GB
- Integrated CD-ROM drive (2X)
- PCMCIA expansion slots (two Type I or II, or one Type III)
- 84-, 85-, or 89-key keyboard with an integrated TrackPoint III

The 820 and 850 systems also support multitasking capability and a choice of high-performance, 32-bit operating systems:

- AIX® Version 4.1.4 for Clients
- Windows† NT Workstation 3.51 (PowerPC™ Edition)
- Solaris Desktop 2.5.1 (PowerPC Edition)

**Price:** Prices starting at \$7,699

**Planned Availability Date:** April 15, 1996

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† Trademark of Microsoft Corporation

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### IN BRIEF . . .

These systems place power and performance at your finger tips. Features include:

- ◆ Powerful workstation design
- ◆ PowerPC 603e 100MHz microprocessor
- ◆ Graphics capability
- ◆ Mobile memory up to 48MB for the 820 and up to 96MB for the 850
- ◆ Choice of operating systems:
  - AIX Version 4.1.4 for Clients
  - Windows NT Workstation 3.51 (PowerPC Edition)
  - Solaris Desktop 2.5.1 (PowerPC Edition)
- ◆ CD-ROM, stereo speakers, and microphone
- ◆ Optional video camera (for the 850 only)

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## Description

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### **Strengths of the 820 and 850 Systems**

These systems deliver superior performance through:

- New generation PowerPC technology — fast PowerPC 603e 100MHz microprocessor with integrated 32KB Level 1 cache, floating-point unit, and power management

These systems also include a standard 256KB Level 2 cache and a 32-bit memory controller on the 820 and a 64-bit memory controller on the 850.

- Expandable memory — up to 48MB for the 820 and up to 96MB for the 850

Each system includes an 810MB SCSI-2 disk drive but can be purchased with a 1.2GB drive.

- Support for multimedia applications with built-in stereo speakers and microphone, integrated 16-bit business audio, PCI local bus G10 Graphics Adapter or G10 Graphics with Motion Video Adapter and built-in CD-ROM
- PCMCIA slots for communication expansion capability
- User-friendly 10.4-inch (measured diagonally) displays, familiar IBM keyboard with TrackPoint III, efficient power management (operating system dependent), user-removable hard disk drive, and CD-ROM drive

**Preconfigured Systems — Base System:** The ThinkPad Power Series 820 (7247-821, 7247-822, and 7247-823) and ThinkPad Power Series 850 (7249-851) include:

- 603e 100MHz PowerPC Processor
- 256KB Level 2 cache
- Color TFT display (resolution varies by model; 800 x 600 or 640 x 480)
- 810MB hard disk (upgradeable to 1.2GB)
- SCSI-2 2X (XA) built-in CD-ROM
- 84-, 85-, or 89-key keyboard with integrated TrackPoint III
- 16-bit business audio with stereo speakers and microphone
- PCMCIA slots (two Type I or II, or one Type III) — serial, parallel, external diskette drive, keyboard/mouse, external display (up to 1024 x 768); SCSI-2 ports — headphone jack, microphone jack
- External 3.5-inch, 1.44MB diskette drive (supports 1.2MB mode)
- NiMH battery pack
- 50-watt universal AC adapter

Display and graphics adapter vary by model:

Memory Bus	Base/Maximum Memory	Hard Disk Drive	Display	Graphics Adapter
<b>7247-821</b>				
32-bit	32MB/48MB	810MB	800 x 600	G10 Graphics
<b>7247-822</b>				
32-bit	32MB/48MB	810MB	640 x 480	G10 Graphics with Motion

Memory Bus	Base/Maximum Memory	Hard Disk Drive	Display	Graphics Adapter
<b>7247-823</b>				
32-bit	32MB/48MB	810MB	640 x 480	G10 Graphics

<b>7249-851</b>				
64-bit	32MB/96MB	810MB	800 x 600	G10 Graphics with Motion

The G10 Graphics with Motion Video Adapter is factory installed and available only on models 7247-822 and 7249-851.

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## Publications

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The 820 system is shipped with the *IBM ThinkPad Power Series 820 User's Guide*; the 850 system is shipped with the *IBM ThinkPad Power Series 850 User's Guide*.

The following service publications are available for order:

Title	Order Number
<b>ThinkPad Power Series 820</b>	
IBM ThinkPad Power Series 820 Hardware Maintenance Manual	S30H-2383
<b>ThinkPad Power Series 850</b>	
IBM ThinkPad Power Series 850 Hardware Maintenance Manual	S30H-2388

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## Technical Information

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### **Specified Operating Environment**

#### **Physical Specifications**

##### *ThinkPad Power Series 820*

- Width: 297 mm (11.7 in)
- Depth: 210 mm (8.3 in)
- Height: 56 mm (2.2 in)
- Weight:
  - 2.8 kg (6.16 lb) with battery
  - 3.0 kg (6.64 lb) with battery and diskette drive
  - 3.4 kg (7.53 lb) with battery and CD-ROM drive

##### *ThinkPad Power Series 850*

- Width: 297 mm (11.7 in)
- Depth: 260 mm (10.24 in)
- Height: 61 mm (2.4 in)
- Weight:
  - 3.2 kg (6.96 lb) with battery
  - 3.6 kg (7.96 lb) with battery and CD-ROM
  - 3.8 kg (8.28 lb) with battery, CD-ROM, and video camera

**Electrical Power Specifications:** For the ThinkPad Power Series 820 and 850 systems:

##### *Universal AC Adapter*

- Power Rating: 50W
- Input Voltage: 100 to 240 V AC
- Input Current: 0.75 to 1.5 A
- Input Frequency: 50Hz to 60Hz
- Output Voltage: 20 to 10 V DC
- Output Current: 2.5 to 5.0 A

### Travel Quick Charger Power Specifications (820)

- Input Voltage: 10 to 20 V DC
- Input Current: 2.5 to 5.0 A
- Input to System:
  - Voltage: 10 to 20 V DC
  - Current: 2.5 to 5.0 A
- Output to Charge Battery:
  - Maximum Voltage: 14 V DC
  - Quick Charger Current: 3.0 A +/- 6%

### Intelligent Battery Pack

- 14 NiMH cells, 1800 mAH/cell (820)
- 16 NiMH cells, 1700 mAH/cell (850)
- Microprocessor for power management
- Nominal Voltage:
  - 8.4 V DC (820)
  - 9.6 V DC (850)
- Nominal Capacity
  - 3600 mAH (820)
  - 3300 mAH (850)

### Battery Operating Hours and Charging Time Estimates

- Power Off/Suspend Charging: 1.5 hours
- Charge During Operation: 2 hours
- Travel Quick Charger Charging: 2 hours (820)
- Battery Operation<sup>1</sup>: 2 to 5 hours
- Quick Charger (850)
  - Discharging<sup>2</sup>: 7 hours
  - Charging: 1.5 hours

<sup>1</sup> Operating system, application, and user-dependent  
<sup>2</sup> Discharge and charge cycle

### Quick Charger Power Specifications (850)

- Input Voltage: 100 to 240 V AC
- Input Current: 0.45 to 0.8 A
- Input Frequency: 50 to 60Hz
- Output Characteristics:
  - Rated Voltage: 12 V DC
  - Maximum Charge Voltage: 18 V DC
  - Quick Charge Current: 2.7A +/- 0.1 A
  - Trickle Charge Current: 80 mA +/- 20 mA

### Operating Environment

Heat Output: 171 Btu

Electrical Power Consumption: 50W maximum

Air temperature: 0 to 8,000 feet

- Operating: 5° to 35°C (41° to 95°F) (without diskette)
- Operating: 10° to 35°C (50° to 95°F) (with diskette inside unit)
- System Off: 5° to 43°C (41° to 110°F)
- Storage/Shipment: -20° to 60°C (-4° to 140°F)
- Wet Bulb (Maximum): 29.4°C (85°F)

8,000 to 10,000 feet

- Operating: 5° to 31.3°C (41° to 88°F) (without diskette)
- Operating: 10° to 31.3°C (50° to 88°F) (with diskette inside unit)
- System Off: 5° to 43°C (41° to 110°F)
- Storage/Shipment: -20° to 60°C (-4° to 140°F)
- Wet Bulb (Maximum): 25.7°C (78°F)

**Note:** The maximum temperature when the system is on is linearly decreased from 8,000 feet to 10,000 feet.

### Relative Humidity

- Operating: 8% to 95% (without diskette)
- Operating: 8% to 80% (with diskette inside unit)
- Storage/Shipment: 5% to 95%

### Altitude

- 3,048 m maximum (10,000 ft)

### Agency Approvals

#### System Unit Approvals

- FCC Class-B Certified to comply with FCC Rules, Part 15
- VCCI CLASS 2 (0 db)
- CISPR22B
- CE Mark
- UL-1950
- CSA C22.2 No. 950
- CB certificate to IEC950/EN60950
- UK-PTT
- MPR 2

#### AC Adapter Approvals

- UL-1950
- CSA-C22.2 No. 223
- SA

**Environmental Impact Assessment:** The ThinkPad Power Series 820 and ThinkPad Power Series 850 were developed in compliance with corporate policy letter number 139 (Environmental Affairs).

Environmental Impact Assessment numbers are:

- ThinkPad Power Series 820: 940802MPC0491PMS (dated May 25, 1995)
- ThinkPad Power Series 850: 950127MPC0514PMS (dated May 9, 1995)

The systems also comply with Corporate Standard C-S 3-0527-002 (1991-06) Control of Chemicals in IBM Facilities, Requirements, and Responsibilities.

### Homologation

#### ThinkPad Power Series 820 and 850

- EMC: EN55022/EN50082-1/EN60555-2
- Safety: IEC950/EN60950

### ISO 9000

#### ISO 9000 Registered IBM Locations

Research Triangle Park, NC Manufacturing	ISO 9001
Greenock, Scotland Manufacturing	ISO 9001
Austin, TX RS/6000™ System Manufacturing	ISO 9002
RS/6000 Hardware/OEM/Technical Lab	ISO 9001
AIX Software Lab	ISO 9001
PSP-LAN Systems	ISO 9001
PCCO ECAT Manufacturing	ISO 9001
PCCO PWB Facility	ISO 9002
Fujisawa, Japan Manufacturing	ISO 9001
Yamato, Japan Lab	ISO 9001

Models are complete systems and can include an operating system.

**Software Requirements:** The following operating systems support the ThinkPad Power Series 820 and 850:

- AIX Version 4.1.4 for Clients
- Windows NT Workstation 3.51 (PowerPC Edition)
- Solaris 2.5.1 (PowerPC Edition)

**Note:** The non-IBM software programs listed in this section are licensed under the non-IBM manufacturers', suppliers', or publishers' terms and conditions. The non-IBM manufacturers, suppliers, or publishers are responsible for providing any service or support associated with these programs. The descriptions of these programs were obtained from information made available by these companies to the general public. IBM does not warrant these products.

**Compatibility:** The ThinkPad Power Series 820 and 850 systems are designed to be compatible with the PowerPC Reference Platform™ Specification.

The ThinkPad Power Series 820 and ThinkPad Power Series 850 are designed to maintain compatibility with standard PCMCIA adapters. For an industry standard PCMCIA adapter to work in these systems, device driver support is required. You must determine if the operating system chosen supports a particular device or if the supplier of the device provides the necessary drivers.

The 820 and 850 systems contain setup and diagnostics software in its Flash ROM called "Easy-Setup."

Easy-Setup allows you to set:

- Passwords
- Start-up sequence for the drives
- SCSI IDs for the SCSI-2 adapter and the internal hard disk

Easy-Setup also runs the diagnostics through a graphical user interface.

#### **Limitations**

- For the 820, the video connector cable box shipped with the G10 Graphics with Motion Video Adapter is required for motion video input and output.
- G10 Graphics with Motion Video Adapter supports NTSC video input and output, and PAL video input only.
- G10 Graphics with Motion Video Adapter is supported in the operating system environment only. Support may vary by operating system.
- Software developers envisioning the use of DCBZ or MTMSR PowerPC instructions should consult the programming guidelines area of the Power Series™ Systems Products and Solutions home page on the World Wide Web by entering URL:  
<http://www.austin.ibm.com/powrinfo.html>
- The 820 system has a total of three DIMM memory slots per system. Two are used for base memory. Using 16MB DIMM optional feature cards, up to 48MB of system memory is possible.
- Audio functions are supported only in the operating system environment. Audio support may vary by operating system. Audio support for AIX requires Ultimedia® Services Version 2.1, or later.
- The power management function is implemented in the operating system environment and will affect the expected battery life.
- The system is designed so customers can install or remove a PCMCIA card without turning off the system, if the PCMCIA card and operating system selected support this function. Refer to the PCMCIA card instructions.

- The keyboard is an integral part of the ThinkPad Power Series 820 and 850. It cannot be interchanged as other RS/6000 keyboards, and key caps cannot be exchanged.
- When the system is working under some operating systems, removal and installation of a PCMCIA card may not be supported during the power-on state.
- When installing two Type II PCMCIA communications cards in the PCMCIA slot, cable interference may allow only one card to be used.
- PC Card point enablers may write directly to the hardware, bypassing Socket and Card Services. Writing directly to the hardware may cause problems that cannot be anticipated. Point enablers may interfere with client device drivers that do communicate with Socket and Card Services. Additional testing in your specific environment is recommended.
- Maximum data transfer rate of the built-in, double-speed CD-ROM drive is approximately 300 Kbps when used with the ThinkPad Power Series 820 or 850.
- The IBM Keyboard/Mouse Connector cable is required when attaching an external keyboard to the system via the external input device port.
- When running AIX with a tablet instead of the TrackPoint III in the AIXwindow environment, execute (rmdev -1 mouse0) at the command line before starting the AIXwindow environment.
- Devices supported depends on the operating system used and on the availability of its device driver. It is recommended that this information be verified with the device driver.
- Device drivers for x86 systems supplied with PCMCIA cards will not execute on these systems. Customers must ensure that PowerPC device drivers are available for the card.
- The resolution of NTSC OUT is less than VGA resolution. The screen quality may not be what is expected.

**Suspend Mode/Hibernation Mode Operational Considerations:** The system can enter suspend mode when using a PCMCIA card with one of the following operating systems:

- AIX Version 4.1.4 for Clients
- Windows NT Workstation 3.51 (PowerPC Edition)

**Note:** Removing or installing PCMCIA cards during suspend/hibernation mode is not recommended. Also the suspend/hibernation mode capabilities are operating system dependent.

#### **Planning Information**

**Customer Responsibilities:** The ThinkPad Power Series 820 and 850 are designated as customer setup.

Customer setup, service, and software publications are available. Customer setup allowance is one day. Following the setup instructions, attach the peripherals, install the battery, connect the AC adapter, and turn on the system. If the operating system does not come up, the system documentation can step you through the start-up procedures.

**Cable Orders:** You may need to order a Keyboard/Mouse Connector Cable if an external keyboard is required.

You must order a SCSI-2 cable if you want to attach an external SCSI-2 device.

**Installability:** The ThinkPad Power Series 820 and 850 systems require less than an hour for installation. Installation includes unpacking, setting up, and powering on the system. Additional time may be required to install memory, an operating system, or other features.

## **Security, Auditability, and Control**

### **Standard Security Features**

- Passwords
  - A power-on password (POP) helps protect the system from unauthorized use. If a POP is set, the password prompt appears each time the system is turned on.
  - A supervisor password provides a higher level of security than the POP. The supervisor password helps protect the system functions from being used by unauthorized users and helps protect the hardware configuration from unauthorized modification. If a supervisor password has been set, the system will prompt you to enter a password when trying to access the configuration or start-up sequence sub-menu of Easy-Setup.
- You can connect the hook on the locking mechanism to a leash with a user-selected padlock and chain or cable.
- The system is Vital Product Data (VPD) enabled. VPD is a software system identification method.

**Considerations:** The ThinkPad Power Series 820 and 850 systems support an icon-based interface that eliminates the need for national language translation. Customers select icons from an easily understandable menu to configure the system.

National language support (NLS) is also dependent on the operating system used. Refer to the operating system manuals to determine support for a particular country.

User management is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

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## **Terms and Conditions**

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These products are available for purchase under the terms of the IBM Customer Agreement (ICA).

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed. Regardless, IBM's warranty terms apply.

**Volume Orders:** For information regarding volume orders, contact your IBM representative.

**IBM Credit Corporation Financing:** Term leases and installment payment plans are available for commercial and state and local government customers.

### **Warranty Period**

- System Hardware (7247 and 7249): One-year Customer Carry-In Service

This warranty is for the system and any IBM features that are preinstalled at the factory. Any IBM feature installed by the customer or shipped in a separate package is considered an optional feature and the Optional Feature Warranty applies.

- System Battery: One year
- Optional Features: One year
- Media (Diskettes and CD-ROMs): Three months
- IBM Programs: Three months

**Non-IBM Programs:** Not warranted by IBM. Warranty, if any, is provided by the program's supplier.

**Non-IBM Optional Features:** Not warranted by IBM. Warranty, if any, is provided by the product's supplier.

**Licensing:** IBM programs included with the ThinkPad Power Series 820 and 850 are licensed under the terms and conditions of the IBM International Program License Agreement and IBM System Programs License Agreement. A copy of these agreements are included in the documentation that ships with the system.

Non-IBM programs are available from IBM as distributed by the program supplier. Terms and conditions of the supplier apply. They are included in their respective program packages and are passed on to the customer.

**Warranty Service:** Customer Carry-In Repair (CCR)

**ThinkPad EasyServ:** Warranty service for the ThinkPad Power Series 820 and 850 will be provided by ThinkPad EasyServ. ThinkPad EasyServ is a courier repair service in which the ThinkPad system will be picked up at the customer's location and delivered to an IBM-designated repair location. The repair location will repair the system and return the repaired system to the customer. Charges for the courier service will be paid by IBM.

If the warranty service is required, the customer should call the HelpCenter® at 800-772-2227. The HelpCenter will assist users with problem isolation for both hardware and software. Should a hardware problem be identified, the HelpCenter will arrange for a courier to pick up the system for overnight delivery (where available) to the repair location. Most repairs should be made the same day the system is received at the repair location. Customers should keep the original shipping carton for shipping to the repair location. If the original shipping carton is not available, the courier will deliver a shipping carton and return to pick up the system for delivery to the repair location.

ThinkPad EasyServ is available in the U.S. only.

**International Warranty Service (7247 and 7249):** Customers who travel or need to move products to another country can register the products for IBM International Warranty Service. Upon registering with the International Warranty Service Office (IWSO), IBM will issue an International Warranty Service Certificate that will be honored virtually worldwide, where IBM or IBM resellers sell and service IBM PC products. During the original warranty period, service will be provided through the service delivery methods available for the customers' specific IBM system in the servicing country.

For more information on IBM International Warranty Service in the United States and Canada or to register your ThinkPad Power Series 820 and 850 systems, contact IBM at 800-497-7426. Refer to Services Announcement 694-028, dated October 17, 1994.

**Alternative Service**

- IBM On-site Repair (IOR)

IOR is not offered as a generally available option. On-site service is offered only through the special bid process.

- ThinkPad EasyServ Overnight Repair Option

The ThinkPad EasyServ Overnight Repair Option is available for an additional per incident charge or via special bid for coverage during the warranty period.

The ThinkPad EasyServ Overnight Repair option is available Monday through Thursday only.

Alaska and Hawaii require 48 hours for this service.

Contact your Area Service Marketing Specialist for details.

**Maintenance Service**

- ThinkPad EasyServ Maintenance Agreement

This is a courier repair service in which the ThinkPad system will be picked up at the customer's location and delivered to an IBM designated repair location. The repaired system will be returned to the customer. Charges for the courier service will be paid by IBM.

- ThinkPad EasyServ Overnight Repair Option

The ThinkPad EasyServ Overnight Repair Option allows customers whose mobile systems are covered by an IBM EasyServ Maintenance agreement to upgrade the service to overnight repair with a per incident charge or via special bid during the agreement period. Customers should call the HelpCenter at 800-772-2227 for information on utilizing this service.

Alaska and Hawaii require 48 hours for this service. The ThinkPad Overnight Repair Option offering is available in the U.S. only.

**ThinkPad EasyServ Maintenance Agreement:** If customers select ThinkPad EasyServ for their post-warranty maintenance delivery, customers should call the HelpCenter at 800-772-2227. The HelpCenter will assist users with problem isolation for both hardware and software. Should a hardware problem be identified, the HelpCenter will arrange for a courier to pick up the system for overnight delivery (where available) to the repair location. Most repairs should be made the same day the system is received at the repair location. Customers should keep the original shipping carton for shipping to the repair location. If the original shipping carton is not available, the courier will deliver a shipping carton and return to pick up the system for delivery to the repair location.

ThinkPad EasyServ post-warranty service is available in the U.S. only.

**Alternative Service:** IOR is not offered as a generally available option. Customers who require a more timely repair option can select either the ThinkPad EasyServ Overnight Repair option or on-site service via the special bid process.

Contact your Area Service Marketing Specialist for details.

**IBM Hourly Service Rate Classification:** One

IBM Warranty Service, Maintenance Service, or IBM Hourly Service can be obtained by calling 800-IBM-SERV (426-7378). IBM Hourly Service is available at the

applicable rate and terms, including element exchange price, if applicable.

**Mid-Range System Option:** The announced products are eligible machines for the Mid-Range System Option\* of the ICA.

Eligible Types	Discount	
	Three-Year	Five-Year
7247/7249	12%	17%

**Corporate Service Option:** The announced products are eligible machines for the Corporate Service Option\* of the ICA.

	Discount	
	Three-Year	Five-Year
Network System	15%	20%
	12%	17%

\* A revised exhibit will be available at a later date.

**Extended Maintenance Option:** The announced products are eligible machines under the Extended Maintenance Option of the ICA.

When a type of service involves the exchange of a machine or part, the replacement may not be new but will be in good working order.

**Product Availability Status:** New product available

**Field Installable Features:** Yes

**Model Conversions:** No

**Customer Setup:** Yes

**Licensed Internal Code:** No

**Educational Allowance:** A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

**Charges**

Description	Machine Type	Model	Purchase Price	MMC <sup>3</sup> Annual
IBM ThinkPad Power Series 820	7247	821	\$ 8,299	\$560
		822	7,899	560
		823	7,699	560
IBM ThinkPad Power Series 850	7249	851	12,399	630

<sup>3</sup> Minimum Maintenance Charge

**Required Selectable Features**

Description	Machine Type	Model	Feature Number	Purchase Price
<b>SCSI-2 Hard Disk Drives</b>				
Internal 810MB Hard Disk Drive	7247	821, 822,	2010	NC <sup>4</sup>
		823		
Internal 810MB Hard Disk Drive	7249	851	2010	NC

Description	Machine Type	Model	Feature Number	Purchase Price	Description	Machine Type	Model	Feature Number	Purchase Price
Internal 1.2GB Hard Disk Drive (Select up from #2010)	7247	821, 822, 823	2020	\$652	Adapter to Option Cable	7247	821, 822, 823	8223	\$ 285
Internal 1.2GB Hard Disk Drive (Select up from #2010)	7249	851	2020	652	Adapter to Option Cable	7249	851	8223	285
Software Preinstalled - AIX Only	7247	821, 822, 823	5005	NC	Terminator Cable	7247	821, 822, 823	8226	65
Software Preinstalled - AIX Only	7249	851	5005	NC	Terminator Cable	7249	851	8226	65
CCS Customer Service Specify	7247	821, 822, 823	0986	NC	SCSI-2 Cable Option to Option (Long)	7247	821, 822, 823	8224	80
CCS Customer Service Specify	7249	851	0986	NC	SCSI-2 Cable Option to Option (Long)	7249	851	8224	80
					SCSI-2 Cable Option to Option (Short)	7247	821, 822, 823	8225	65
					SCSI-2 Cable Option to Option (Short)	7249	851	8225	65

**Additional Features**

Description	Machine Type	Model	Feature Number	Purchase Price
After Market Order Specify	7247	821, 822, 823	0001	NC
After Market Order Specify	7249	851	0001	NC
810MB Hard Disk Drive	7247	821, 822, 823	2011	\$1,884
810MB Hard Disk Drive	7249	851	2011	1,884
1.2GB Hard Disk Drive	7247	821, 822, 823	2021	2,536
1.2GB Hard Disk Drive	7249	851	2021	2,536
External SCSI Hard Disk Drive 1.0G	7247	821, 822, 823	8220	442
External SCSI Hard Disk Drive 1.0G	7249	851	8220	442
External SCSI-2 Hard Disk Drive 2.0G	7247	821, 822, 823	8221	1,753
External SCSI-2 Hard Disk Drive 2.0G	7249	851	8221	1,753
External SCSI Storage Enclosure	7247	821, 822, 823	8222	295
External SCSI Storage Enclosure	7249	851	8222	295

**Additional Memory Options**

16MB DIMM	7247	821, 822, 823	4011	1,588
32MB ICDRAMs (2 x 16MB)	7249	851	4022	3,204
64MB ICDRAMs (2 x 32MB)	7249	851	4023	6,174
AC Adapter	7247	821, 822, 823	7080	144
AC Adapter	7249	851	7080	144
Quick Charger	7249	851	7060	289
Travel Quick Charger	7247	821, 822, 823	7040	289

**Additional Battery**

820 NiMH Battery	7247	821, 822, 823	7020	216
850 NiMH Battery	7249	851	7030	216

**Multimedia Options**

Personal Microphone	7247	821, 822, 823	6308	71
Personal Microphone	7249	851	6308	71
850 Camera	7249	851	6200	506

**PCMCIA Cards**

10 Base2 Ethernet PCMCIA	7247	821, 822, 823	8020	348
10 Base2 Ethernet PCMCIA	7249	851	8020	348

Description	Machine Type	Model	Feature Number	Purchase Price
10 BaseT Ethernet PCMCIA	7247	821, 822, 823	8030	\$276
10 BaseT Ethernet PCMCIA	7249	851	8030	276
Token-Ring PCMCIA	7247	821, 822, 823	8040	537
Token-Ring PCMCIA	7249	851	8040	537
14.4/14.4 Data Fax Modem	7247	821, 822, 823	8060	174
14.4/14.4 Data Fax Modem	7249	851	8060	174

**Mouse/Keyboards**

Black Three-Button Mouse	7247	821, 822, 823	6041	95
Black Three-Button Mouse	7249	851	6041	95
PS/2® Miniature Mouse	7247	821, 822, 823	8210	95
PS/2 Miniature Mouse	7249	851	8210	95
Keyboard/Mouse Connector	7247	821, 822, 823	8212	58
Keyboard/Mouse Connector	7249	851	8212	58

**Alternative Service Charges:** IBM on-site service will be considered via the special bid process.

<sup>4</sup> NC = No Charge