# IBM

# Storage Options for Personal System/2

*For Micro Channel systems*

## Storage options: expansion and growth for your PS/2

Whatever your expansion requirements, IBM has a solution for you. IBM offers a wide variety of storage options designed to enhance the expandability and functionality of your Personal System/2,® including:

- SCSI fixed disk drives
- SCSI CD-ROM II
- SCSI tape drives
- SCSI rewritable optical drive
- 2.88MB diskette drives
- 5.25-inch diskette drives
- External storage enclosures
- And more…

IBM hard disks are designed, manufactured and tested to very rigid IBM quality specifications. That's why IBM offers reliability that's tops in the industry. And IBM's SCSI Adapter with Cache won the 1991 "Systems Integration Product of the Year" award in the peripheral/controller boards category.[1] To ensure the highest quality, reliability and compatibility for all storage options, IBM performs vigorous and comprehensive testing. The result: higher productivity and better investment protection as you grow and expand your PS/2®

The ANSI industry-standard Small Computer System Interface (SCSI)[2] lets you enhance your IBM Personal System/2 with more files and peripherals than ever before. A single Micro Channel® expansion slot and PS/2 SCSI adapter support the addition of high-performance fixed disks, CD-ROM drives, tape drives, and more—up to seven SCSI devices. And that means you'll still have slots available for other uses.



## Need more information?

For additional information about options for your IBM Personal System/2, please contact:

- Your IBM marketing representative
- Your Authorized IBM Remarketer
- The IBM HelpCenter™ at 800-772-2227

## Two SCSI adapters for flexibility

Many PS/2s include SCSI as a standard feature. The PS/2 56, 57, P75, 76, 77 and Server 85 all come with an integrated SCSI port, and PS/2 65, 80 (081, 121, 161, A21, A31, A16, 321), 90 and 95 come with a SCSI adapter card. But all Micro Channel Personal System/2s can utilize SCSI technology with the addition of one of IBM's two Micro Channel SCSI adapter cards.

Both SCSI adapters let you combine expandability with high data transfer rates and Micro Channel support, and you can attach up to seven SCSI devices on each. With four SCSI cards, you can have a total of up to 28 devices on a single PS/2. And since these adapters perform intelligent busmaster functions, they can operate independently of your system processor, which translates into improved system throughput with faster, more efficient, and more reliable data transfer.

The IBM PS/2 Micro Channel SCSI Adapter offers you a cost-effective SCSI solution for PS/2 expansion. It fits in either a 16- or 32-bit Micro Channel slot and provides data transfer rates of up to 6.6MB per second.

The IBM PS/2 Micro Channel SCSI Adapter with Cache is designed for disk-intensive environments where overall performance is critical—like multiuser transaction processing or with high-capacity network servers. This 32-bit adapter card gives you a data transfer rate of up to 16.6MB per second, while its built-in 512KB cache lets you free up system memory for running applications.

## IBM PS/2 Micro Channel SCSI adapters at a glance

| | Micro Channel SCSI Adapter | Micro Channel SCSI Adapter with Cache |
|---|---|---|
| **Part number** | 6451109 | 6451133 |
| **Configuration** | Uses one 16- or 32-bit Micro Channel expansion slot; up to four SCSI adapters may be installed on some PS/2s | |
| **Micro Channel** Data path Transfer rate | 16-bit 6.6MB/sec. | 32-bit 16.6MB/sec. |
| **Data cache** | None | 512KB |
| **SCSI BIOS** | Provides fixed disk interface with DOS and OS/2® environments; allows operation of both SCSI and non-SCSI fixed disks on the same PS/2; includes Power-on Self Test (POST) and a generic, hardware-independent interface for other SCSI devices | |
| **Device support** | Up to seven SCSI-compatible physical devices via IBM SCSI internal or external adapter connectors; up to eight logical devices can be defined for each physical device, to a maximum of 15 logical devices per adapter | |
| **SCSI cabling** | Serial "daisy-chain" cabling, with a total cable length not exceeding six meters; devices or adapters at the ends of the chain must be terminated | |

## Hi-tech breakthrough: rewritable optical storage

Write, read and write again: the IBM PS/2 3.5-inch Rewritable Optical Drive lets you store an impressive amount of data—up to 127 million bytes—on a single diskette-like cartridge. Installing this SCSI option gives you large storage capacity and easy updating capability for your PS/2 Micro Channel system.

### IBM PS/2 3.5″ Rewritable Optical Drive at a glance

| Part number | 6450162 |
|---|---|
| Storage capacity | 127MB |
| Data transfer rate | 4.3MB/sec. |
| Supported systems | Supported as an internal device on PS/2 Models 56, 57, 60, 65 SX, 76, 77, 80, Server 85, 90 and 95 with SCSI adapter installed; supported on other Micro Channel models with a SCSI adapter via the External Enclosure for SCSI Devices (3511003) or the SCSI Storage Enclosure (35100V0) |

## Data protection and storage with tape drive options

You can protect your company's critical data, store large databases economically, and back up your system regularly with IBM PS/2 SCSI tape drives. IBM offers you three SCSI tape drives to choose from, depending on your system requirements. You can store more than two billion bytes of data on the 8mm IBM PS/2 2.3GB SCSI Tape Drive or 2.3GB External SCSI Tape Drive. And the newest addition to the tape drive family is the PS/2 2.0GB 4mm Tape Drive, which holds over 2.0GB of data, or more with data compression.

### IBM SCSI tape drive options at a glance

| | PS/2 2.3GB Full-High SCSI Tape Drive (Internal/8mm) |
|---|---|
| Part number | 6451121 |
| Storage capacity | 2.3GB |
| Data transfer rate | 245KB/sec. |
| Supported systems | PS/2 Server 85 and 95 XP 486; supported on other Micro Channel models via the External Enclosure for SCSI Devices (3511003) |

| | PS/2 2.3GB External SCSI Tape Drive (8mm) |
|---|---|
| Part number | 3532023 |
| Storage capacity | 2.3GB |
| Data transfer rate | 245KB/sec. |
| Supported systems | All PS/2 Micro Channel systems (via PS/2 SCSI adapters) |

| | IBM 2.0GB 4mm Tape Drive Option for PS/2 |
|---|---|
| Part number | 55F9464 |
| Storage capacity | 2.0GB (4 to 8GB with data compression) |
| Data transfer rate | 183KB/sec. (366 to 732KB/sec. with data compression) |
| Supported systems | Supported as an internal device on PS/2 Models 56, 57, 76, 77, Server 85, 90, 95; supported on other Micro Channel models with a SCSI adapter via the External Enclosure for SCSI Devices (3511003) or the SCSI Storage Enclosure (35100V0) |

## Cost-effective way to protect critical data

With the PS/2 Internal Tape Backup Unit, you've got a simple and cost-effective way to add secure storage to your Personal System/2. The convenience kit includes the IBM PS/2 Internal Tape Backup Unit and the companion IBM PS/2 Tape Backup Program—for OS/2 or DOS—as well as a formatted 120MB tape minicartridge for backup and offline storage. You get everything you need to begin backing up your hard disk without delay.

### IBM backup tape drives at a glance

| | 80/120MB Internal Tape Backup Unit | Internal Tape Backup Convenience Kit—DOS | Internal Tape Backup Convenience Kit—OS/2 |
|---|---|---|---|
| Part number | 30F5279 | 92F3434 | 92F3340 |
| Capacity | Up to 120MB per minicartridge | | |
| Tape speed | 2MB-per-minute backup rate | | |
| Supported systems | PS/2 Models 50–95 (except 55, 8556, P70) | | |

## Access more data faster with SCSI fixed disks

With a SCSI adapter, you can add up to seven internal or external storage devices to your Micro Channel PS/2. This includes a wide range of SCSI fixed disk options—80MB, 160MB, 212MB, 320MB, 400MB and 1GB—with average seek times as fast as 11ms. The newest fixed disk drive from IBM holds 212MB of data and has an access time of 12ms.

You can tailor your storage capacity by using a mix of disk sizes, or just add fixed disk drives as you need them. The built-in SCSI BIOS supports both SCSI and non-SCSI drives on the same PS/2 and provides compatibility for DOS and OS/2 environments.

## IBM SCSI fixed disk options at a glance

| | 80MB SCSI fixed disk | 160MB SCSI fixed disk |
|---|---|---|
| Part number | 6451045 | 6451046 |
| Average seek time | 17ms | 16ms |
| Supported systems | 80 and 160MB drives supported in PS/2 Models 56, 57, 60, 65, 76, 77, 80, Server 85, 90, 95 and the 3510, 3511. Will attach externally to any SCSI-based PS/2 Micro Channel system when installed in the 3510 or 3511 | |

| | 212MB SCSI fixed disk |
|---|---|
| Part number | 6451242 |
| Average seek time | 12ms |
| Supported systems | 212MB drive supported internally in PS/2 systems with SCSI controllers standard and will externally attach to all SCSI-based PS/2 Micro Channel systems when installed in the 3510 or 3511 |

| | 320MB SCSI fixed disk | 400MB SCSI fixed disk |
|---|---|---|
| Part number | 6451234 | 6451235 |
| Average seek time | 12.5ms | 11.5ms |
| Supported systems | 320 and 400MB drives supported in PS/2 Models 9556, 57, 60, 65, 76, 77, 80, Server 85, 90, 95 and the 3510, 3511. Will externally attach to any SCSI-based PS/2 Micro Channel system when installed in the 3510 or 3511 | |

| | 1GB SCSI fixed disk |
|---|---|
| Part number | 6451052 |
| Average seek time | 11ms |
| Supported systems | 1GB drive supported internally in PS/2 Server 85 and 95. Will externally attach to any SCSI-based PS/2 Micro Channel system when installed in the 3510 or 3511. The PS/2 Server 85 and 95 and the 3511 may be configured with a maximum of two 1GB drives |

Note: Please consult your IBM marketing representative, Authorized IBM Remarketer, or the IBM HelpCenter at 800-772-2227 for additional PS/2 fixed disk configuration information.

## Add powerful resources economically with the IBM CD-ROM II

Attaching the IBM CD-ROM II Drive to your SCSI-equipped system provides a low-cost alternative for storing large amounts of read-only data. Imagine the online ready reference this can provide for your text, graphics or multimedia applications.

The CD-ROM II Drive supports the DVI standard, plus XA architecture. Each compact disc can put the equivalent of over 400 high-density 3.5-inch diskettes of information online to your users—it's like having over 180,000 pages of information on a single disc. And that means powerful flexibility and productivity for individuals and LAN users alike.

## IBM PS/2 CD-ROM II Drive at a glance

| Part number | 6451104 |
|---|---|
| Storage capacity | Approximately 600MB |
| Supported systems (via PS/2 SCSI adapters) | All IBM PS/2 Micro Channel systems |

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### IBM PS/2 3.5″ Rewritable Optical Drive at a glance

| | |
|---|---|
| **Part number** | 6450162 |
| **Storage capacity** | 127MB |
| **Data transfer rate** | 4.3MB/sec. |
| **Supported systems** | Supported as an internal device on PS/2 Models 56, 57, 60, 65 SX, 76, 77, 80, Server 85, 90 and 95 with SCSI adapter installed; supported on other Micro Channel models with a SCSI adapter via the External Enclosure for SCSI Devices (3511003) or the SCSI Storage Enclosure (35100V0) |

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### IBM SCSI tape drive options at a glance

| PS/2 2.3GB Full-High SCSI Tape Drive (Internal/8mm) | |
|---|---|
| **Part number** | 6451121 |
| **Storage capacity** | 2.3GB |
| **Data transfer rate** | 245KB/sec. |
| **Supported systems** | PS/2 Server 85 and 95 XP 486; supported on other Micro Channel models via the External Enclosure for SCSI Devices (3511003) |

| PS/2 2.3GB External SCSI Tape Drive (8mm) | |
|---|---|
| **Part number** | 3532023 |
| **Storage capacity** | 2.3GB |
| **Data transfer rate** | 245KB/sec. |
| **Supported systems** | All PS/2 Micro Channel systems (via PS/2 SCSI adapters) |

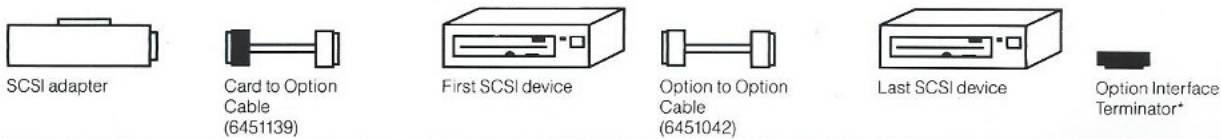| IBM 2.0GB 4mm Tape Drive Option for PS/2 | |
|---|---|
| **Part number** | 55F9464 |
| **Storage capacity** | 2.0GB (4 to 8GB with data compression) |
| **Data transfer rate** | 183KB/sec. (366 to 732KB/sec. with data compression) |
| **Supported systems** | Supported as an internal device on PS/2 Models 56, 57, 76, 77, Server 85, 90, 95; supported on other Micro Channel models with a SCSI adapter via the External Enclosure for SCSI Devices (3511003) or the SCSI Storage Enclosure (35100V0) |

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### IBM backup tape drives at a glance

| | 80/120MB Internal Tape Backup Unit | Internal Tape Backup Convenience Kit—DOS | Internal Tape Backup Convenience Kit—OS/2 |
|---|---|---|---|
| **Part number** | 30F5279 | 92F3434 | 92F3340 |
| **Capacity** | Up to 120MB per minicartridge | | |
| **Tape speed** | 2MB-per-minute backup rate | | |
| **Supported systems** | PS/2 Models 50–95 (except 55, 8556, P70) | | |

## IBM SCSI cables and accessories at a glance

| | | |
|---|---|---|
| **PS/2 Card to Option Cable** | A 60-pin to 50-pin connector cable required for attaching the first SCSI external device in the daisy chain; includes a 50-pin Option Interface Terminator required for the last external device in the chain | |
| Part number | 6451139 | |
| **PS/2 Option to Option Cable** | A 50-pin to 50-pin connector cable for attaching one SCSI external device to another | |
| Part number | 6451042 | |
| **PS/2 SCSI Fixed Disk Kit A** | Required to install SCSI fixed disk drives in the front DASD bay of IBM PS/2 Models 60, 65 SX and 80 386 | |
| Part number | 6451053 | |
| **PS/2 CD-ROM II Kit A** | Required to install the CD-ROM II drive in all PS/2 floorstanding systems and the PS/2 External Enclosure for SCSI Devices (3511003) | |
| Part number | 6451145 | |
| **PS/2 CD-ROM II Kit B** | Required to install the CD-ROM II drive in the PS/2 SCSI Storage Enclosure (35100V0) | |
| Part number | 6451146 | |
| **PS/2 3.5" Rewritable Optical Drive Kit A** | Required to install the PS/2 3.5" Rewritable Optical Drive in PS/2 Models 60 and 80 (041, 071, 111, 311) | |
| Part number | 6451126 | |
| **PS/2 2.0GB 4mm Tape Drive Hardware Kit for Models 60 and 80** | Required to install the PS/2 2.0GB 4mm Tape Drive in PS/2 Models 60 and 80 | |
| Part number | 65F9965 | |

## SCSI cabling for external attachment

SCSI adapter    Card to Option Cable (6451139)    First SCSI device    Option to Option Cable (6451042)    Last SCSI device    Option Interface Terminator*

*Included with Card to Option Cable. This terminator is not required on the External Enclosure for SCSI Devices (3511003).

For information on other IBM storage options, including the 3515 High Performance Disk Subsystem and 3514 High Availability External Disk Array, please see Large Storage Options for Personal System/2 (G221-3475-00).

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G221-3476-00