IBM

Personal System/2
Model 90 XP 486 series

Moving ahead with the latest 486 technology

Make your move to i486™ power, and go as far and fast as you like – with the Model 90 XP™ 486 series from Personal System/2.® Built around the latest Intel486™ microprocessor technology, the PS/2s® in this series offer a range of speed, memory and storage capacity to suit your needs and your budget. They're easy to upgrade – all the way to 50 MHz if you choose. And they're simple to expand, so you get a solution that's suited not only for today but for tomorrow.

Whether you select a 25 MHz, 33 MHz or 50 MHz processor complex, you benefit from balanced Micro Channel®-based performance. That means you get the most from the 90 XP 486's resources – from processor to ports to XGA graphics to SCSI fixed disks to optimized memory. And you realize the full potential of 486 power through the advanced technology of PS/2.
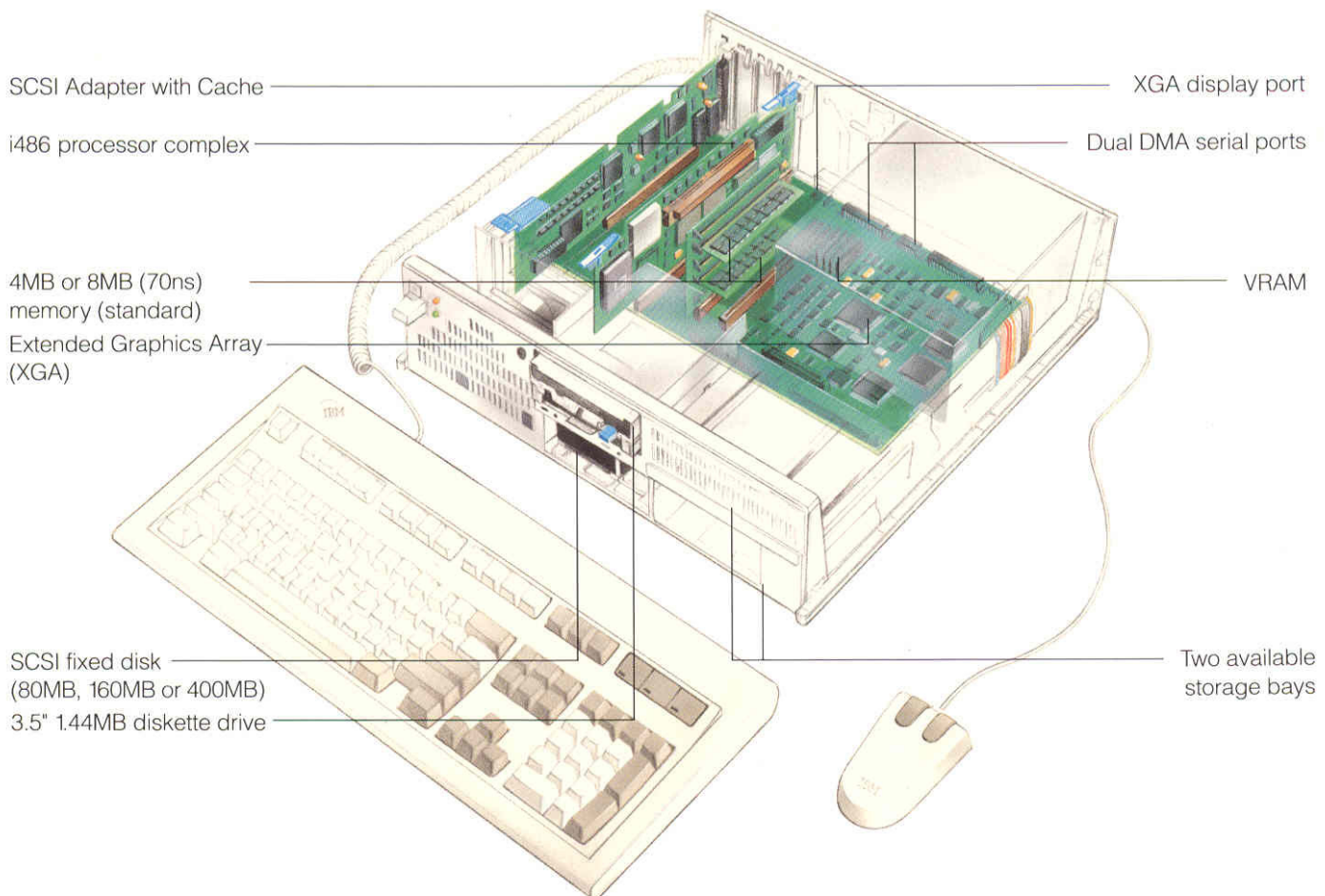
Model 90 XP 486 series at work

Here are some of the ways you can put the Model 90 XP 486 series to work for you:

- Do financial analyses, modeling, complex spreadsheets and other numeric-intensive applications – at your choice of 25 MHz, 33 MHz or 50 MHz processing speed
- Run power-hungry, high-resolution imaging and graphics programs for science and engineering – i486 DX processor models excel at CAD/CAM
- Meet desktop publishing demands and deadlines more easily and efficiently than ever
- Create presentation graphics with a professional appearance
- Increase the productivity of your programming staff with quick turn-around on compiles and tests

Feature	Benefit
Advanced i486 SX and DX processor complexes	• Give you flexibility in choosing the right performance for the right price • Include 8KB memory cache for super-fast access to frequently used data • Offer a standard (DX) or support an optional (SX) floating-point unit • Provide a 256KB cache (50 MHz) or room to add one (33 MHz) • Handle numeric-intensive business and technical tasks at top speeds • Allow upgrades from 25 MHz to 33 MHz to 50 MHz to protect your investment
Built-in XGA graphics (busmaster)	• Deliver faster performance for existing VGA applications–and support more colors, too • Supply 1,024 x 768 addressability, with no need for separate adapter • Support today's windowing environments with enhanced hardware-assist features
Enhanced memory design	• Includes caching functions that make frequently used information available to the processor with zero wait states • Optimizes to 486 processing power with interleaved memory access techniques • Performs parity checking for improved reliability and data integrity • Adjusts automatically to allow memory SIMMs of different speeds to be supported
SCSI Adapter with Cache (busmaster)	• Enables attachment of up to seven SCSI devices, including high-performance fixed disks, without using another expansion slot • Works with Micro Channel to enhance overall system performance
4MB or 8MB memory, expandable to 64MB on planar	• Makes the 90 XP 486 series ideal for OS/2®- and UNIX®-based environments • Saves expansion slots by building on the system board
Micro Channel	• Provides efficient data paths for fast, reliable, balanced performance • Supports multiple tasks and concurrent I/O operations • Protects investment by providing a platform for future expansion and growth
Four storage bays (two available)	• Allow flexibility in configuring data storage • Enable installation of 5.25-inch devices, including a 5.25-inch diskette drive for easy data transfer to and from different diskette sizes • Make room for up to three fixed disk drives providing internal storage up to 1.2GB
Initial Machine Load (IML)	• Provides system reference and setup instructions on fixed disk, eliminating the need for separate diskettes • Simplifies implementation of future system program upgrades
Selectable boot	• Lets you boot from any diskette or disk drive so you can use different operating systems • Provides an additional level of security

SCSI Adapter with Cache — XGA display port

i486 processor complex — Dual DMA serial ports

4MB or 8MB (70ns) memory (standard)

Extended Graphics Array (XGA) — VRAM

SCSI fixed disk (80MB, 160MB or 400MB)
3.5" 1.44MB diskette drive

Two available storage bays

IBM Personal System/2 Model 90 XP 486 series at a glance

Machine numbers	8590-0H5	8590-0H9	8590-0K9	8590-0KF
Microprocessor				
Standard	80486 SX	80486 SX	80486 DX	80486 DX
Clock speed	25 MHz	25 MHz	33 MHz	33 MHz
Wait states	0	0	0	0
Memory cache	8KB	8KB	8KB	8KB
Other functions	Data parity; parity memory reliability checking		Internal floating-point processing unit; data parity; parity memory reliability checking	
Optional	80487 SX/25 MHz	80487 SX/25 MHz	256KB cache	256KB cache
Processor upgrades	33 MHz, 50 MHz	33 MHz, 50 MHz	50 MHz	50 MHz
Bus architecture	Micro Channel	Micro Channel	Micro Channel	Micro Channel
Data path	32-bit	32-bit	32-bit	32-bit
Memory (RAM)				
Standard	4MB (70ns)	4MB (70ns)	8MB (70ns)	8MB (70ns)
Maximum on				
system board	64MB	64MB	64MB	64MB
System maximum	64MB	64MB	64MB	64MB
Integrated functions	Extended Graphics Array (XGA) display port, dual DMA serial ports, DMA parallel port, pointing device port, keyboard port, diskette controller support for three drives, SCSI Adapter with Cache (includes SCSI port)			
Available expansion slots	Three 32-bit	Three 32-bit	Three 32-bit	Three 32-bit
Diskette storage (internal)				
Standard (3.5-inch)	1.44MB	1.44MB	1.44MB	1.44MB
Optional (3.5-inch)	1.44MB	1.44MB	1.44MB	1.44MB
Optional (5.25-inch)	1.2MB	1.2MB	1.2MB	1.2MB
Fixed disk storage (internal)				
Standard	80MB (17ms)	160MB (16ms)	160MB (16ms)	400MB (11.5ms)
Optional SCSI	Up to two additional 80MB, 160MB, 320MB or 400MB internal SCSI drives			
Tape backup (internal)				
Optional (3.5-inch)	120MB	120MB	120MB	120MB
Tape backup (external)				
Optional (5.25-inch)	2.3GB	2.3GB	2.3GB	2.3GB
Display modes	XGA (includes all VGA modes)			
APA modes	640 x 480 x 256 colors/64 gray shades; 1,024 x 768 x 16 colors/gray shades; hardware support for 132-column text mode; 16-bit direct color mode at 640 x 480 x 64K colors			
Optional graphics	With additional video memory expansion feature, 1,024 x 768 x 256 colors or 64 gray shades; higher resolution modes, up to 1,600 x 1,200, are supported by the IBM PS/2 Image Adapter/A family of adapters			
Supported displays	IBM Personal System/2 Color Displays 8512, 8513, 8514, 8515, 8516 and 8518; IBM Personal System/2 Monochrome Displays 8504 and 8508[1]			
Supported printers/ plotters	IBM Proprinter® 24P, IBM Personal Printer Series II family, IBM LaserPrinter family, IBM ExecJet™ Printer, IBM Page Printer 3816, IBM PS/1™ Printer, IBM 618X Color Plotters			
Keyboard	101 keys, including 12 function keys, 3 lighted mode indicators; 6-foot coiled cable			
Power supply	194-watt worldwide, autosensing and autoswitching			
Operating system	DOS 3.3 or higher, IBM OS/2 1.2 or 1.3, OS/2 2.0 (when available), AIX® Personal System/2 1.2.1			
Size	Approx. 5.5"H x 17.3"W x 16.9"D (140mm x 440mm x 430mm); 25 lbs. (11.4 kg)			
Warranty	One-year limited warranty			

Wide range of options[2]

	Part no.
Coprocessors/processor upgrades	
• Wizard Adapter	34F3062
• Math Co-Processor 487 SX/20-25 MHz (0Gx[3] and 0Hx models only)	6451243
• 486/20-25 MHz Processor Upgrade	6450759
• 486/33 MHz Processor Upgrade	6451094
• 486/50 MHz Processor Upgrade	6450757
• 256KB Cache Option	6451095
Storage devices	
• 3.5" 1.44MB 1-inch High Diskette Drive	6451072
• 5.25" 360KB External Diskette Drive	4869001
• 5.25" 1.2MB External Diskette Drive	4869002
• 5.25" Slim High Diskette Drive	6451066
• 80MB SCSI Fixed Disk Drive	6451045
• 160MB SCSI Fixed Disk Drive	6451046
• 320MB SCSI Fixed Disk Drive	6451108
• 400MB SCSI Fixed Disk Drive	6451081
• CD-ROM Drive (internal)	6451113
• External CD-ROM Drive	3510001
• 6157 Streaming Tape Drive (60MB, 150MB)	6157001/6157002
• Internal Tape Backup Unit	30F5279
• 2.3GB SCSI Full High Tape Drive	6451121
• 2.3GB SCSI Tape Drive (external)	3532023
• 3.5" Rewritable Optical Drive	6450162
• External Storage Enclosure for SCSI Devices	3511003
• SCSI Storage Enclosure	35100V0
Scanners	
• 3119 PageScanner	94X2410
Connectivity/communications	
• Token-Ring Network Adapter/A	69X8138
• Token-Ring Network 16/4 Adapter/A	16F1133
• Token-Ring Network 16/4 Busmaster Adapter/A	74F4140
• Adapter/A for Ethernet Networks	6451091
• PC Network Baseband Adapter/A	1501223
• PC Network Broadband Adapter II/A	1501222
• PC Network Adapter II/A–Frequency 2	96X5647
• PC Network Adapter II/A–Frequency 3	96X5648
• Realtime Interface Co-Processor Multiport/2 and related features	09F1897[4]
• Realtime Interface Co-Processor Portmaster Adapter/A and related features	53F2601[4]
• X.25 Interface Co-Processor/2	16F1858
• Multi-Protocol Adapter/A	6451114
• 3270 Connection	74F3465
• 300/1200/2400 Internal Modem/A	94X1755
• Leased Line Modem	26F1862
• System 36/38 W/S Emulation Adapter/A	69X6279
• Display Station Emulation Adapter/A	92X0743
• System/370™ Channel Emulation Adapter/A	06F3160
• Fax Concentrator Adapter/A	94X2530
Graphics and multimedia	
• XGA Display Adapter/A	75X5887
• Audio Capture/Playback Adapter/A	87F9909
• Video Capture Adapter/A	34F2785
• M-Motion Video Adapter/A	34F3087
• Image Adapter/A Series	44F9914[4]
Other features	
• Micro Channel SCSI Adapter	6451109
• Micro Channel SCSI Adapter with Cache	6451110
• Mouse	6450350

Memory matrix table

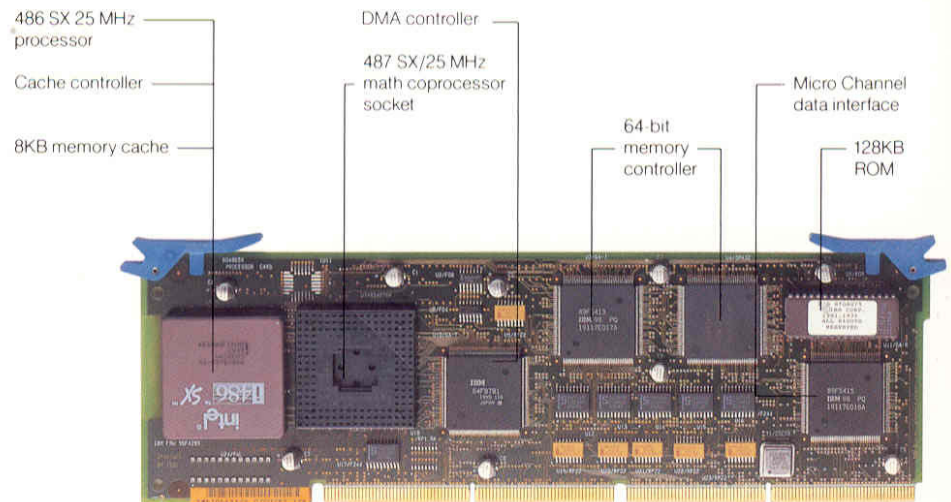| Memory on system board	486 SX models	486 DX models
Standard memory	4MB (70ns)	8MB (70ns)
Maximum memory	64MB*	64MB*
System board memory expansion kits**	2MB: 70ns (6450902)	2MB: 70ns (6450902)
	4MB: 70ns (6450128)	4MB: 70ns (6450128)
	8MB: 70ns (6450130)	8MB: 70ns (6450130)
Memory configurations possible on system board	Various configurations from 4MB to 64MB*	Various configurations from 8MB to 64MB*

*64MB maximum configuration requires 8MB SIMMs in all memory sockets.
**Kits must be added in matched pairs in 33 MHz and 50 MHz systems. In 25 MHz systems, kits need not be added in matched pairs; however, installing in pairs will improve performance. 80ns and 85ns memory kits are also supported. 85ns memory kits are not supported on 0Hx models.

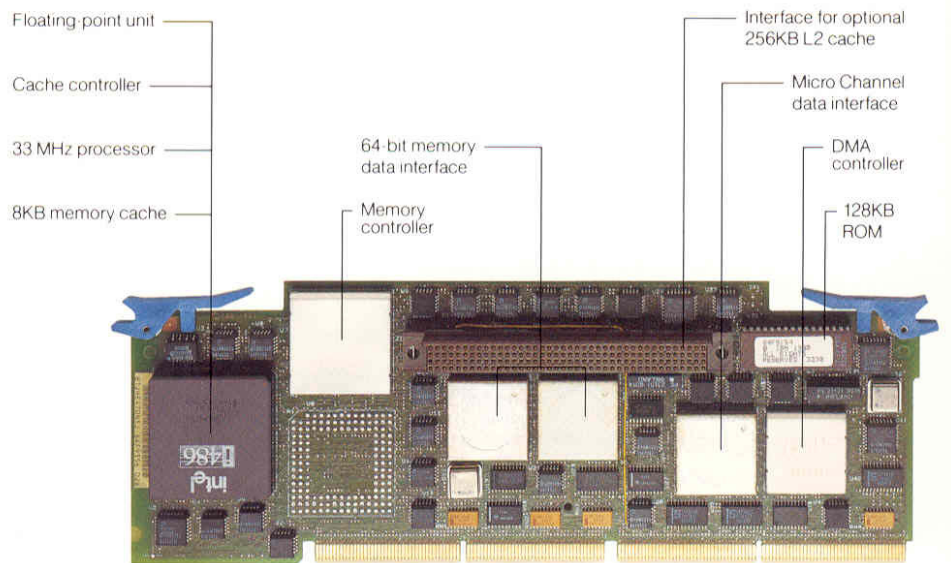# A close look at i486 processing complexes

i486 SX, 25 MHz

- High-power processing, affordably priced
- Integrated 8KB memory cache for "no-wait" processing
- Support for interleaved or noninterleaved memory
- 25 MHz 80487 SX coprocessor upgrade for extra-fast completion of numeric-intensive tasks
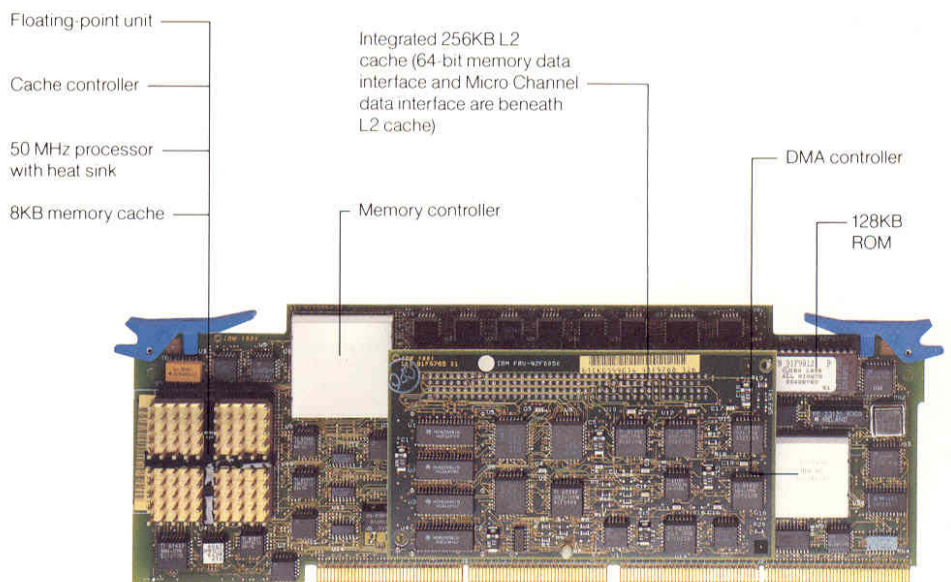- Easy upgrade to 33 MHz or 50 MHz to keep pace with changing needs

486 SX 25 MHz processor
Cache controller
8KB memory cache
DMA controller
487 SX/25 MHz math coprocessor socket
64-bit memory controller
Micro Channel data interface
128KB ROM

i486 DX, 33 MHz

- High-speed 486 processor with full complement of integrated components
- On-chip floating-point unit for extra calculating speed
- Integrated 8KB memory cache for "no-wait" processing
- On-board interface for optional 256KB L2 cache
- Easy upgrade to 50 MHz when you want to work even faster

Floating-point unit
Cache controller
33 MHz processor
8KB memory cache
64-bit memory data interface
Memory controller
Interface for optional 256KB L2 cache
Micro Channel data interface
DMA controller
128KB ROM

i486 DX, 50 MHz

- The fastest 486 processor available today—for applications where every nanosecond counts
- Full complement of integrated components—including 8KB memory cache and floating-point unit—for maximum performance and speed
- 256KB L2 cache standard
- Upgradability to future higher-speed processors

Floating-point unit
Cache controller
50 MHz processor with heat sink
8KB memory cache
Integrated 256KB L2 cache (64-bit memory data interface and Micro Channel data interface are beneath L2 cache)
Memory controller
DMA controller
128KB ROM

Why PS/2?

Here are some of the reasons why PS/2 stands out as the best solution for your business needs.

Technological leadership through Micro Channel architecture, integrated construction and advanced design (by combining Very Large-Scale Integration and Surface Mount Technology), and SCSI support for large data storage.

Extensive communications capabilities – through a wide range of connectivity options–that provide concurrent support for intelligent communications adapters and coprocessors, thanks to Micro Channel architecture.

Compatibility and expandability to protect your investment since the PS/2s you have today work with existing products and programs and with those you'll need tomorrow.

Service and support that provide you with everything from fast parts delivery to onsite services to system planning to 24-hour phone support–all at a competitive price.

Business Partners who enhance PS/2 capabilities by helping customers choose, customize and configure hardware and software to meet a range of needs.

Quality and reliability that ensure PS/2s are built to perform smoothly and dependably year after year.

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