IBM Personal System/2
Model 90 XP 486 series

### Moving ahead with the latest 486 technology

Make your move to 486™ power, and go as far and as fast as you like— with the Model 90 XP 486 series from Personal System/2.® Built around the latest Intel486™ SX and DX microprocessor technology, the PS/2s® in this series offer a range of speed, memory and storage capacity to suit your needs and your budget. And because all Model 90 XP 486s are designed for easy upgrading and expansion, you get a solution that's suited not only for today but for tomorrow.

Whether you select a 20 MHz, 25 MHz or 33 MHz system, 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. So 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:
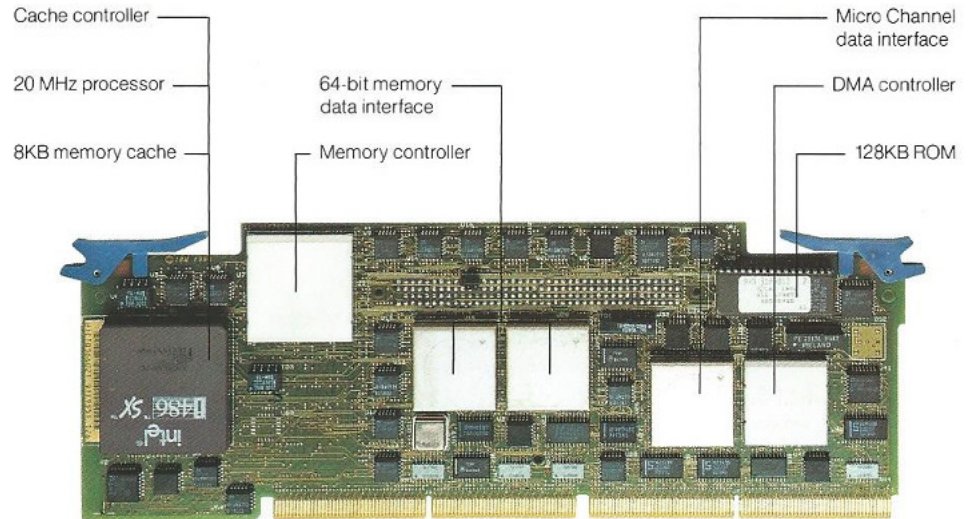
- Do financial analyses, modeling, complex spreadsheets and other numeric-intensive applications—at your choice of 20 MHz, 25 MHz or 33 MHz processing speed
- Run power-hungry, high-resolution imaging and graphics programs for science and engineering–i486™ DX processor models excel at CAD/CAM
- Meet 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

IBM
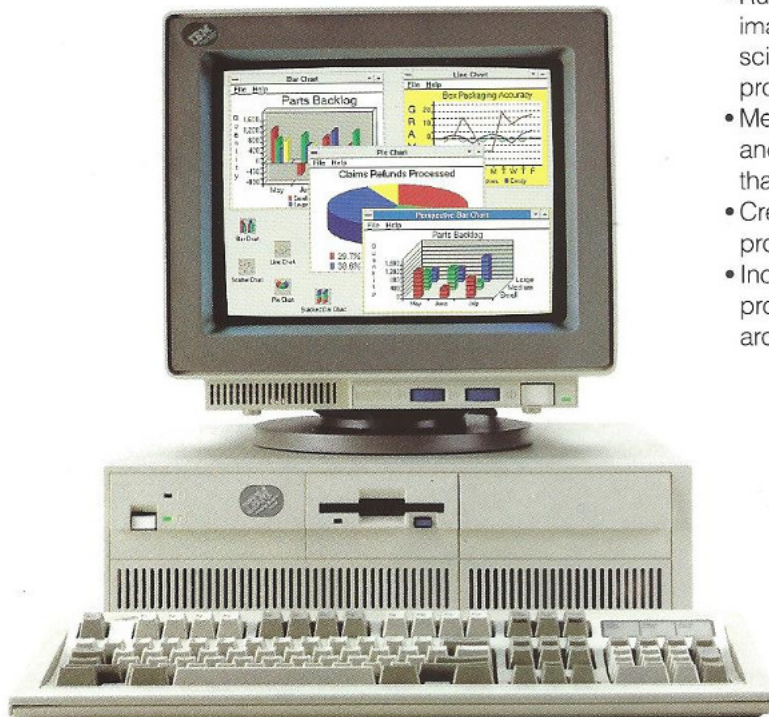
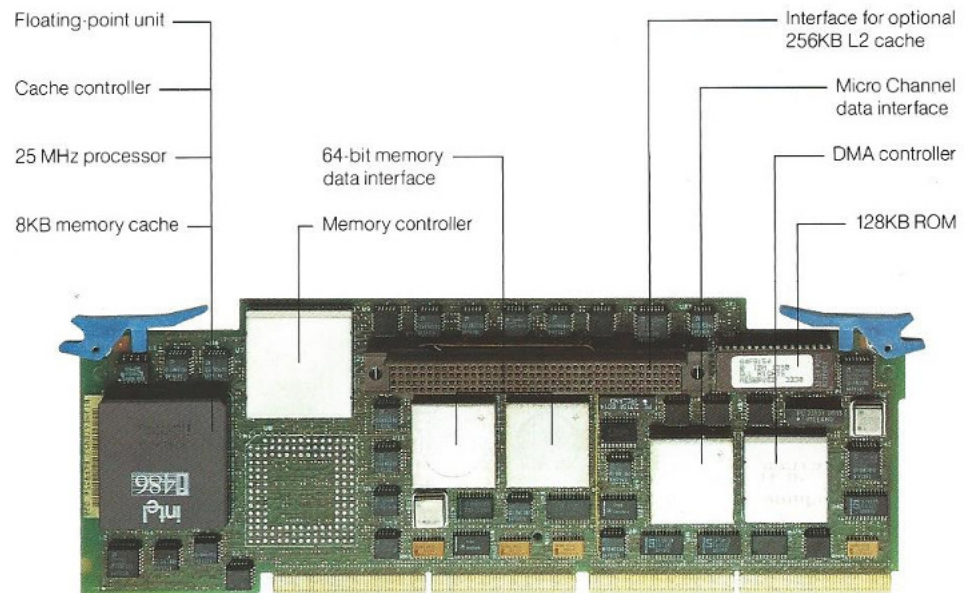## A close look at i486 processing complexes

i486 SX, 20 MHz

- Entry-level 486 processor providing the equivalent of 386™ 33 MHz performance
- High-power processing, affordably priced
- Integrated 8KB memory cache for "no-wait" processing
- 20 MHz 80487 SX coprocessor upgrade for extra-fast completion of numeric-intensive tasks
- Easy upgrade to 25 MHz or 33 MHz to keep pace with changing needs

Cache controller

20 MHz processor

8KB memory cache

64-bit memory data interface

Memory controller

Micro Channel data interface
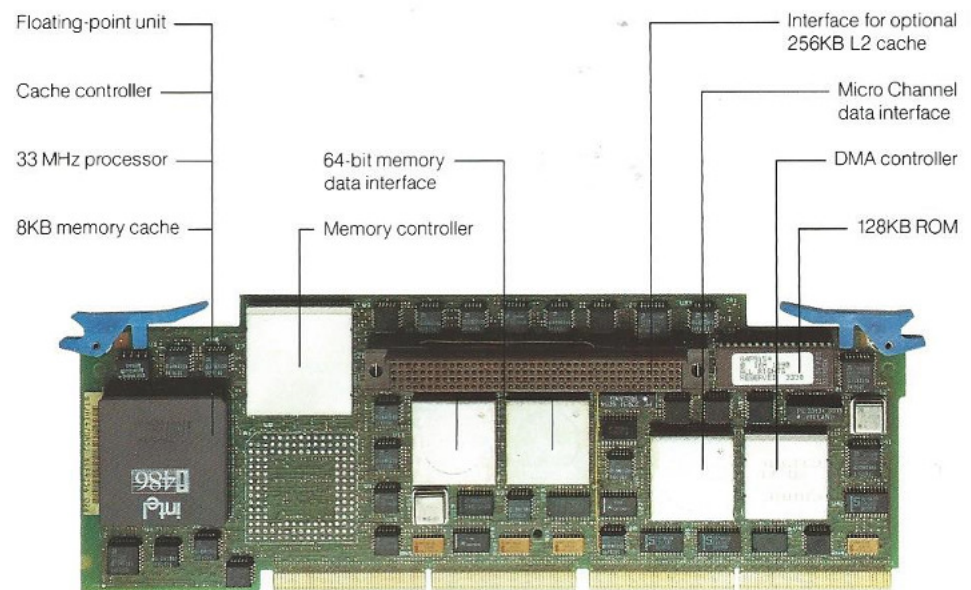
DMA controller

128KB ROM

i486 DX, 25 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 33 MHz when you want to work even faster

Floating-point unit

Cache controller

25 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, 33 MHz

- The fastest 486 processor available today–for applications where every nanosecond counts
- Full complement of integrated compo-nents–including 8KB memory cache and floating-point unit–for maximum performance and speed
- On-board interface for optional 256KB L2 cache
- Upgradability to future technology– higher-speed processors are soon to come

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

intel™ inside

Wide range of options[3]

	Part no.
Coprocessors/processor upgrades	
• Wizard Adapter	34F3062
• Math Co-Processor 487 SX /20 MHz (0G5 and 0G9 only)	6451230
• 486/25 MHz Processor Upgrade (0G5 and 0G9 only)	6450755
• 486/33 MHz Processor Upgrade (0G5, 0G9, 0J5 and 0J9 only)	6451094
• 256KB Cache Option (0J5, 0J9 and 0KD only)	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
• 60MB SCSI Fixed Disk Drive	6451049
• 80MB SCSI Fixed Disk Drive	6451045
• 120MB SCSI Fixed Disk Drive	6451050
• 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
• 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
• 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	34F2784
• 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	32MB*	32MB
System board memory expansion kits**	2MB: 70ns (6450902)	2MB: 70ns (6450902)
	4MB: 70ns (6450128)	4MB: 70ns (6450128)
Number of memory kits that can be added on system board	6**	6**
Memory configurations possible on system board	4, 8, 12, 16, 20, 24, 28 and 32MB*	8, 12, 16, 20, 24, 28 and 32MB

*32MB maximum configuration requires replacing two standard 2MB SIMMs with two 4MB kits.
**Kits must be added in matched pairs. 4MB of memory are provided via two 2MB memory kits. 8MB of memory are provided via two 4MB memory kits. Six memory sockets are available for adding kit pairs. 80ns and 85ns memory kits are also supported.

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

Machine numbers	8590-0G5	8590-0G9	8590-0J5	8590-0J9	8590-0KD
Microprocessor					
Standard	80486 SX	80486 SX	80486 DX	80486 DX	80486 DX
Clock speed	20 MHz	20 MHz	25 MHz	25 MHz	33 MHz
Wait states	0	0	0	0	0
Memory cache	8KB	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/20 MHz	80487 SX/20 MHz	256KB cache	256KB cache	256KB cache
Processor upgrades	25 MHz, 33 MHz	25 MHz, 33 MHz	33 MHz	33 MHz	–
Bus architecture	Micro Channel	Micro Channel	Micro Channel	Micro Channel	Micro Channel
Data path	32-bit	32-bit	32-bit	32-bit	32-bit
Memory (RAM)					
Standard	4MB (70ns)	4MB (70ns)	8MB (70ns)	8MB (70ns)	8MB (70ns)
Maximum on system board	32MB	32MB	32MB	32MB	32MB
System maximum	32MB	32MB	32MB	32MB	32MB
Integrated functions	Extended Graphics Array (XGA) Adapter with display port, dual DMA serial ports, DMA parallel port, pointing device port, keyboard port, diskette controller support for three drives, SCSI Adapter with Cache				
Available expansion slots	Three 32-bit	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	1.44MB
Optional (3.5-inch)	1.44MB	1.44MB	1.44MB	1.44MB	1.44MB
Optional (5.25-inch)	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB
Diskette storage (external)					
Optional (5.25-inch)	360KB or 1.2MB	360KB or 1.2MB	360KB or 1.2MB	360KB or 1.2MB	360KB or 1.2MB
Fixed disk storage (internal)					
Standard	80MB (17ms)	160MB (16ms)	80MB (17ms)	160MB (16ms)	320MB (12.5ms)
Optional SCSI	Up to two additional 60MB, 80MB, 120MB, 160MB, 320MB or 400MB internal SCSI drives				
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 and 8515; IBM Personal System/2 Monochrome Displays 8503, 8506,[1] 8507 and 8508[1]				
Supported printers/ plotters	IBM Proprinter® family, IBM LaserPrinter family, IBM ExecJet™ Printer, IBM Quietwriter® III, IBM Page Printer 3812/3816, IBM Quickwriter,® IBM 618X and 737X Color Plotters				
Keyboard	101 keys, including 12 function keys, 3 lighted mode indicators; 6-foot coiled cable				
Power supply	194-watt worldwide				
Operating system	DOS 3.3 or higher, IBM Operating System/2® Standard or Extended Edition 1.2 or 1.3, AIX® Personal System/2[2]				
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				

Feature	Benefit
Advanced i486 SX and DX processor complexes	• Offer flexibility in choosing the right performance for the right price • Include 8KB memory cache–DX complexes also come with an integrated floating-point unit and can support an optional 256KB cache • Handle numeric-intensive business and technical tasks at top speeds • Protect your investment by allowing future upgrades from 20 MHz to 25 MHz to 33 MHz–and, in time, beyond
Built-in XGA graphics	• 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 SIMM pairs of different speeds to be supported
SCSI Adapter with Cache	• 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 32MB on planar	• Makes the Model 90 XP 486 series ideal for OS/2® and UNIX®-based operating 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 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 total storage up to 1.12GB
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

SCSI Adapter with Cache

i486 processor complex

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

Extended Graphics Array (XGA)

XGA display port

Dual DMA serial ports

VRAM

SCSI fixed disk (80MB, 160MB or 320MB)

3.5" 1.44MB diskette drive

Two available storage bays
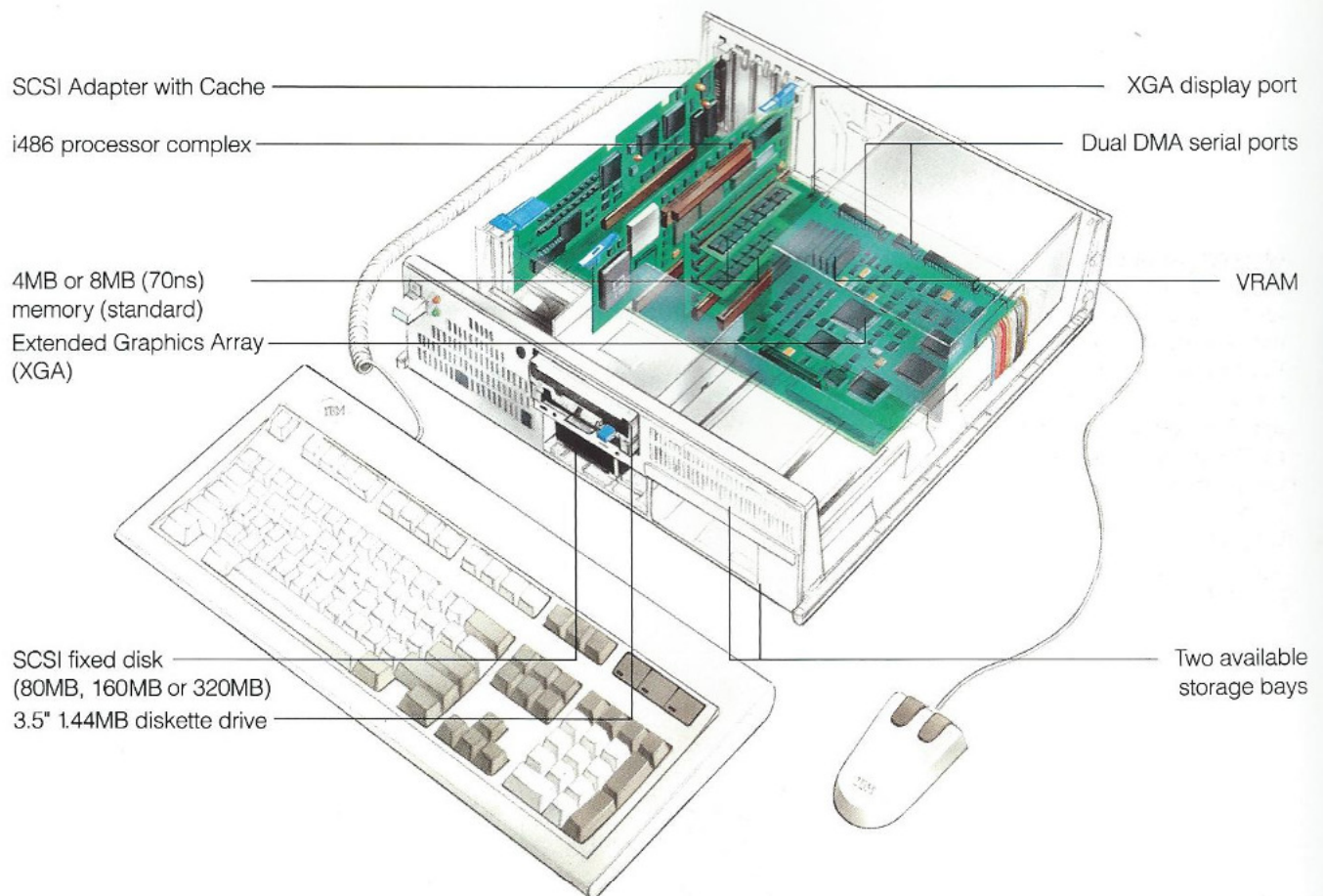
Why PS/2?

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–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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™*ExecJet and System/370 are trademarks of International Business Machines Corporation. 486, Intel486, i486 and 386 are trademarks of Intel Corporation.*

[1]*Supported by PS/2 Image Adapter/A.*
[2]*IBM intends to provide AIX PS/2 support in a future release.*
[3]*The options listed may require other features for the desired function or for installation.*
[4]*There is more than one part number for this type of option depending on the amount of on-card memory and other functions desired.*

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