



The combination of the high-performance PG 90 graphics display system and IBM's Personal Computer AT creates a powerful graphics workstation.

PG 90™ Graphics Display System

The PG 90 from Adage's Lexidata™ Division is a high-performance graphics display system that provides IBM® Personal Computer AT™ users with flicker-free, high-resolution (1280 × 1024, 60Hz non-interlaced) color graphics.

PG 90 was designed to provide the PC/AT user with the industry's most sophisticated single-screen graphics solution available today. The combination of the PG 90 and the PC/AT creates a powerful graphics workstation that is ideal for CAD/CAM, CAE, defense, oil exploration, and medical imaging applications.

Featuring Lexidata's unique Virtual Windows color window management functionality, PG 90 allows PC/AT users to define, manipulate, and display 15 windows simultaneously. With Virtual Windows, any portion of the PG 90's 2048 × 1024 bit map area may be managed in real time.

PG 90 also offers a full-screen IBM Color Graphics Adapter™ (CGA) window which provides true CGA compatibility. This unique feature enables the user to access any PC/AT application (such as Lotus 1-2-3™) on the same display used for sophisticated engineering and scientific requirements.

A Member of the LEX 90™ Family

PG 90 is the newest member of Lexidata's LEX 90 family of raster graphics display processors. Like all LEX 90 products, PG 90's software architecture is based upon Lexidata's Extended Graphics Operating System (EGOS), providing upward compatibility across the LEX 90 product line.

EGOS provides advanced 2-D graphics functions for the generation of arcs, circles, vectors, polygon fills, text, and other fundamental graphics tools. EGOS enables the PC/AT user to work with an upwardly-compatible command set and its powerful macro-library provides room for growth as applications become more complex.

System Architecture

The PG 90 provides the IBM PC/AT host with a powerful computational processor, the PG 90 Processor System, and a dedicated graphics processor—the Personal Graphics Display Processor.

PG 90 Processor System

The PG 90 Processor System (PGPS) is a PC/AT-compatible card which utilizes one dual (16-bit) connector bus slot. This computational processor consists of an Intel 80286 microprocessor running at 8MHz, and provides 64KBytes of Read Only Memory (ROM), 256KBytes of user-programmable Random Access Memory (RAM), and a power-on diagnostics capability. For graphics functions requiring floating point calculations, an optional Intel 80287 Floating Point Co-Processor can also be installed directly on the PGPS board.

The PGPS manages all graphics operations, handles any command pre-processing, and tracks attached peripherals locally. The PGPS can also be used to assist in complex graphics processing tasks, or to accomplish display list processing. The PGPS is primarily responsible for providing the interface between the graphics processor and the user's application software.

Configurations

The PG 90 is available in both four- and eight-plane configurations. The four-plane system can display 16 colors, and the eight-plane model can display 256 colors. All colors are selectable from a palette of 16.7 million.

PG 90 users also have the choice of either 15" or 19" ergonomically-designed, tilt-and-swivel color display monitors. Available peripherals include an 11" x 11" data tablet with four-button puck and a video hardcopy unit. (Support for a mouse is also provided.)

Personal Graphics Display Processor

At the heart of the PG 90 system is the Personal Graphics Display Processor (PGDP). The PGDP is a dedicated, single-board, high-performance graphics processor. Housed separately in an ergonomically-designed monitor base (see Figure 1), this module provides 1280 x 1024, 60Hz non-interlaced video output for color graphics. The bit map provides a 2048 x 1024 pixel work area with either four or eight planes of graphics memory. Lexidata's unique Virtual Windows functionality, pixel replicated pan and zoom, and a hardware cursor are all integrated into the PGDP.

Virtual Windows

An advanced version of Lexidata's real-time color window management functionality, Virtual Windows, is a *standard* feature on the PG 90. With Virtual Windows, a user can define, manipulate, and display up to 15 windows simultaneously—each with independent pan and zoom—and can selectively display any portion of the PG 90's 2048 x 1024 bit map area. As a result, the bit map can be accessed either as a single plane, or as multiple planes of display memory. Virtual Windows is ideal for schematic capture, drafting, mapping, and modeling applications.

PG 90 Configuration Summary

MODEL	PGDP-4	PGDP-8
Viewable Resolution	1280 x 1024	1280 x 1024
Bit Map Resolution	2048 x 1024	2048 x 1024
Graphics Memory	4 Planes	8 Planes
Display Refresh Rate	60Hz Non-Interlaced	60Hz Non-Interlaced
Look-Up Table	4 x 24	8 x 24
Displayable Colors	16	256
Color Palette	16.7 Million	16.7 Million
Virtual Windows	Standard	Standard
Hardware Cursor	Standard	Standard
Random Vector Draw	50,000 Vectors/Second	50,000 Vectors/Second
Microprocessor	Intel 80286 @ 8MHz	Intel 80286 @ 8MHz
ROM	64KBytes	64KBytes
RAM	256KBytes	256KBytes

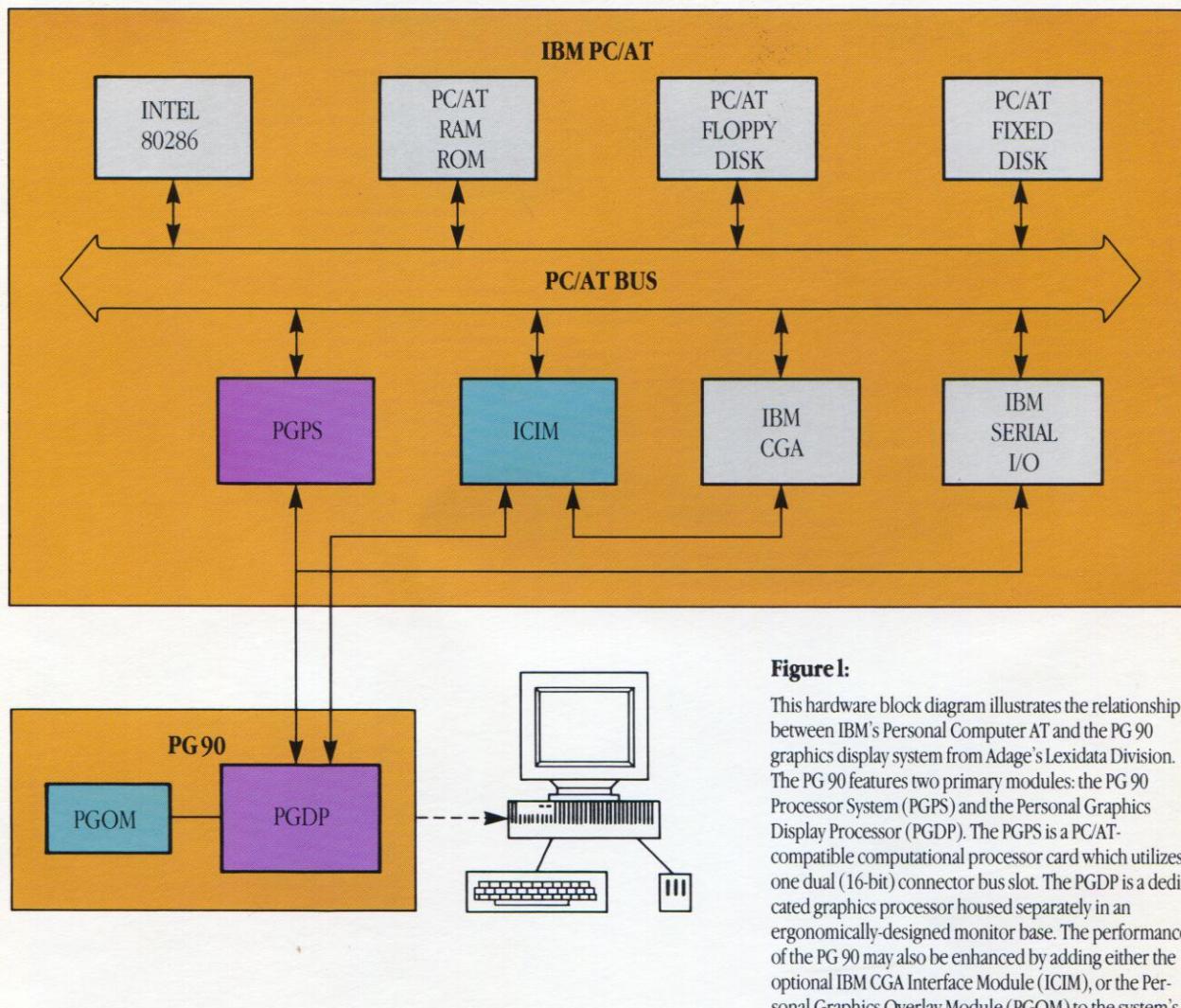


Figure 1:

This hardware block diagram illustrates the relationship between IBM's Personal Computer AT and the PG 90 graphics display system from Adage's Lexidata Division. The PG 90 features two primary modules: the PG 90 Processor System (PGPS) and the Personal Graphics Display Processor (PGDP). The PGPS is a PC/AT-compatible computational processor card which utilizes one dual (16-bit) connector bus slot. The PGDP is a dedicated graphics processor housed separately in an ergonomically-designed monitor base. The performance of the PG 90 may also be enhanced by adding either the optional IBM CGA Interface Module (ICIM), or the Personal Graphics Overlay Module (PGOM) to the system's basic configuration.

PG 90 Hardware Options

The performance of the PG 90 may be enhanced with the addition of one or more available hardware options which can be added to the PG 90's basic configuration. These options (see Figure 1) include a full-screen software-selectable IBM CGA window that provides true CGA compatibility, and a separate high-resolution overlay for annotations and menus.

IBM CGA Interface Module

The PG 90's optional IBM CGA Interface Module (ICIM) is a PC/AT-compatible card which utilizes either one single (8-bit) or one dual (16-bit) connector bus slot. This module allows the user to run existing software packages on the PG 90 that have already been developed to utilize the CGA.

The ICIM captures the IBM CGA video output and re-displays it on the Lexidata monitor in a 1280×800 pixel area. This video mapping is accomplished by converting the 640×200 image to a 1280×800 image using a 2x horizontal zoom and a 4x vertical zoom. The selection of either the IBM CGA image, or Lexidata's high-resolution image, is under software control and can be dynamically executed.

Personal Graphics Overlay Module

The Personal Graphics Overlay Module (PGOM) is an optional daughter card for the PG 90 Display Processor, and provides a separate $2048 \times 1024 \times 1$, non-zoomed overlay ($1280 \times 1024 \times 1$ viewable) for either the four- or eight-plane configuration. The PGOM is ideal for high-resolution text or graphics data, and can be software-selected to display in any one of eight colors. This overlay can also be used to support object dragging.

Firmware and Software

Firmware options for the PG 90 include Adage's patented SOLIDVIEW® solids rendering display technology, 2-D integer graphics transformations, downloadable fonts, and user programmability.

Software interfacing can be accomplished easily through either direct commands to the graphics processor, Lexidata's EGOS, the emerging industry standard GKS/CGI (as implemented by Graphic Software Systems, Inc.), or a user-written command set.

Service and Support

Adage, together with its Lexidata Division, has always been committed to providing its customers with the best service and support organization in the industry. With 57 direct sales and service offices located throughout the United States, Canada, France, Italy, Japan, the Netherlands, the United Kingdom, and West Germany — plus leading distributors around the globe — Adage, with its more than 200 sales and service professionals, continues to provide the full-service capability that you expect from a company dedicated to providing computer graphics solutions.

Summary

The PG 90 from Adage's Lexidata Division provides IBM Personal Computer AT users with a level of performance and graphics sophistication that previously was available only on high-priced, minicomputer-based systems. Today, with the PG 90 graphics display system, Adage offers this same functionality on the de facto industry standard workstation at an affordable price.

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1-2-3™ is a trademark of Lotus Development Corporation.

AutoCAD™ is a trademark of Autodesk, Inc.

PG 90 System Options

Hardware

- IBM CGA Interface Module
- PG 90 Overlay Module
- Intel 80287 Floating Point Co-Processor

Firmware (Includes FORTRAN Host Library)

- SOLIDVIEW-M
- 16-Bit Integer Graphics Transformations
- Downloadable Fonts
- Lexidata Device Driver for GKS/CGI (Implemented by GSS, Inc.)
- User Programmability

Peripherals (Includes 6' Cable)

- 11" x 11" Data Tablet with Four-Button Puck
- Video Hardcopy Unit

Color Ergonomic Monitors

- 15", 1280 x 1024, 110/220 VAC User-Selectable
- 19", 1280 x 1024, 110 VAC (90-132)
- 19", 1280 x 1024, 220 VAC (180-264)

PG 90 Specifications

Dimensions

	HEIGHT	WIDTH	LENGTH	WEIGHT
• Display Processor Alone:	4"	17.5"	19.5"	30 lbs.
• With 15" Monitor Attached:	19"	17.5"	19.5"	82 lbs.
• With 19" Monitor Attached:	23"	21"	25"	117 lbs.

Power

- Voltage: 90-132 VAC or 180-264 VAC
- Frequency: 47-63Hz
- Power Dissipation: Not to exceed 200 Watts

Operating Temperature

- 15-32°C, 85% Relative Humidity (non-condensing)

AT Environmental Impact

PGPS (One 16-bit AT Slot Required)

- Power: 2.8A @ +5 Volts
50 mA @ +12 Volts
50 mA @ -12 Volts
- Heat Dissipation: 14 Watts

ICIM (One 8-bit AT Slot Required)

- Power: 2.2A @ +5 Volts
11 Watts

Acoustic Noise Level

- The acoustic noise level meets the OSHA NC-55 noise criteria specification.



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No. PG90-101-DS