

G-WINDOWS BENCHMARK TESTS

The first column is a standard **SYSTEM IV** Computer using a 68000 microprocessor running at 16 MHz under OS9/68K. The VGA Card is a stock video card using a Tseng Labs ET4000 video chip. The card contains 1 MBytes of memory and is capable of 1024x768 resolution and 256 colors. The **G-WINDOWS** port will support 640x480x256, 800x600x256 or 1024x768x256 resolutions and colors - user selectable.

The second column is a standard **SYSTEM V** Computer using a 68020 microprocessor running at 25 MHz under OS9/68K. The same type VGA card is used as in the **SYSTEM IV** and the **G-WINDOWS** port will support the same resolutions and colors.

The last three columns are reference machines and are described later.

Test Title	68000 VGA Secs	68020 VGA Secs	386SX VGA Secs	68030 ACRTC Secs	486 VGA Secs
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Big Solid Boxes	14.95	2.93	8.21	9.09	1.92
Small Solid Boxes	11.05	4.47	11.26	4.16	2.05
Thin Outline Boxes	11.60	4.84	40.51	0.91	2.50
Thick Outline Boxes	19.25	8.63	18.39	5.03	2.51
Thin Lines	20.92	8.36	21.89	1.37	2.61
Thick Lines	31.44	13.95	29.84	7.62	4.18
Bit Block Transfer	39.31	9.66	13.09	9.40	8.92
Raw Block Read	1.66	0.41	16.97	3.33	0.39
Quick Font	11.30	4.15	16.71	4.64	2.30
Normal Font	10.27	4.24	11.68	5.08	1.71
Circles	20.56	10.45	31.43	0.33	4.84
Ellipses	13.77	7.38	18.32	25.60	2.83
Solid Rounded Boxes	16.12	6.09	12.53	9.49	2.01
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Totals	222.30	85.56	250.83	86.05	38.77

These benchmark tests are designed to compare the speed of G-Window graphics primitives on different platforms.

ONLY THE LOW LEVEL GRAPHICS PRIMITIVES ARE TESTED.

This does not test update speed of gadgets, or the speed of other G-Windows libraries. Everything other than graphics primitives depend almost entirely on the speed of the CPU, for which there are standard measurements available to be used.

DRAWING IS NOT AS SLOW AS IT LOOKS.

Each graphics primitive is drawn 3 or 4 times with different colors and patterns before moving to a new position. This gives the impression that drawing is slower than it should be.

TESTING IS DONE IN A 640x400 WINDOW.

To ensure that the same test is performed on each system, all tests are done within a window that is the same size on each system. While all of the tests produce accurate measurements, they may not reflect the speed of the system in actual use. This is especially apparent when comparing standard VGA (640x480x16) with the GESVIG24 GDP board (1280x1024x256). There are simply a lot more pixels to erase, draw, and scroll when using the GDP instead of VGA. (DELMAR NOTE - The VGA card used in the **SYSTEM IV** and **SYSTEM V** tests is 1024x768x256.)

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THE TIME FOR EACH TEST IS MEANINGLESS BY ITSELF.

The number of seconds used by each test is produced for comparative purposes only. Since the same graphics operations will take place on other systems, the times between the two systems can be compared to get a basic difference in speed between the two systems.

Measurements from three other systems are provided for immediate comparison. The first is G-Windows running under OS-9000 with a 16 MHz 80386SX using standard 16 color VGA. The second is running under OS-9/68K with a 30 MHz 68030 using a GESVIG4 256 color ACRTC board. The third is a 25/50 MHz 80486 DX2 using standard 16 color VGA.

The system being tested is compared with each of the other systems to produce the "%Faster" field. This is the percentage speed increase that is obtained by moving from the other system to the system currently being tested. Positive numbers mean the current system is faster - negative numbers mean the current system is slower. (DELMAR NOTE - these fields have been deleted to allow room for both systems.)

EACH GRAPHICS PRIMITIVE AFFECTS PERFORMANCE IN DIFFERENT WAYS.

Depending on the limitations of the graphics hardware and graphics driver, some systems may excel at certain primitives while performing miserably with others. The following list outlines how some of these primitives affect more important features of system performance.

- Big Solid Boxes - Screen clearing and basic window refresh.
- Small Solid Boxes - 2 color image drawing.
- Bit Block Transfer - Scrolling of text windows and speed of window movement.
- Raw Block Read - 16 and 256 color image drawing.
- Quick Font - VT100 terminal emulation, all quick font usage.
- Normal Font - All use of fonts other than quick fonts.

Note that with the memory block functions (Bit Block Transfer, Raw Block Read), 16 color systems have an advantage over 256 color systems. Because they use 4 instead of 8 bits per pixel, the block functions on 16 color systems move half as much data, and so should be twice as fast if all other things are equal.

G-WINDOWS

- Multi-tasking - processes continue running when windows are made inactive or are hibernating.
- Pop-Up Menus - user may easily define his own custom menu.
- Windows are sizeable and moveable.
- Start process by selecting an icon, from your custom menu, or from the command line.
- Copy and Paste between windows.
- Adds command line editing, command history, and file name expansion.
- Runs existing OSK software without modification.
- Number of windows and processes limited only by your available memory.
- Includes GIF viewer.
- Flexible and powerful enough to aid experienced users and programmers. Intuitive for the inexperienced user.

G-WINDOWS is the only full-featured windowing/GUI environment for the popular real-time, multi-user, multi-tasking OS-9 operating system. This program permits display of windows with full color text and graphics, pop-up menus and a variety of input/output icons and gadgets. **G-WINDOWS** is equally suitable for the experienced or the inexperienced user. The user has complete access to system resources at all times and any of the various flavors of 'shell' may be used. All OS-9 programs which work with text terminals will work within any window. The user can control the size and position of the window or hibernate the window if desired. **G-WINDOWS** was designed as a file manager for OS-9, conforms completely to the philosophy and syntax of OS-9 and is truly multitasking as all windows can be active and updated simultaneously on the screen. **G-WINDOWS** is extremely memory efficient and there is no limit to the number of windows that can be opened except as determined by the available hardware memory. **G-WINDOWS** provides a window and icon oriented replacement for many OS-9 shell functions and basic file handling functions. File directories may be viewed as icons or text with each directory appearing in its own window. Most commands are entered simply by pointing and clicking the mouse. A file can be moved by clicking on its icon and dragging it onto another drive, directory or even a bit bucket to delete it. Multiple windows can be used to view several files or processes at once. A built-in text copy and paste function works between windows. **G-WINDOWS** is a powerful productivity tool for the OS-9 users whether experienced or inexperienced.

The Developer's Pack provides the libraries and documentation necessary to write applications using **G-WINDOWS**. These applications may use a variety of input and output gadgets such as simple buttons, single line text input box, labelled text output field that can be positioned within a window and display text in a variety of sizes and color, shape and color patterns and many more input/output tools. **G-WINDOWS** is ideally suited for the developers of applications requiring a visually attractive and powerful user interface in their application.

PRICING

Specify whether 68000 or 68020

G-WINDOWS w/mouse and port cable	\$249.00
Developer's Pack (requires G-WINDOWS)	\$299.00
G-WINDOWS DEMO w/mouse and port cable	\$49.00
S/H (U.S.) add	\$10.00

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SYSTEM IV

The **SYSTEM IV** is a high performance computer system based on the Motorola 68000 microprocessor operating at a clock speed of 16 MHz. Microware's Professional OS9 operating system is included with the **SYSTEM IV** providing an efficient multi-user and multi-tasking environment. It has been designed to provide maximum flexibility and versatility making the **SYSTEM IV** an ideal OS-9 development system and workstation. Additionally, the **SYSTEM IV** provides a viable low-cost solution for many industrial control applications, business applications and a PC for home use. The **SYSTEM IV** features from 1 to 4 MBytes of 0 wait-state dram, 4 serial ports, 2 parallel ports, a battery-backed real-time clock, HD floppy controller, socket for a 1772 floppy controller and 7 PC/XT compatible expansion slots. Special requirements such as A-D/D-A, multiplexing, networking, special video, sound, midi, etc. are easily handled with readily available PC/XT boards which can plug into the **SYSTEM IV** expansion slots. As requirements change or improved special function boards become available, they may be added or replaced at the user's option.

OTHER OPERATING SYSTEMS may be installed. These include CPM, MINIX, STAR-DOS, REX and most any other operating system capable of running on the 68000 microprocessor chip.

FEATURES

- MC68000 Microprocessor - 16 MHz Clock
- Sockets for 4 MBytes of DRAM, 1 MBytes installed
- 4 layer board for improved performance
- Seven PC/XT compatible slots
- 16 bit expansion slot
- 1024x768x256 VGA card with 1 MBytes of memory (optional)
- Four RS-232 Serial Ports - up to 38,400 baud
- Parallel Printer Port
- Second Parallel Port
- Clock with Battery - 5 year life
- IDE controller (optional)
- Floppy Disk Controller (37C65) - supports two 360k, 720k, 1.2M or 1.4M Drives
- Socket for 1772 Floppy Disk Controller
- Mini PC Case - holds five 1/2 height drives; four accessible from the front panel
- 200 watt switching power supply
- Professional OS9, version 2.4 with K&R C-Compiler, Editor, Assembler, Linker, over 80 Utilities and MW Manuals
- **SYSTEM IV** Users Manual with schematics
- One year Parts and Labor Warranty
- System board designed and manufactured by Peripheral Technology
- One year Parts and Labor Warranty

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SYSTEM IV PRICES

Effective April 1, 1993

SERIAL SYSTEM \$ 999.00

Includes -

- 1 MBytes of DRAM
- 4 RS-232 Serial Ports
- Parallel Printer Port
- Clock with Battery
- Either a 1.2M or 1.4M high density floppy drive
- Case and power supply
- Professional OS-9, version 2.4 with K&R C Compiler, Editor, Assembler
Linker, over 80 Utilities and MW Manuals

CONSOLE SYSTEM \$1,299.00

Includes above plus -

- 101 key, AT style keyboard
- 1024 x 768 x 256 VGA Card w/1 Meg of Memory

ALT86 MSDOS Card w/1 MByte Memory \$ 329.00

The SYSTEM IV comes with a one (1) year parts and labor warranty.

Special monitor prices when ordered with the SYSTEM IV.

OPTIONS

These prices apply only when ordered with the SYSTEM IV

G-WINDOWS w/mouse \$ 199.00

3 MBytes of additional on-board DRAM \$ 160.00

IDE Host Adapter and Driver \$ 95.00

210 MByte IDE Hard Disk \$ 269.00

260 MByte IDE Hard Disk \$ 319.00

340 MByte IDE Hard Disk \$ 399.00

450 MByte IDE Hard Disk \$ 599.00

540 MByte IDE Hard Disk \$ 899.00

Additional 5 1/4" or 3 1/2" HD Floppy Drive \$ 92.00

ULTRA-C C-COMPILER \$ 299.00

GRAPHICS CLIB \$ 75.00

GRAPHICS CLIB w/source \$ 150.00

Because of market fluctuations, prices are subject to change without notice.

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