

## AViiON WORKSTATIONS



The Data General AViiON™ workstations are the first in a new generation of high-performance desktop systems from Data General. Based on the Motorola 88000 Reduced Instruction Set Computing (RISC) architecture, this workstation delivers extremely high levels of performance, functionality, and ease-of-use features—all at the cost of a PC. It effectively combines RISC technology with the strength of the Data General DG/UX™ operating system. DG/UX 4.1, a robust implementation of the industry-standard UNIX operating system, can support large files, recovery mechanisms and symmetric multiprocessing.

The AViiON workstations consist of a single printed circuit board that contains an extremely powerful processor, cache and memory management units, memory system, graphics and video subsystems, a LAN controller, SCSI bus interface, parallel and serial ports, and keyboard and mouse interfaces. Memory is expandable from four to 28 MB on the system board, using four-MB memory modules.

AViiON features a compact chassis that is 16 inches x 16 inches in width and 2-1/2-inches high. This low-profile chassis, which also houses the power supply and cooling unit, fits under the user's choice of two high-resolution monitors. The unit is extremely quiet and has very low thermal output.

Users have a choice between monochrome or eight-plane color graphics systems. Hardware coprocessors speed graphics performance.

The AViiON workstations are completely customer-installable and maintainable. And, their distributed applications capabilities make them ideal for a client-server model of computing. By coupling a high-performance CPU with high-resolution graphics, AViiON workstations are well-suited for both technical and commercial applications.

## FEATURES AND BENEFITS

- High-performance, open-architecture desktop system design
  - Provides industry-leading power for high-productivity stand-alone and distributed UNIX® applications
- Fully integrated single-board system
  - Improves reliability and reduces maintenance costs
- Advanced DG/UX™ operating system support
  - Provides industry-standard UNIX with enhancements in multiprocessing, the file system, and reliability
  - POSIX and SVID 2 compliant
  - Offers a robust development environment
  - Includes industry-standard libraries and tool kits
  - Supports X-Windows
  - 88open Binary Compatibility Standard (BCS) compliant
- Four to 28 MB of memory using single in-line memory modules (SIMM)
  - Provides flexible system growth
- Flicker-free (70 Hz) 20-inch monochrome or 19-inch color monitors with 1280 x 1024 resolution
  - Offers high-performance, bit-mapped graphics
  - Reduces eyestrain
- Graphics hardware accelerators for monochrome and eight-plane color
  - Improves system performance by relieving the CPU of many graphics-intensive processing tasks
- Industry-standard communications
  - Supports either thick or thin ETHERNET connections
  - Provides asynchronous RS-232/422 interface
  - Offers Centronix/Data Products printer port

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*Features and Benefits (continued)*

- **External peripheral housing**
  - Offers industry-standard SCSI bus for connecting mass storage devices
  - Accommodates up to three Desktop Peripheral Housings for 5-1/4-inch full- and half-height devices
- **Compact desktop packaging**
  - Offers a processor unit measuring 16 inches x 16 inches x 2.5 inches
  - Operates at noise levels quieter (40db) than a PC
  - Provides an easy-to-use, completely user-installable and maintainable system
  - Configures ideally into work group environments
- **Diskless NFS™ node functionality**
  - Provides cost-effective incremental growth
  - Allows integration into existing NFS networks
- **Motorola 88000 RISC-based technology**
  - 16.67 MHz or 20 MHz versions available
  - Integrates a tightly-coupled floating point unit (FPU)
  - Incorporates two 88200 16-KB cache/memory management units for improved performance
- **Provided by Data General, a major supplier of industry-leading systems**
  - Offers a wide range of reliable systems backed by worldwide service and support

**DG/UX OPERATING SYSTEM**

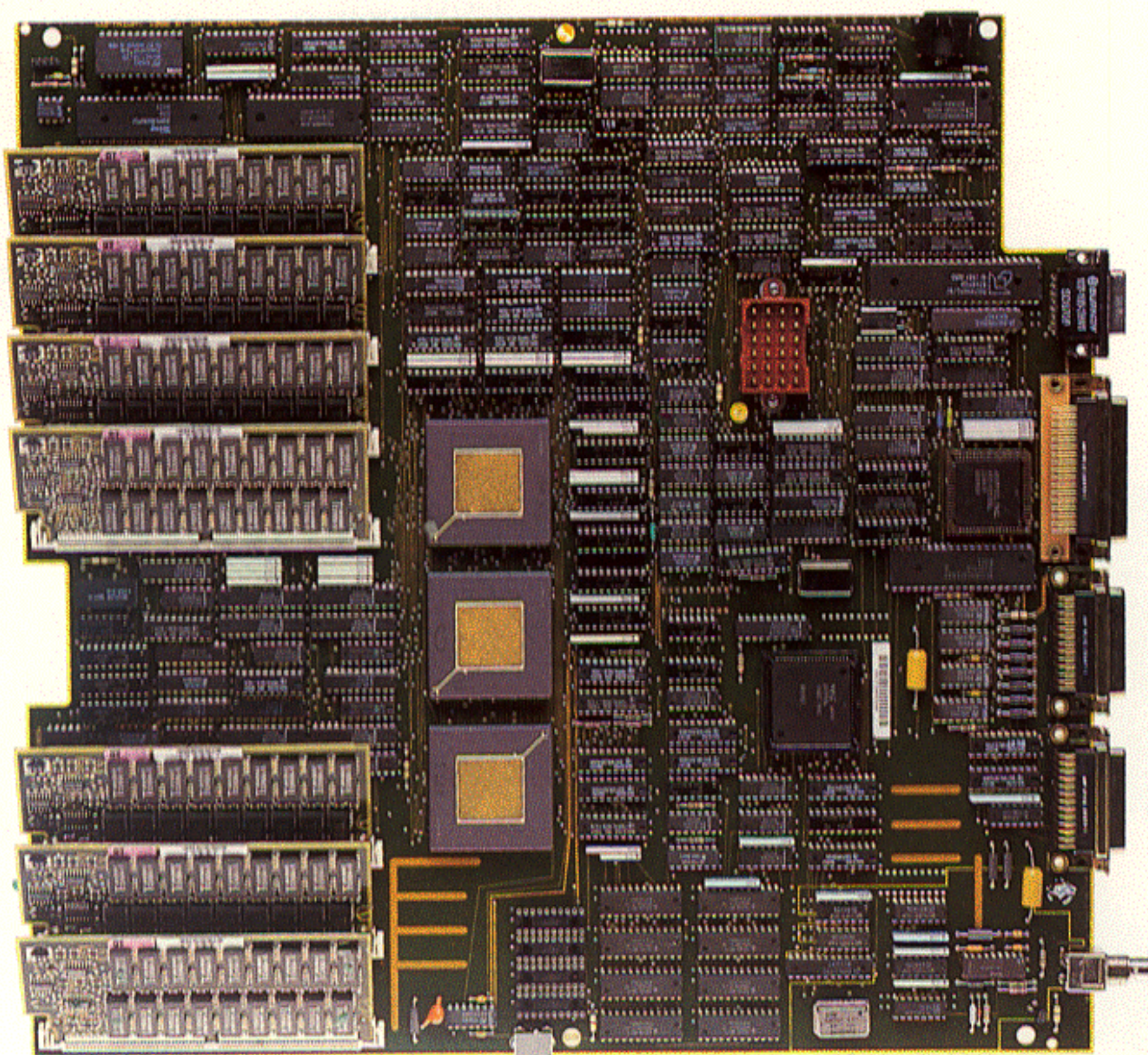
AViiON workstations run under the Data General DG/UX 4.1 operating system, an industry-standard UNIX implementation compatible with both System V.3 Release 1 and Berkeley Software Distribution Rev. 4.2. DG/UX supports a wide range of layered software products, including TCP/IP communications software, NFS 4.0, X Windows Version 11 Release 3, Documenter's Toolkit, and fully implements the 88open's Binary Compatibility Standard.

DG/UX offers all the benefits of any standard UNIX system including: multi-user support; access to local, regional and international computer networks; and portability of programs. It features all standard UNIX development tools and utilities, as well as enhanced compilers and a symbolic high-level language debugger, which is

user-extensible. Both the AT&T Bourne Shell and the Berkeley C Shell are offered. DG/UX also supports a complete language set, including C, FORTRAN 77, and Pascal.

DG/UX includes major enhancements over conventional UNIX file systems. It offers fully symmetric multiprocessor support, and a contemporary file system for high availability, maintainability, and recovery. The file system supports logical disks that enable physical files to span multiple drives. Additionally, it provides medium-term schedulers that improve throughput under heavy load; diskless/tapeless workstation support; and an extensive range of easy-to-use system administration facilities.

The system's menu-driven tools help users manage disks and perform general system management tasks. System installation is streamlined and simplified, and an enhanced kernel configuration scheme safeguards against building a system with unbalanced use of resources.

**BINARY COMPATIBILITY STANDARD**

Data General has committed to the first Binary Compatibility Standard (BCS), as published by the 88open Consortium. Acceptance of the BCS means that any software written to BCS specifications will run on any BCS-compliant, 88000-based system. BCS is also compatible with the IEEE POSIX Standard, X/Open Portability Guide, and the AT&T UNIX System V Interface Definition (SVID). The availability of this standard and its industry support gives users common system-level software, which will accelerate the delivery of applications for 88000-based systems.

**HIGH-PERFORMANCE PROCESSOR**

The 88000 family chip set is comprised of the 88100 RISC microprocessor, and two 88200 Cache/Memory Management Units (CMMUs).

The 88100 microprocessor includes an integer processor, a floating point adder and a floating point multiplier. The 88000 RISC architecture has an integrated floating point unit (FPU) on the CPU chip. The FPU greatly increases floating point performance through the use of parallel processing. In addition, an advanced, flexible pipeline architecture is featured for improved performance.

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## CACHE/MEMORY MANAGEMENT UNIT

The AViiON workstation's 88000 RISC family implementation uses a combined, dual-bus cache and Cache/Memory Management Unit (CMMU) for both instruction and data. This dual-bus structure eliminates contention between instruction fetches and data loads/stores. The CMMU chips help to keep the RISC processor fed, providing single-cycle access to fast memory. Caches run at processor speed, feeding the CPU a new instruction each cycle.

CMMUs are designed for multi-processing with both write-through and copy-back caching modes. To maintain multiple cache coherency, each chip implements a snooping bus protocol, which detects system bus writes or reads to an item in its cache. The unit then updates its cached item or main memory to insure that no processor is relying on old data.

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## MEMORY

AViiON workstations feature single in-line memory modules (SIMMs) implemented with double-sided, surface-mount technology. The system memory is self-configuring and consists of four to 28 MB of parity memory available in user-installable, four-MB modules.

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## HIGH-PERFORMANCE MONITORS

The workstation features high-resolution, 20-inch monochrome and 19-inch color monitors which operate at 70 Hz, eliminating flicker and reducing eyestrain. These monitors feature 1280 x 1024 resolution.

The AViiON workstation design incorporates a graphics coprocessor which offers improved graphics and relieves the CPU from many graphics-intensive processing tasks.

Both the color and monochrome graphics coprocessors are connected directly to the memory bus for maximum performance. The monochrome unit includes the: NEC uPD72120 Advanced Graphics Display Controller; eight 256K video RAMS; RS-343A monitor interface; video-timing logic; addressable resolution of 1280 horizontal by 1638 vertical; and viewable resolution of 1280 x 1024 with 614 x 1024 used for off-screen storage of fonts or menus.

Additionally, it offers an optional four MB of standard RAM memory for supporting the Japanese character set in off-screen video memory.

The color unit features a Color Look-Up Table with 256 displayable colors from a palette of 16.7 million combinations. It has sixty 256K dual-ported video RAMS, video timing logic, and an addressable resolution of 1536 x 1024 x 10.

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## USER INTERFACES

Any standard IBM PC-AT<sup>®</sup> compatible keyboard or Mouse System<sup>™</sup> compatible mouse can be connected to the AViiON workstation. Data General offers keyboards that can support users from a variety of countries including Canada, Denmark, France, Germany, Italy, Japan, Norway, Spain, Switzerland, the United Kingdom and United States.

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## PERIPHERALS

AViiON workstations offer an industry-standard external SCSI bus for connecting mass storage devices. The SCSI bus exits the rear of the workstation and terminates in a 50-pin DB connector. It features an eight-bit bus with parallel transfer of data and address information.

All Data General peripherals for the AViiON workstation are mounted in an office-styled desktop peripheral housing, which can accommodate over 16 storage and backup options. These options include a 320-MB 5-1/4-inch full-height Winchester disk with 16 MS access time, and a 150-MB quarter-inch cartridge (QIC) tape drive. Up to three housings can be connected to an AViiON workstation. And, each housing can accommodate one full-height and one half-height unit.

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## DISKLESS AND STANDALONE OPERATION

AViiON workstations can be configured as diskless nodes in NFS networks or standalone systems using SCSI bus peripherals. Up to three peripheral housings can be attached to the system unit. Each peripheral unit can be configured with a 320-MB disk for a total of approximately one GB of disk storage. Additional SCSI peripherals include a 160-MB disk, a QIC 150-MB cartridge tape, and 5-1/4-inch and 3-1/2-inch floppy disks.

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## COMMUNICATIONS

The AViiON workstations support both ETHERNET and Thin ETHERNET connections. It provides a single RS-232/422 interface, as well as a Centronix or Data Products parallel printer port.

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## FULL-YEAR WARRANTY

The AViiON workstations include a one-year, mail-in warranty.

Worldwide Data General Field Engineering and Customer Service organizations provide industry-leading service and support. Advanced service technology, systems engineering and educational and training programs are aimed at increasing uptime and productivity to match customer needs.

## SPECIFICATIONS

### Processor:

- Motorola 88100  
16.67 or 20 MHz 88100 processor  
with integral FPU

### Memory Management

- Virtual memory  
2 88200 CMMUs; 4 GB per process

### Caches

- Data cache and instruction cache  
Size: 16 KB  
Organization: 4-way set associative  
Cycle time: 66ns or 50ns

### Main Memory

- 4 MB - 28 MB with parity  
Expansion: 4-MB modules  
Busses: 32-bit memory-to-cache; 32-bit  
cache-to-processor

### Integrated I/O

- LAN - ETHERNET  
IEEE 802.3  
Bandwidth: 10 Mbits/sec
- Parallel Port  
Centronix- and Data Products-compatible
- Serial Port  
RS-232/422 with modem control; baud rates  
up to 19.2 kilobaud
- SCSI  
Asynchronous

### Graphics Processor

- Monochrome  
NEC uPD72120
- Color  
Custom graphics processor

### Monitors

- Pixel aspect ratio  
1:1
- Refresh Rate  
70 Hz, flicker-free
- Pixel Rate  
125 MHz
- Controls  
Brightness, contrast

	Monochrome	Color
Monitor Format	20" landsc.	19" landsc.
Displayable Res.	1280x1024	1280x1024
Addressable Res.	1280x1638	1536x1024
Colors Display	N/A	256
Color Palette	N/A	16.7 mill.
Overlay Planes	N/A	2

### User Interface

- Keyboard  
Style: 101/102-key PC-AT compatible  
Available versions: French, German, Italian,  
Japanese, Spanish, Swedish, UK, US
- Mouse  
3-button optical

### Environmental

- Temperature  
Operating/Nonoperating: 0 - 55 C / -40 - 70 C
- Relative Humidity  
Operating/Nonoperating: 0-80%/10-90%
- Electrical  
AC Voltage: 120V nominal (85-138 VAC)  
220V nominal (187-276 VAC)  
AC Frequency: 47 - 63 Hz  
Power Supply: 78 Watts

### Physical

- Dimensions: 16" x 17.5" x 2.5" (front);  
3.5" (back)
- Weight:  
18.25 lbs.

### Peripherals

- 5.25 SCSI Peripheral Housing  
Accommodates up to 3 half-height  
SCSI devices
- Winchester disk drives  
160 MB half-height  
320 MB full-height
- TPI flexible disk drives  
760 KB 3.5" 136 half-height  
1.2 MB 5.25" 96 half-height
- Tape Drive  
150 MB half-height QIC tape

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