

**Description**


Apollo's DOMAIN® Series 3000™ Personal Workstation™ family offers technical professionals the affordability and convenience of a personal computer, while providing the power of a dedicated, 32-bit workstation and the resource-sharing capabilities of the DOMAIN System. Series 3000 Personal Workstations are available in both monochrome and color display models.

The tightly integrated architecture of Series 3000 Personal Workstations features the high-speed, 32-bit MC68020 central processor and MC68881 floating point coprocessor, making DOMAIN Series 3000 monochrome Personal Workstations the first in the industry to offer extremely high-resolution graphics capabilities and large screen integrated with MC68020 performance and an IBM® PC/AT-compatible bus as standard features.

The 19-inch Series 3000 monochrome display features 1280-by-1024 pixel resolution, 64Hz refresh rate, and supports the broad spectrum of powerful DOMAIN System graphics tools. Built-in ergonomic features include a small footprint, tilt-and-swivel monitor with non-glare screen, a sculptured keyboard with numeric keypad and ten function keys, and extremely quiet operation.

The convenience of an open bus architecture is provided by the Series 3000 Personal Workstation's IBM PC/AT-compatible interface bus that lets users connect a wide range of inexpensive and popular IBM PC and PC-compatible peripherals directly to their workstations.

DOMAIN Series 3000 Personal Workstations are fully compatible with the rest of the DOMAIN System Product Family, affording users the full



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benefits of the DOMAIN System's network-wide resource-sharing capabilities. A large and growing library of software applications solutions is available for users of Series 3000 Personal Workstations to serve a variety of applications needs, including 2-D and 3-D graphics, technical office support, user interface management, applications development and much more.

### Features

- Integrated MC68020 processor and MC68881 floating point coprocessor
- Integrated IBM PC/AT-compatible peripherals bus
- 19-inch, 64Hz non-interlaced monochrome monitor, with 1280-by-1024 resolution
- Integrated graphics assist hardware
- Up to 24 concurrent processes; 64M bytes virtual address space per process
- 8M byte memory capacity for memory-intensive applications
- 86M byte (72M byte formatted) Winchester drive, 170M byte (155M byte formatted) or 380M byte (348M byte formatted) ESDI Winchester drive; 5¼-inch, 1.2M byte, double-sided, high-density floppy disk drive; 60M byte, ¼-inch cartridge tape
- Switch-selectable 120/240-volt operation
- Ergonomic features include tilt-and-swivel monitor, non-glare screen, small footprint on both monitor and system cell, sculptured keyboard, mouse, and extremely quiet operation

### Benefits

- MC68020 and MC68881 processors and integrated graphics deliver high performance and throughput required by technical professionals

- PC/AT-compatible interface, ergonomic design features, and low price deliver personal convenience and ease-of-use
- Choice of disk sizes and the latest disk technology (ESDI) on larger disk sizes provides higher performance capabilities
- Compatibility with DOMAIN System delivers high-speed local and wide area networking capabilities
- Tight integration of hardware and software enhances sharing of resources and information
- Ability to concurrently run several large applications
- Task-oriented, multiwindow environment
- Fits comfortably into the technical Work Group's office environment
- Worldwide service and support

### Tightly Integrated System Cell Unit

The DOMAIN Series 3000 system unit supports either the Series 3000 monochrome or color monitors, and can also function as compute server.

The tightly integrated architecture of the system unit brings together an MC68020 central processor, MC68881 floating point coprocessor, memory management unit, four memory card slots, interface for keyboard, mouse, and SIO ports, and the IBM PC/AT-compatible bus interface.

The memory cards reside on the system's 32-bit wide private memory bus, thus ensuring optimal throughput and processing speed.

### Personal Workstation Convenience

DOMAIN Series 3000 Personal Workstations offer users the affordability of personal computers, while providing the far-reaching resource-sharing capabilities of the DOMAIN System local and wide area network.

The Series 3000 monochrome system features a 19-inch, 64Hz, tilt-and-swivel monitor, low-profile key-

board (complete with numeric keypad and ten user-definable function keys), extremely quiet operation, and – most important – an IBM PC/AT-compatible bus interface that lets users connect a wide variety of popular low-cost PC/AT, PC/XT, and compatible personal computer peripherals to their workstations.

IBM PC and PC-compatible peripherals that can be directly connected to DOMAIN Series 3000 Personal Workstations via the PC/AT-compatible interface include many low-cost data storage and acquisition devices.

The number of system I/O ports can be expanded with the optional Serial/Parallel Expansion (SPE) board. The SPE option adds two RS232C ports and one Centronics parallel port to the Series 3000 system unit.

The Series 3000 system unit features a small, low-profile footprint and can be easily rotated 90 degrees to be mounted on a desk-side floor stand or directly on the user's desk.

These features combine to bring the convenience and versatility of personal computing to engineers along with the power and performance of a 32-bit, virtual memory system and the versatility of the DOMAIN System network – making the DOMAIN Series 3000 monochrome workstation truly a personal workstation.

### Versatility and Functionality

DOMAIN Series 3000 monochrome Personal Workstations provide extremely high-resolution, flicker-free graphics

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in a true multiwindow, multitasking environment. Users can run up to 24 concurrent processes, with as much as 64M byte of virtual address space for each process. Available with up to 8M bytes of main memory, Series 3000 Personal Workstations are an economical and versatile tool for engineers who need wide-ranging color graphics capabilities.

The Series 3000 Personal Workstations support two powerful, resource-sharing operating systems: the UNIX<sup>®</sup> and AEGIS<sup>™</sup> operating systems. UNIX software support includes both popular UNIX system environments: Berkeley 4.2 and AT&T System V Release 2.

In addition, Series 3000 Personal Workstations are compatible with the rest of the DOMAIN System family of workstations, servers, peripherals, and software tools.

#### **IBM PC/AT-Compatible Interface**

With its integrated PC/AT-compatible bus interface, the Series 3000 Personal Workstation lets users enjoy the benefits of peripherals designed for the IBM PC/AT, PC/XT, and compatible personal computers without sacrificing the power and functionality of the DOMAIN System.

The open architecture of the Series 3000 implementation of the IBM PC/AT-compatible bus provides a great deal of flexibility, connectivity, and cost-effectiveness for all applications.

The interface bus is fully integrated into the workstation's system unit and includes six 16-bit board slots that are PC/AT-compatible and two 8-bit PC/XT-compatible slots.

The PC/AT-compatible bus lets users interface a variety of popular personal computer peripherals— from low-cost expansion devices, input devices, mass storage subsystems, to a wide array of communications devices, monitors and video systems, printers and other output devices, and voice processing units. Users need only provide the appropriate software drivers for the devices being connected. This helps maintain a lower cost-per-seat, while providing fully dedicated, 32-bit DOMAIN System workstation capabilities.

#### **Powerful Subsystems**

*Graphics Subsystem.* The graphics subsystem of the DOMAIN Series 3000 Personal Workstation includes the 19-inch screen, 1280-by-1024, non-interlaced, anti-glare monitor with tilt-and-swivel base and graphics assist hardware.

Gate array technology allowed the workstation's controller to be designed small enough to fit on a single PC/AT-compatible board. Tightly coupled graphics assist hardware helps accelerate such graphics primitives as bit-blt, raster operations, vector generation, and polygon fills.

A refresh rate of 64Hz and non-interlaced scan pattern means that display images are extremely stable and flicker-free.

*Mass Storage Subsystem.* Series 3000 Personal Workstations support an 86M byte (72M byte formatted), 170M byte (155M byte formatted) or 380M byte (348M byte formatted) Winchester drive. A 5¼-inch, half-height, floppy disk drive provides 1.2M bytes of unformatted backup space for double-sided, high-density floppy disks. And a ¼-inch, 60M byte cartridge tape is also available.

A single controller supports the Winchester and floppy disk drives and uses industry-standard interfaces to allow the easy integration of larger capacity storage devices as they become available.

A separate controller is required for cartridge tape.

#### **Input Devices**

DOMAIN Series 3000 Personal Workstations are designed for ease of use and personal computer-class convenience. A number of ergonomic features are built-in to each of the Series 3000 input devices.

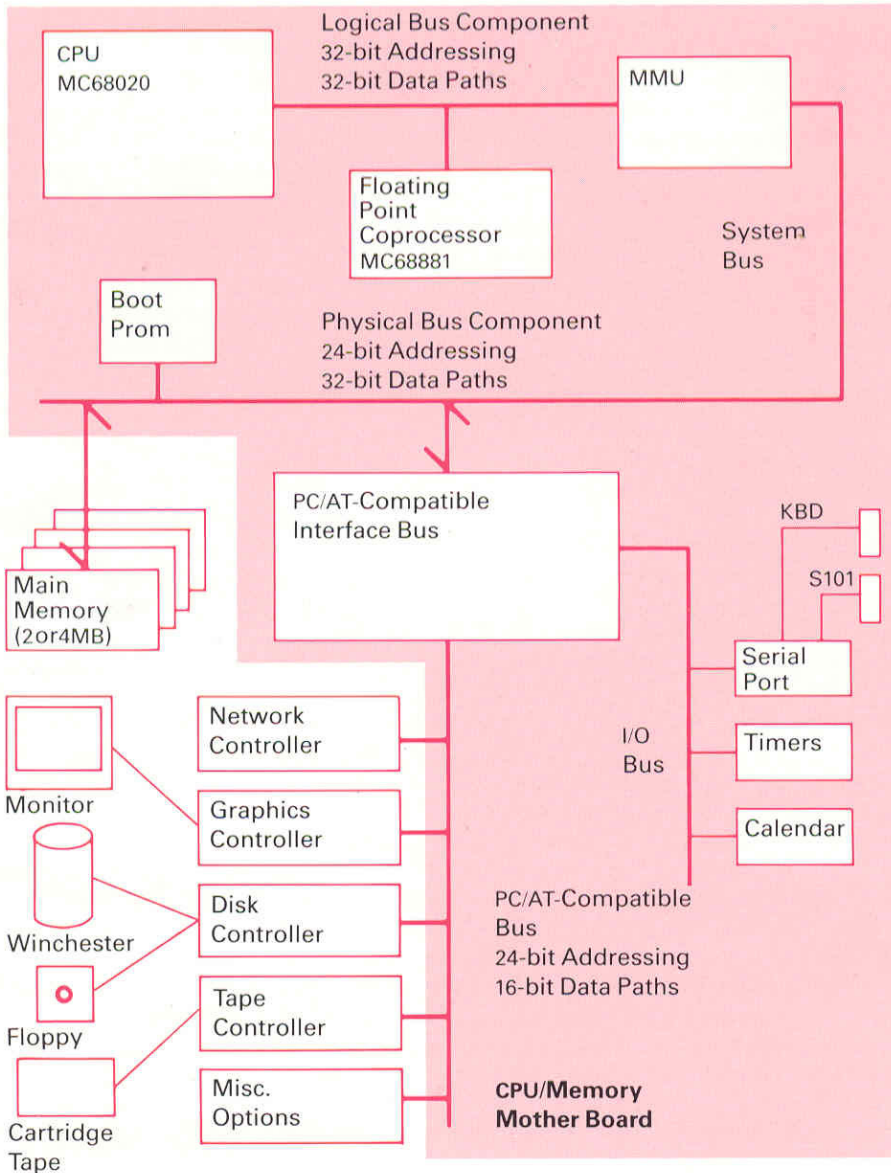
*Keyboard.* The DOMAIN Series 3000 keyboard helps improve typing speed and enhances productivity with its sculptured, low-profile layout. Ten user-programmable function keys provide an additional measure of convenience. In addition, a numeric keypad is integrated into the keyboard, and includes the digits 0-9, +, -, decimal point, and return/enter keys.

*System Mouse.* A newly designed mouse brings smooth, accurate tracking to Series 3000 users. A rubber roller ball provides reliable surface tracking, and finger buttons have been specially designed for optimal ease of use and comfort.

#### **The DOMAIN Graphics Tool Set**

Apollo offers the software developer a comprehensive set of sophisticated graphics tools.

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The open architecture of DOMAIN Series 3000 Personal Workstations includes an IBM PC/AT-compatible bus that supports all network, graphics, disk, tape, and option slot controllers. The CPU, FPP, MMU, and main memory reside on an internal 32-bit bus. (All components within the shaded area in this diagram reside on the mother CPU board.)

The DOMAIN Graphics Resource (DGR™) is a complete graphics toolkit that provides a flexible environment to support the varied and demanding range of sophisticated graphics applications.

DGR includes the DOMAIN Display Manager, which lets users divide the workstation screen into true multi-window work areas that provide simultaneous activities that can help dramatically enhance productivity.

The Graphics Metafiles Resource (GMR™) takes full advantage of the high degree of integration offered by Series 3000 workstations and provides a comprehensive set of 2-D and 3-D graphics functions.

GMR creates permanent files containing hierarchically structured graphics data. These files can exist on remote nodes and be demand paged into the virtual memory of the process accessing them for editing or viewing. GMR supports multiple viewports, automatically rescaling to Display Manager windows.

The DOMAIN/DIALOGUE™ User Interface Design and Management System helps applications developers build sophisticated, menu-driven and pointer-oriented user interfaces. GMR is tightly integrated with the DOMAIN/DIALOGUE software.

The Graphics Primitives Resource (GPR™) is a rich set of graphics I/O functions, and is fully integrated with the DOMAIN Display Manager. This procedural interface allows graphics functions to be performed without generating metafiles. GPR lets applications take full advantage of Series 3000 hardware features.

DOMAIN Graphics Service Routines (GSR™) are an integral component of Apollo's Open Architecture

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Program. Actual low-level graphics instruction sets (and the routines to support their use) are made available to OEMs, qualified Third Parties, and sophisticated end users to permit performance tuning on their products.

DOMAIN/CORE™ is a complete set of SIGGRAPH CORE functions for 2-D and 3-D graphics applications. DOMAIN/CORE provides the portability and ease of use of the proposed CORE standard.

The DOMAIN 4014 emulator lets Series 3000 workstations function as TEKTRONIX® 4014 graphics terminals, and lets users access the wide range of 4014 applications running on remote mainframes and superminis.

Also available are a number of implementations of the ISO-approved Graphical Kernel System (GKS) from such popular vendors as Precision Visuals, Template, GTS-GRAL, and NOVA Graphics.

### Two Powerful Operating Systems

The DOMAIN System, built from the ground up for sharing, provides two transparent, network-wide virtual memory operating systems. These powerful operating systems maximize the integrated workstation computing environment.

DOMAIN/IX™ is Apollo's twin port of the two most popular UNIX system standards: Berkeley 4.2 and AT&T's System V Release 2. Users can run applications in either operating system, or both simultaneously, from a single Series 3000 Personal Workstation. DOMAIN/IX users are provided all the benefits of the UNIX standards integrated into a distributed processing environment.

Apollo's AEGIS operating system provides a true multiwindow, multi-tasking environment and a distributed file system that lets users transparently share data and resources.

### DOMAIN Series 3000 Color

Apollo's Series 3000 Personal Workstation family also includes 15-inch and 19-inch color display workstations with 60Hz refresh rate and 1024-by-800 resolution.

The Series 3000 color models provide the same high level of personal computer affordability and convenience, along with the power and resource-sharing of the DOMAIN System.

Series 3000 color Personal Workstations also include the IBM PC/AT-compatible bus interface, and are compatible with the Series 3000 monochrome Personal Workstation, as well as the rest of the DOMAIN System product family.

### DOMAIN Open Architecture Program

Connectivity is an integral feature of the DOMAIN System, and the PC/AT-compatible interface capabilities of DOMAIN Series 3000 Personal Workstation demonstrate Apollo's commitment to its Open Architecture Program.

At the foundation of the DOMAIN System are its high-speed local and wide area networking capabilities. The DOMAIN System network helps join productive, but isolated, technical professionals into a tightly knit, highly effective Work Group, sharing information, files, and resources over high-speed, far-reaching networks.

### Series 3000 Hardware Features

- 32-bit VLSI CPU (integrated MC68020 processor and MC68881 floating point coprocessor)

- 2M to 8M byte main memory
- Low-profile, detachable keyboard with programmable function keys, numeric keypad, and mouse input device
- 86M byte, 170M, or 380M byte Winchester disk; 5¼-inch, 1.2M byte floppy disk drive; ¼-inch, 60M byte cartridge tape
- Extremely quiet operation
- Two RS232C ports (up to 19.2K baud—one is used for the keyboard)
- IBM PC/AT-compatible bus interface

### Monochrome Display Features

- 19-inch, 64Hz, non-interlaced monochrome display
- Tilt-and-swivel monitor with small footprint
- Extremely high resolution (1280 by 1024 pixels)
- Graphics-assist hardware for optimum performance
- Vector generation .45 million pixels per second
- Up to 6,500 2-D integer transformed, clipped vectors per second
- Bit-blts at over 24 million pixels per second
- Raster operations at 20 million pixels per second
- Area fills at over 25 million pixels per second

### The DOMAIN Network

- 12M bit-per-second baseband network in a ring topology
  - Dual address packet with single token arbitration
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- Up to 1000 meters between cable-connected nodes standard
- Transparent access to data, programs, and peripherals
- Gateway access to remote and foreign facilities and protocols

### Software

#### Standard

- DOMAIN/IX, Apollo's twin port of the UNIX system standards: Berkeley 4.2 and AT&T System V Release 2
- AEGIS, object-oriented operating system
- Multiple window management with cut-and-paste
- High-level language debugger
- DOMAIN Graphics Resources: Display Manager, 2-D and 3-D GMR, GPR
- Power-on diagnostics

#### Optional

- FORTRAN 77, ISO Pascal, DOMAIN/C,<sup>™</sup> DOMAIN/LISP,<sup>™</sup> and DOMAIN/CommonLISP<sup>™</sup> support
- DOMAIN Graphics Resources: DOMAIN/DIALOGUE, DOMAIN/CORE, DOMAIN 4014 GSR, GKS (via third parties)
- D3M<sup>™</sup> distributed data management
- DSEE<sup>™</sup> Software Engineering Environment Package
- DPSS/MAIL<sup>™</sup> Technical Office Support
- More than 750 solutions supplier applications packages

### Specifications

#### Physical Dimensions

**Electronics Unit:** height 17.4 cm (7 inches), width 53.2 cm (23 inches), depth 43.8 cm (17 inches)  
**Monitor:** 19-inch display – height 46.4 cm (18.25 inches), width 46.4 cm (18.25 inches), depth 38 cm (15.25 inches)

#### Weight

**Electronics Unit:** 24 kilograms (52 lb)  
**Monitor:** 24 kilograms (52 lb)  
**Keyboard:** 2 kilograms (4.4 lb)

#### Power

**Electronics Cell:** 500 Volt-Amps  
**Monitor:** 115 Volt-Amps

#### Operating Environment

**Temperature:** 15C to 32C (60F to 90F)  
**Humidity:** 20% to 80%, non-condensing  
**Ceiling:** 0-3,050 meters (0-10,000 feet)

#### Options

- Serial/Parallel Expansion Board (SPE) provides two RS232C ports and one Centronics parallel port
- EtherController-AT board provides gateway and routing services
- PC Coprocessor board provides PC compatibility in a display window

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