



## HARDWARE

- Powerful 16-/32-bit super microcomputer supporting up to 16 users
- Industry standard UNIX™ System V Release 2 with 4 MB demand-paged virtual memory
- High performance Motorola 68010 microprocessor operates at 10 MHz with no wait states
- 512 KB RAM expandable to 2 MB in 512 KB increments
- Object-code compatible with the MegaFrame™ system family
- System backup via 1/4-inch streaming tape and/or 5 1/4-inch floppy
- Up to two integral 5 1/4-inch, 26 or 50 MB Winchester disk drives
- Multidrop RS-422 port at 307 Kbit/second
- Two RS-232 ports at up to 9.6 Kbit/second
- Centronics-compatible parallel printer port
- Expansion slot for optional communication module:
  - Eight RS-232 port module
  - Sixteen RS-232 ports and one multidrop RS-422 port module
  - Ethernet module
  - Ethernet module with eight RS-232 ports
- Programming languages include industry standard High Level COBOL, BASIC, FORTRAN 77, Pascal, and "C"
- Data management facilities include ISAM, Sort/Merge, and a Forms generation package

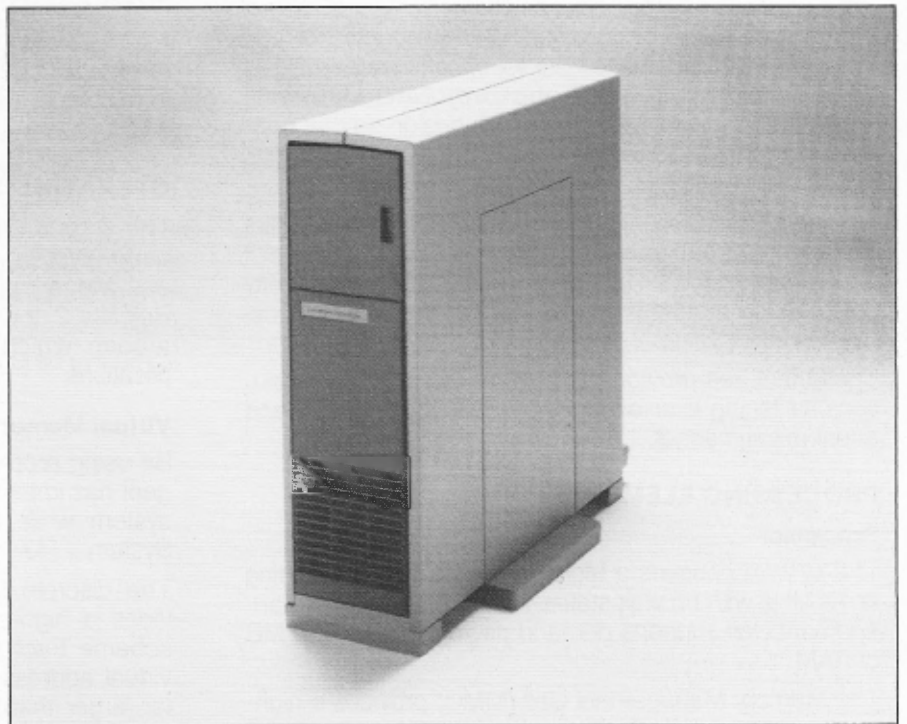
# CONVERGENT TECHNOLOGIES

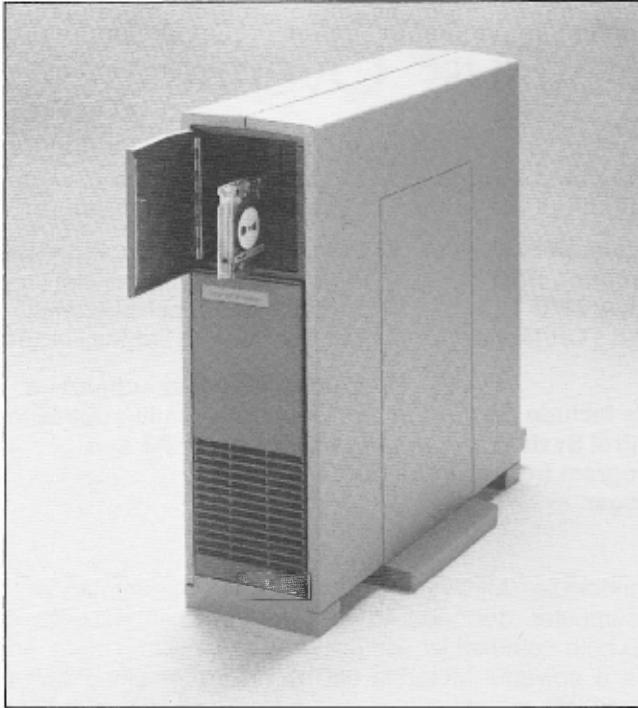
## MiniFrame Plus™ Overview

- Communications include BSC 3270 Terminal Emulator, BSC 2780/3780 RJE, SNA 3270 Emulator, X.25, and TCP/IP via Ethernet
- Office Automation includes Word Processor, Financial Spreadsheet, Electronic Mail, and Business Graphics libraries
- Development tools include the Source Code Control System and full screen program Editor, Linker, and Debugger
- Window Manager supports a multi-window, multi-application environment for PT and GT terminals

The Convergent Technologies MiniFrame Plus™ is a high performance 16-/32-bit super-microcomputer designed to provide low-cost solutions for vertical applications in both commercial and office environments. The foundation of this system is a powerful Motorola 68010 CPU. Combined with an efficient discrete Memory Management Unit, this system provides high speed RAM access and a large virtual memory address space for superior performance in supporting up to 16 users concurrently.

The MiniFrame Plus computer system incorporates the industry standard UNIX™ System V Release 2 Operating System to address the expanding multi-user UNIX marketplace. This allows Convergent to offer extensive programming tools and languages for the development of unique applications while being fully compatible with thousands of existing third-party software packages.





For maximum flexibility, the MiniFrame *Plus* system offers several entry points. This allows the price-conscious user the opportunity to profit from the MiniFrame's low cost and high performance, while retaining a path of graceful expandability as needs change.

Users may start with a high capacity 16-user system or any of several entry-level configurations. When needs change, the user may add additional terminals, select from a wide range of communications modules, or add applications from an extensive list of software packages. Since flexibility is a major objective of the MiniFrame *Plus*, much thought was given to its design so that configuration changes may be easily accomplished on site, in a matter of minutes.

As users' needs continue to change, MiniFrame *Plus* systems may be linked to members of the MiniFrame™ and MegaFrame™ family; object-code compatibility between the products insures that software investments maintain their value.

These features provide a wide range of attractive solutions for facing ever-expanding needs in an orderly and economical manner.

## PROCESSING ELEMENTS

### Processor

The system contains a Motorola 68010 CPU, operating at 10 MHz with no wait states. A discrete Memory Management Unit supports demand paging, and up to 2 MB of RAM.

The Memory Management Unit (MMU) provides a high-speed (no wait states), demand paging scheme with 3.0 MB of virtual address space per user. Page size is 4 KB.

The system will support two 5¼-inch Winchester disks (formatted capacities in parentheses) with capacities of 50 MB (37 MB) and/or 26 MB (21 MB). Backup support includes a choice of either a 55 MB ¼-inch streaming tape, a 5¼-inch 1 MB (640 KB) floppy disk, or both.

An on-board multidrop RS-422 port can run up to 8 Convergent PT™ or GT™ terminals at 307 Kbit/second. Two RS-232 lines can support synchronous and asynchronous protocols at speeds up to 9.6 Kbit/second. A Centronics-compatible parallel printer port supporting speeds up to 600 lines per minute is also provided.

### Memory Expansion

Memory Expansion boards provide expansion in 512 KB increments. One expansion board comes as part of all standard configurations having a ¼-inch tape device; additional expansion boards can be added up to a system total of 2 MB of RAM.

### Communications Expansion

The MiniFrame *Plus* provides one expansion slot for adding any one of several optional communication modules.

An **Ethernet expansion** module provides communications to other MiniFrame or MegaFrame systems and is compatible with IEEE 802.3 LAN standard.

An **8-port RS-232 expansion** module with full modem control will support standard ASCII terminals and serial printers at speeds up to 9.6 Kbit/second. An alternative module combines the **8 RS-232 ports with Ethernet** communications.

A **16-port RS-232 expansion** module with full modem control is also available, supporting standard ASCII terminals and serial printers at up to 9.6 Kbit/second.

Alternatively, a customer-designed communication module with a DMA system interface may be added. Up to 105 square inches are available along with 5 amps at 5 volts power.

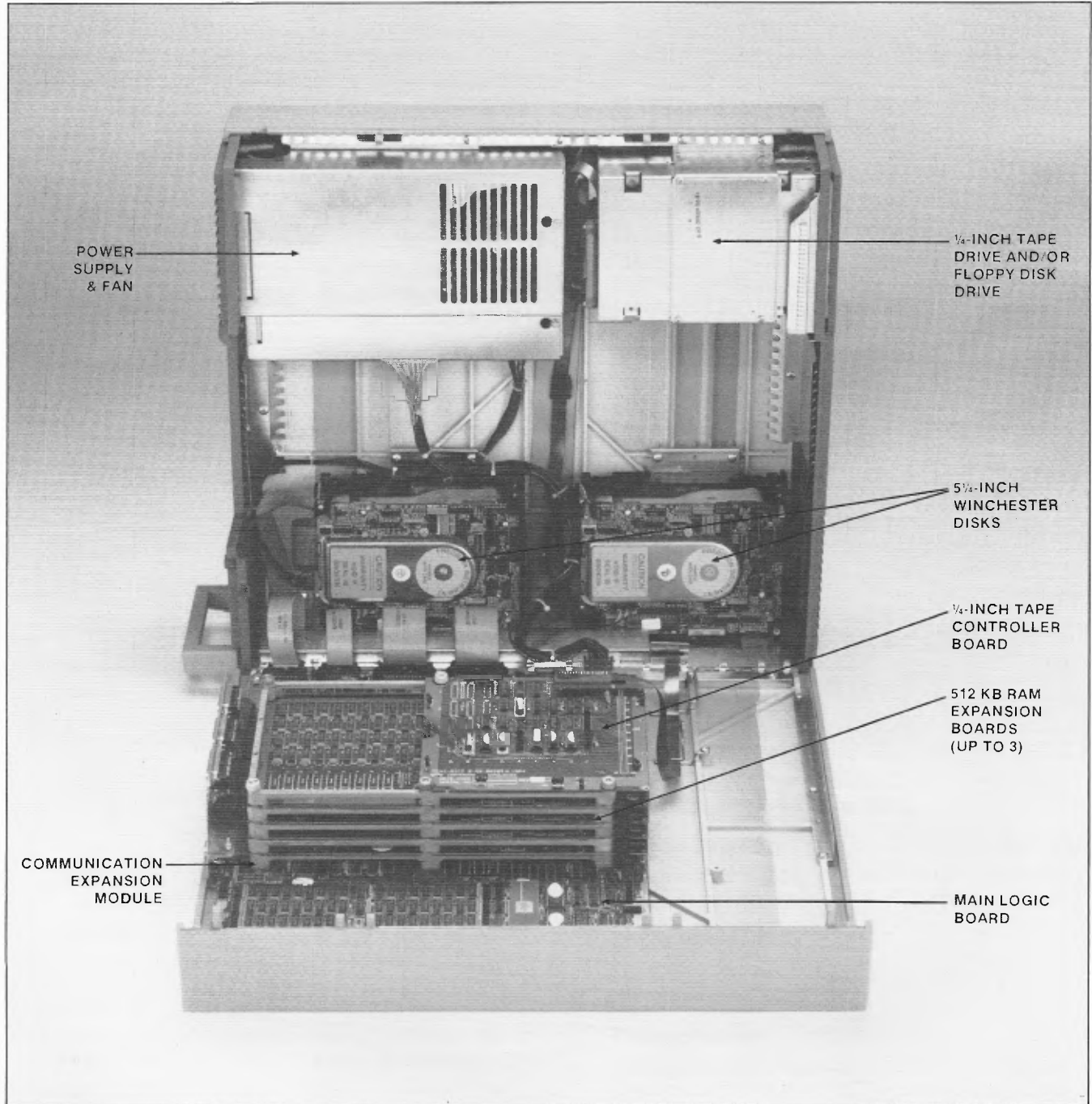
## OPERATING SYSTEM SUPPORT

The CTIX™ Operating System is a time-shared operating system for the Convergent MiniFrame *Plus* and MegaFrame systems, based on UNIX System V Release 2. It provides a reliable high-performance base around which to build time-shared, interactive applications.

### Virtual Memory

By using proprietary virtual memory hardware, Convergent has implemented a demand-paged virtual memory system while remaining totally compatible with UNIX System V Release 2.

The discrete Memory Management Unit (MMU) provides a high-speed (no wait states), demand paging scheme. Each user is provided with a uniform 3.0 MB of virtual address space which permits running programs far larger than the amount of physical memory in the system.



**Window Manager**

The window manager provides the PT and GT terminals with a multi-window, multi-application environment in which a user may view and manipulate up to four concurrently executing applications on the same PT or GT terminal screen. The terminal maintains a 28 line virtual screen for each of the four windows. Each window can be independently scrolled horizontally and vertically. Users can also have multiple views of the same application wherein a different part of the same document can occupy a separate window with each window capable of scrolling horizontally and vertically independently.

The window manager allows users to run existing UNIX applications within a window, and permits copying and moving Financial Spreadsheets, Word Processor documents, and Electronic Mail between windows using a simple set of commands.

**Command Interpreters**

In addition to the *Bourne Shell*, the *Berkeley C-Shell* is provided for system programmers already familiar with the UNIX Operating System.



## SOFTWARE

Convergent Technologies CTIX, a commercial implementation of UNIX System V Release 2, provides an ideal environment for distributed data processing and office automation. Available software includes a variety of programming languages, data management facilities, communication packages, and office processing tools.

### Languages

CTIX-based language processors include a BASIC interpreter and compiler, FORTRAN compiler, Pascal compiler, COBOL interpreter and compiler, and C language compiler.

#### BASIC INTERPRETER

- Conforms to the ANSI X3.60-78 standard
- GSA certified
- Extensive screen formatting capability with the PRINT USING command
- Access to external subprograms written in C and assembler
- Access to ISAM, Sort/Merge, and the Forms Facility

#### BASIC COMPILER

- Compatible with BASIC interpreter
- Provides high performance application execution

#### FORTRAN COMPILER

- Full FORTRAN 77 ANSI X3.9-78
- GSA certified
- 3.0 MB virtual address space per user
- Extensive error messages
- Data Types:
  - INTEGER\*1,2,4
  - REAL\*4,8
  - COMPLEX
  - LOGICAL\*1,2,4
  - CHARACTER
- Cross reference listing
- IEEE standard representation of REAL data
- FORTRAN Symbolic Debugger

#### PASCAL COMPILER

- General conformance to ISO 1980 draft standard
- 3.0 MB virtual address space per user
- Extensive error messages
- IEEE standard representation of floating point data
- Pascal Symbolic Debugger

#### COBOL COMPILER

- ANSI X3.23 1974
- GSA High certified
- Screen handling facilities
- Symbolic Debugging utility available
- Uses CTIX ISAM for high performance structured file access

#### C COMPILER

- Conforms to "The C Programming Language" — Kernighan/Ritchie 1978

## Data Management Facilities

### ISAM

- Multi-user/multi-key access to structured information
- Support for six different key types:
  - byte string
  - character string
  - packed decimal
  - binary
  - long real
  - short real
- Support for transactions with record locks and queueing
- Increased flexibility through
  - duplicate keys
  - index in ascending or descending order
  - suppression of indexing on null value key fields (user selectable)

### FORMS GENERATOR

- Takes full advantage of the PT and GT terminal capabilities
- Interactive design and test of sophisticated business and graphic forms
- Protected and unprotected text and graphic rulings
- Application control of run-time sequencing between fields and specification of data validation routines
- Forms run-time modules are called from application programs

### SORT/MERGE

- Supports variable-length and fixed-length records
- Handles multi-level sorts up to 15 levels
- Support for six different key types:
  - byte string
  - character string
  - packed decimal
  - binary
  - long real
  - short real
- Procedural interface from application programs

## Communications Services

The MiniFrame supports:

- BSC 3270 Emulator
- 2780/3780
- BSC RJE System Service
- SNA 3270 System Service
- X.25 Communications Manager System Service
- TCP/IP via Ethernet



### The MiniFrame Office System

The Office Systems package is accessible via the Convergent PT and GT terminals. It consists of:

- Word Processor: a Wang-style document preparation system
- Financial Spreadsheet Package: a sophisticated financial modeling and planning software package, based on Supercomp Twenty™
- Electronic Mail Facility: an easy to use system allowing users to prepare and send electronic mail messages
- GKS graphics libraries: The Visual GKS™ and Visual C-Chart™ packages use device independent resolution algorithms to produce graphic images and fonts on the GT terminal and the Imagen® laser printer, as well as other graphics output devices. A GT Font Designer is also available.

### PERIPHERAL HARDWARE

#### PT and GT Terminal Support

The MiniFrame Office System Package provides a multi-window, multi-application environment for PT and GT terminals in which a user may view and manipulate multiple applications on the same screen.

### SPECIFICATIONS

#### Memory Capacity

RAM: 512 KB to 2 MB, Maximum

#### Serial I/O Rates

External Clock: RS-232-C: 110 Baud to 19.2 KBaud  
 Internal Clock: RS-232-C: 50 Baud to 19.2 KBaud  
 RS-422: 100 Baud to 1.8 MBaud

#### Parallel I/O Rate (Printer Interface)

Programmed I/O: 9600 Characters/second (typical)

#### Ethernet

Conforms to IEEE 802.3 specifications

#### Electrical

115 V: 85-130 Vrms, 4.2 Amps @ 47 Hz to 63 Hz

230 V: 180-260 Vrms, 2.1 Amps @ 47 Hz to 63 Hz

The AC loads specified above represent the loads presented to the line by a fully configured system.

### PHYSICAL

Height: 22.5 in. (57.15 cm)

Width: 7.0 in. (17.78 cm), 10.0 in. (25.40 cm)  
 including base

Depth: 23.0 in. (58.42 cm) excluding standoff at rear

Weight: 65 lbs. (29.9 Kg)

### ENVIRONMENTAL AND SAFETY

#### Safety

Meets UL 478 (EDP) and 114 (Office Equipment)

Meets CSA 154 (EDP) and 143 (Office Equipment)

Meets VDE 0806/18.81 (Office Equipment)

Meets IEC 380 (Office Equipment)

#### Emissions

Meets VDE 8071 /6.78, Level A

Meets FCC Part 15, Sub-Part J for Class A Emissions,  
 Class B Emissions Optional

#### ESD:

5,000 Volts: No observable effect

15,000 Volts: No operator perceived errors

25,000 Volts: No permanent damage

#### Altitude:

Operating: 10,000 feet ASL

Non-Operating: 30,000 feet ASL

#### Acoustic Noise Level

55 dBA

#### Ambient Temperature

Operating: 10°C to 40°C

Non-Operating: -40°C to 60°C

#### Relative Humidity

Operating: 10% to 80% RH, non-condensing

Non-Operating: 10% to 80% RH, non-condensing

#### Shock

Operating: 5 g

Non-Operating: 15 g

#### Transportation

Packaging and shipping containers and procedures comply with the current NSTA preship test procedures.

Shipping container: 33 in. (h) x 32 in. (l) x 15 in. (w)



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**Convergent Technologies** <sup>TM</sup> 2314 N. First Street, San Jose, CA 95131  
(408) 946-2233 TWX 910-338-2149

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