Convergent Technologies™

NOTE: THIS DOCUMENT PROVIDES A RUNNING HISTORY OF CHANGES FOR A MULTI-PAGE DRAWING WHICH CANNOT CONVENIENTLY EXPLAIN CHANGES ON EACH PAGE. LIST ALL BEFORE-AND-AFTER CHANGES AS COMPLETELY AS POSSIBLE UNDER THE APPROPRIATE REVISION BELOW. THE REVISION LEVEL OF DOCUMENT IS LISTED BELOW.

REV	DESCRIPTION OF CHANGES	DATE	APPROVAL(S)
A	RELEASE TO MANUFACTURING	7-6-84	
B	CO#1786 - Update Product Spec's (Pg 12 & 13)	1-2-85	
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TITLE: MINIFRAME PRODUCT OVERVIEW SPECIFICATION

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SHEET 1 OF 15

DRAWING NO. B-02-00130-00

MINIFRAME

PRODUCT OVERVIEW

Revision 1.00, 6/12/84

Specification #B-02-00130-00

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1.1 Architecture

The MiniFrame system is a single-cpu version of a larger companion product, the MegaFrame system. It is a tightly-coupled design, with the main cpu board containing all of the electronics needed to run the minimum system, including device interfaces. The MiniFrame system possesses limited expansion capabilities; more memory or more I/O (including RS-232 and Ethernet) are the only things that may be added.

1.2 Operating System Software

The processor runs a multi-user virtual memory version of the UNIX operating system. The same application object code will run on both the MiniFrame and the MegaFrame computer systems, allowing upward migration of applications as the need for processing power increases.

1.3 System Component Summary

MiniFrame systems are built from a limited number of logic cards and peripherals, a unified enclosure, and associated power system.

1.3.1 PC boards

The following boards are used to configure a MiniFrame:

MiniFrame Processor(MP) - contains a Motorola 68010 cpu with memory management logic that provides a demand-paged virtual memory environment for the UNIX operating system; interfaces for the disks; a line printer interface; an RS-422 communications line; and two RS-232 communication lines.

Memory Expansion (ME) - provides 1/2 megabyte of additional memory to the MP. Up to three Memory Expansion boards may be added to an MP. Utilizes 64 Kbit dynamic RAMSs.

I/O Expansion - provides 8 additional RS-232 ports and/or an Ethernet interface. [Note: alternate versions of this board, serving other communications requirements, will be designed over time, depending on specific market needs.]

1.3.2 Disk drives

The MiniFrame enclosure supports one removable-media disk and one fixed-media disk.

The removable-media disk is a 96 tpi floppy disk.

The fixed media disk is a single 5 1/4 inch Winchester technology drive, with a formatted capacity that is one of the following: 10, 20, or 37 megabytes (formatted capacity).

1.3.3 MiniFrame enclosure

The MiniFrame system consists of a single enclosure with the following:

- One AC power module including fan and DC power supply
- Two disk drives (one fixed media, one removable)
- Structures to support the MiniFrame Processor and any associated Expansion cards
- The MiniFrame Processor
- A plastic enclosure

The AC power module contains a fan and a filtered AC-to-DC converter that supplies up to 144 watts of regulated +5 volt, +12 volt, and -12 volt DC power. There are two versions of the power module, one for 110 volt input, and one for 220 volt input. No additional power supply is needed when the system is expanded up to its maximum configuration.

The diagnostic indicators are five Light-Emitting Diodes (LEDs) that are mounted on the edge of the MiniFrame Processor board so as to be visible through an opening at the back of the unit. One LED (green) indicates the presence of 5 volt power; the others (yellow and red) indicate the current system status. In addition, for the systems programmer, there is a reset switch on the main processor board which can be accessed at the rear of the machine.

1.4 Physical Interconnect

The MiniFrame enclosure contains a small number of physical interconnect structures, including expansion module connections, integral disk drive cabling, AC and DC cabling, and communications cabling.

For reference, the "back" of this unit is the edge closest to where the AC power plugs in; the "front" of the unit is the edge closest to where the removable media is accessed by the operator.

1.4.1 Expansion module connection is accomplished by plugging the PC-mounted Zero-Insertion-Force (ZIF) connector on the module into the associated pins contained either on the MP board (if this is the first expansion board to be added), or onto the topmost expansion module (if an expansion module has previously been installed). The only restriction is that the communications expansion module, if it is present, must be the closest expansion module to the MP board, due to mechanical connection requirements for the additional communication lines.

1.4.2 Disk drives are connected to the MP board by flat ribbon cables for the data and control signals, and to the power module by wire harnesses for the DC power.

1.4.3 Communications cables plug onto the 9-pin RS-422 connectors or the 25-pin RS-232 connectors which are mounted on the MP board, or onto the Ethernet connector which is on the communications board. These connectors are directly accessible from the rear of the unit; it does not have to be opened to allow access.

1.5 Configurations

The MiniFrame system is configured by selecting one of the disk drive combinations, selecting the amount of additional communications capability, selecting the amount of additional memory, and the input voltage of the unit. The rules are as follows:

1.5.1 Memory size: The base unit contains 512 kilobytes of memory. Each Memory Expansion board contains 512 kilobytes of memory. From zero to three memory modules may be added to the system.

1.5.2 Communications ports: The base unit contains one RS-422 port and two RS-232 ports. The Communications Expansion board contains one of several options: an Ethernet Expansion board is one option; other options will be defined at a later date. Zero or one Communications Expansion boards may be added.

1.5.3 Disks: The disks come in four possible combinations:

- A floppy and a 10 MB (formatted capacity) Winchester

- A floppy and a 20 MB (formatted capacity) Winchester

- A floppy and a 37 MB (formatted capacity) Winchester

1.5.4 AC input power

Select either 110 volt AC input or 220 volt AC input.

2.0 Software Description

2.1 UNIX Operating System

MiniFrame executes Convergent's virtual memory version of the UNIX operating system (CTIX). CTIX is derived from UNIX System V under license from Western Electric and is compatible with System V. ("UNIX" is a trademark of Bell Telephone Laboratories Inc.)

2.2 MiniFrame Applications

UNIX applications that do not have hardware or UNIX version dependencies will, in general, run on MiniFrame systems without change, requiring only recompilation. Convergent offers the following applications and application support tools:

UNIX-based program development tools:

Source Code Control System

Screen-based program editor (VI)

UNIX-based language processors:

Basic interpreter

Conforms to the ANSI X3.60-78 standard

Extensive screen formatting capability with the PRINT USING command

Video cursor addressing and attribute manipulation using escape sequences

Access to external subprograms written in "C" and assembler

Access to ISAM, Sort, and the Forms Facility

Extensive symbolic debugging package

Basic compiler

Conforms to the ANSI X3.60-78 standard

Extensive screen formatting capability with the PRINT USING command

Video cursor addressing and attribute manipulation using escape sequences

Access to external subprograms written in "C" and assembler

Access to ISAM, Sort, and the Forms Facility

Substantial speed improvement over the Basic interpreter

FORTRAN compiler

Full FORTRAN 77 ANSI X3.9-78

3.5 MB virtual address

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

Pascal compiler

General conformance to ISO 1980 draft standard

3.5 MB virtual address space

Extensive error messages

IEEE standard representation of floating point data

COBOL compiler

ANSI X3.33 1974

GSA high intermediate except for report writer and communications

Screen handling facilities

Symbolic debug

"C" language compiler

Conforms to "The C Programming Language", Kernighan/Ritchie 1978, plus recent "standard" extensions.

IEEE floating point

Communications Software

2780/3780 RJE emulation

Conforms to ANSI X3.28 subcategory 2.1, message transfer subcategories B2 and D1 (EBCDIC code transmission)

Files can be queued and transmitted automatically

Spooled printing of output

Line speed to 9600 bps

3270 bisynch emulation

Emulation of IBM 3271 control unit model 2, 3277 display station model 2, or 3275 control unit/display station model 2 terminals

Data management facilities:

ISAM

Multiple keys

Six key types: byte string, character string, packed decimal, binary, long real, and short real

Transactions with record locks and queueing

FORMS editor/runtime

Takes full advantage of Convergent PT terminals' video capability

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

Variable-length and fixed-length records

Multi-level sorts

Procedural interface from application program

Word Processing

The MiniFrame word processor is a versatile document-preparation tool that, with the PT terminal, incorporates these features:

Insert and Overtype modes of text editing

Easy cursor motion forward and backward: by character, word, line, paragraph, and page, and to beginning/end of document.

Search and Replace

Convenient Copy, Move, and Delete of text blocks

Undo of deletes

Printed characters can be underscored, underscored by word, double underscored, bold, struck-thru, superscript, subscript.

Tab types: flush left, flush right, decimal, center, and period leader.

Paragraph types: justified and ragged right

Page formatting: height, width, top and bottom margins, and left margin offset

Headers and footers with automatic page numbering

Document formatting: pitch and print wheel

Line spacing options: single, line and a half, double, and triple

Review of hyphenation and page endings with optional automatic page and decisions and widow/orphan avoidance

Print to either Diablo 630 or Line printer

Glossary function for saving/recalling phrases

Document merge with select and sort capabilities for mailing list applications

Parallel Printer Support

The MiniFrame system supports the UNIX System V printer spooler. Additional enhancements to the spooler may be made over time.

3.0   General Product Specifications

3.1   Physical Characteristics

Height: 22.5" (57.15 cm)
Width: 7.0" (17.78 cm), 10.0" (25.40 cm) including base
Depth: 23.0" (58.42 cm) (excluding 2" standoff at rear)
Weight: 45 pounds (20.45 kilograms)

3.2   Electrial - AC Power Requirements

The input voltages shall be:

NOMINAL	VOLTAGE RANGE	FREQUENCY RANGE
115 V	85-130 V RMS, 2.6 Amps	47 to 63 hz
230 V	180-260 V RMS, 1.3 Amps	47 to 63 hz

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

3.3   Ambient Temperature Range

Operating: 10° C to 40° C
Non-Operating: -40° C to 60° C

3.4   Relative Humidity Range

Operating: 20% to 80% RH, non-condensing
Non-Operating: 5% to 95% RH, non-condensing

3.5   Altitude Limitations Range

Operating: Sea Level to 10,000 feet
Non-Operating: Sea Level to 30,000 feet

3.6   Shock

Operating: 5 g
Non-Operating: 15 g

3.7   Acoustical Noise

Maximum noise level is 55 dbA as measured 3 feet away and
5 feet hight.

3.8   Temperature Rise

The overall average air temperature rise through the
equipment shall not exceed 14° C (25 ° F) above ambient.

3.9   Safety/Emissions/ESD Specifications

Meets or exceeds the following requirements"

UL 478 (EDP) and 114 (Office Equipment)
CSA 154 (EDP) and 143 (Office Equipment)
FCC Part 15, Subpart J, Class A
VDE 0806/8.81
VDE 0871/6.78
BSI 5850/1981
ESD: Convergent Technologies Specification #02-00102-00

3.10 Shipping Containers

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

Shipping Container: 33" H x 32" L x 15" W

3.11 Mean Time Between Failure (MTBF)

The following numbers are the calculated MTBF (Mean Time
Between Failure) values for the line replaceable units of
the Miniframe. The calculations are based on Military
Handbook 217D, using the parts count method. The assumption
is medium grade commercial components. For disk drives, we
have used numbers based on actual MTBF of the AWS Workstation
family.

MINIFRAME CALCULATED MTBF's

LRU	MTBF Hours
CPU	6,250
Memory Expansion	14,925
Ethernet	34,357
Floppy Drive (CDC 7768-6004)	14,666
Hard Drive (Rodime 202E)	13,429
Power Supply Module	50,000

Calculated MTBF for the Basic Configuration: 96 TPI Floppy,
20 MB Hard Disk Drive, CPU, one Memory Expansion:

2,252 Hours

MEGAFRAME:

Product

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CTIX 1.09j              99-01548        (AO-100)
    71-00672-04 - Cartridge Set    B-09-00400-01-D - ReleaseNotice
    71-00673-01 - Diagnostics Cartridge

CTOS 1.09j              99-01549        (BR-100)
    71-00674-03 - Cartridge Set    B-09-00401-01-D - ReleaseNotice
    71-00673-01 - Diagnostics Cartridge

Cobol Compiler 1.02     99-01529        (AD-100)
    74-00650 - Assy Distr.         B-09-00340-01-E - ReleaseNotice
    71-00662 - Cobol Cartridge
    71-00661 - ISAM Cartridge
    71-

Cobol Animator          99-01530        (AD-110)
    74-00601 - Assy Distr.         B-09-00341-01      ReleaseNotice
    71-00605 - Cartridge

Cobol NCG               99-01531        (AD-120)
    74-00602 - Assy Distr.         B-09-00342-01      ReleaseNotice
    71-00606 - Cartridge

Fortran 77              99-01532        (AD-150)
                                        B-09-00603-01      ReleaseNotice

Pascal                  99-01533        (AD-200)
    71-00608                            B-09-00344-01      ReleaseNotice

Basic                   99-01534        (AD-250)
                                        B-09-00345-01      ReleaseNotice

       ns              99-01545        (AM-100)
    74-00616 - Assy Distr.         B-09-00356-01      ReleaseNotice
    71-00620 - Cartridge

   /Merge               99-01546        (AM-130)
                                        B-09-00357-01      ReleaseNotice

   ISAM                 99-01547        (AM-150)
    74-00649 - Assy distr.         B-09-00358-01-C    ReleaseNotice
    71-00661 - Cartridge

   Processor            99-01542        (AT-100)
    -00613 - Assy distr.          B-09-00353-01-A    ReleaseNotice
    -00617 - Cartridge

   CTIX Spread Sheet    99-01543        (AT-200)
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     74-00614 - Assy distr.            B-09-00354-01-A    ReleaseNotice
     71-00618 - Cartridge
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CTIX 1.091                99-02005        (BO-108)
     71-00669-28 - Diskette Set      B-09-00407-01-A    ReleaseNotice

CTIX Spread Sheet         99-02009        (BT-200)
     71-00670-01 - Diskette          B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00354-01-A    Mega Rel. Not.

CTIX Forms                99-02008        (BM-100)
     71-00675-01 - Diskette          B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00356-01-A    Mega Rel. Not.

CTIX Word Processor       99-02010        (BT-100)
     71-00671-02   Diskette Set      B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00353-01-A    Mega Rel. Not.

Fortran 77                99-02012        (BD-150)
     71-00676-01   Diskette          B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00603-01      Mega Rel. Not.

Pascal                    99-02013        (BD-200)
     71-00677-01   Diskette          B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00344-01      Mega Rel. Not.

Basic                     99-0201         (BD-250)
     71-00678-01   Diskette          B-09-00407-01-A    CTIX Rel. Not.
                                      B-09-00345-01      Mega Rel. Not.
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