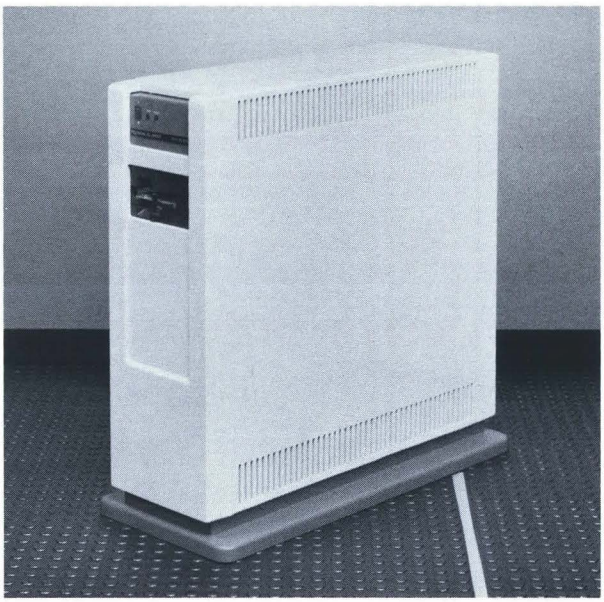
PERKIN-ELMER

EVERYWARE™

3203

Computer System

Product Overview



The 3203 System is Perkin-Elmer's low-cost entry to the Series 3200 range of compatible supermini computers. It combines the performance and flexibility of a supermini with the low price and easy installation of a supermicro.

This system satisfies the business needs of OEMs, resellers, system builders and end users. It offers unparalleled price/performance in its class.

System Highlights

- Lowest cost per user in its class
- Full multi-terminal support for 16 users
- Well suited for office, laboratory and factory environments
- Ideal for commercial, technical, industrial and network applications
- Compatible with the entire line of Series 3200 computers
- Exceptional data communications (SNA, BSC, X.25, Ethernet) support
- New I/O subsystem (SCSI)
- Industry leading memory subsystem with up to 4MB on-board
- Utilizes Perkin-Elmer's OS/32 Operating System
- Self-contained, desk-high cabinet
- Customer-installable
- Ease of operation (Automatic start-up)

The 3203 System is a member of Perkin-Elmer's EVERYWARE family of products, which offers users a broad range of compatible computers. Included in the EVERYWARE strategy is Perkin-Elmer's commitment to such industry standards as SNA and X.25. With EVERYWARE systems, software developed on one system can be ported up and down the product line and connect to or coexist with other systems in environments where similar standards are employed. Profitability increases in virtually all application areas through:

–rapid implementation
–easy integration
–investment protection
–low life-cycle costs

resulting in increased profitability and client satisfaction.

Product Description

The 3203 System is designed for the multiuser environment in commercial, technical, and industrial applications where ease of installation and ease of operation are important. The system builder is offered a powerful low-cost system for developing software and configuration flexibility to tailor the system to meet application needs. With hardware expansion, software portability and data communications links, the 3203 System provides an economic approach to handling a myriad of complex tasks.

As a multiuser system, the 3203 is configured to support up to 16 communications ports, with each user being able to process separate tasks and programs simultaneously. The system builder has the capability of user expansion within the same system, thus maximizing system economy and throughput effectiveness.

The basic system configuration consists of:

- 0.5MB on-board main memory
- Eight communications ports provided by the Multi-Peripheral Controller (MPC)
- Parallel printer port also provided by MPC
- 5.25" Winchester hard disk drive–51MB or 85MB unformatted
- 0.25" streaming cartridge tape drive for backup–60MB capacity

Product Description (Continued)

- Single, desk-high cabinet and power supply/fan package

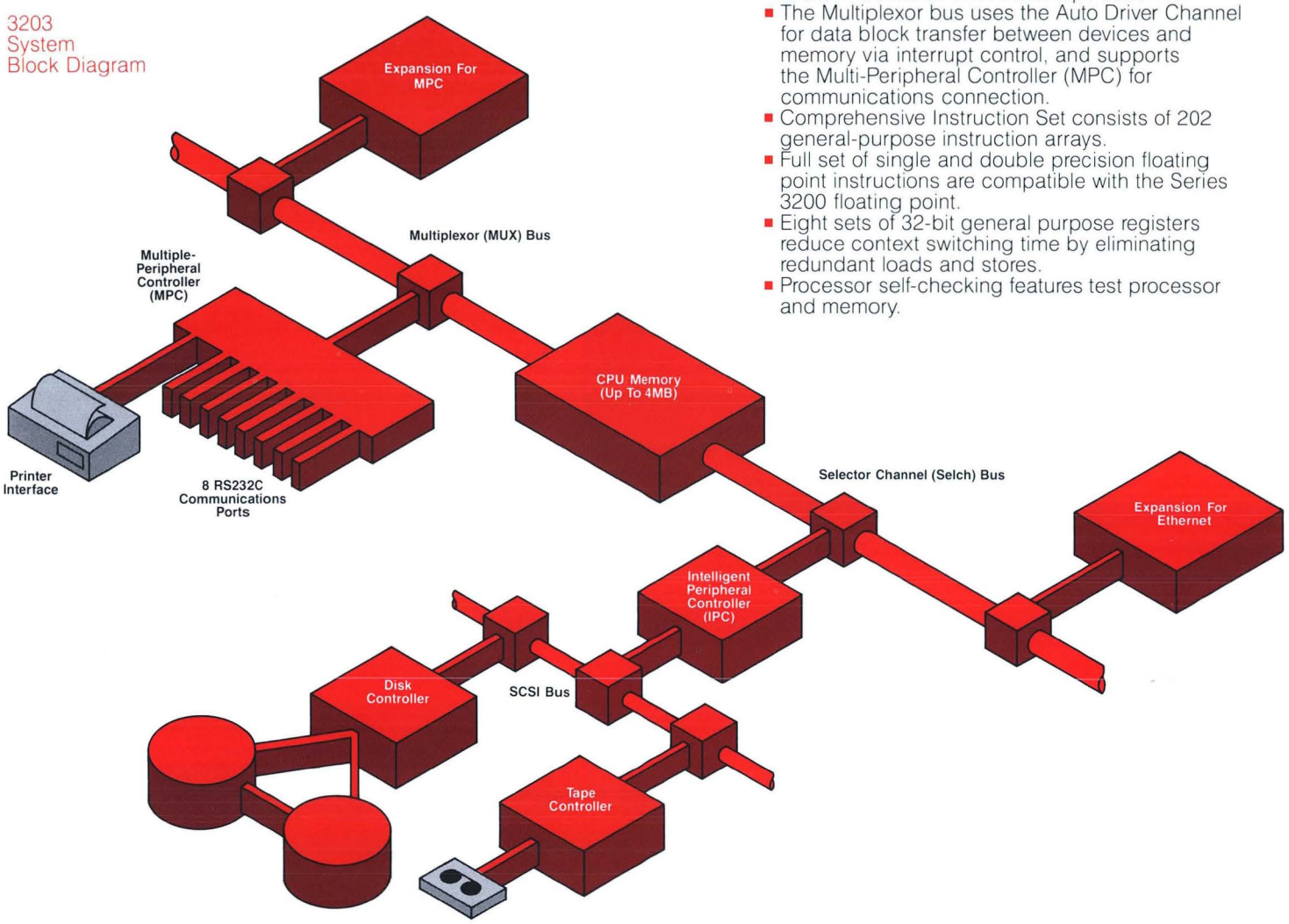
Optional Configuration:
- –Eight additional communications ports (16 ports total)
- –On-board memory expansion to 4MB
- –Additional 5.25" Winchester hard disk drive 51MB or 85MB(2 disks maximum)
- –Ethernet Data Link Controller (EDLC)
- –Universal Logic Interface (ULI)

3203 Processor

The 3203 processor is derived from Perkin-Elmer's proven 3205 processor and offers the full range of Series 3200 facilities described below:

- Compatibility with Series 3200 systems allows for easy software transfer to and from even more powerful systems.
- Dual bus architecture separates slow I/O traffic onto the Multiplexor (MUX) bus, and faster traffic onto the DMA Selector Channel bus. This ensures optimal processor and I/O performance.
- DMA Selector Channel supports the Intelligent Peripheral Controller (IPC), which is the interface to the Winchester drives and tape streamer.
- The Multiplexor bus uses the Auto Driver Channel for data block transfer between devices and memory via interrupt control, and supports the Multi-Peripheral Controller (MPC) for communications connection.
- Comprehensive Instruction Set consists of 202 general-purpose instruction arrays.
- Full set of single and double precision floating point instructions are compatible with the Series 3200 floating point.
- Eight sets of 32-bit general purpose registers reduce context switching time by eliminating redundant loads and stores.
- Processor self-checking features test processor and memory.

3203 System Block Diagram



Memory Subsystem

The 3203 memory system uses state-of-the-art memory chip packaging to achieve an industry first–a full 32-bit processor with up to 4MB of main memory on a single board. This memory chip design conserves system space and allows large application programs to be run on a compact machine. Details of the memory system are listed below:

- Basic system memory consists of 0.5MB of on-board memory. Memory expansion to 1MB, 2MB and a maximum of 4MB can be added to meet user specifications.
- 0.5MB and 1MB memory use 64K RAMS, while 2MB and 4MB memory use 256K RAMS, each housed in Single In-line Packages.
- Memory Manager provides memory segmentation, relocation and protection under operating system control. This function translates a program address into a physical memory address and ensures that the task is operating in a fully protected environment.
- Error Correcting Code detects and corrects single-bit errors via a modified Hamming Code. All double-bit and many multi-bit errors are detected.
- Error Logging records data that identifies error trends. It is used to isolate faulty memory chips before they effect memory system reliability.

I/O Subsystem

The I/O Subsystem incorporates the latest in peripheral devices and access methods:

- 51MB and 85MB 5.25" Winchester hard disks
- 0.25" streaming cartridge tape (60MB)
- Small Computer System Interface (SCSI)

It also provides expansion for disk storage, data communications and custom interfaces.

Multi-Peripheral Controller (MPC)

The Multi-Peripheral Controller performs the system control and low speed I/O functions. The MPC provides an efficient interface for bootloaders, clocks and watchdog timers, as well as communications and printer ports. The MPC utilizes an M68000 microprocessor and provides the following:

- Eight RS-232C full-duplex communications ports at speeds of 50-19200 baud. Modem support is offered on all lines. Each pair of lines may be used synchronously, or asynchronously with a maximum of 4 synchronous lines.
- Loader Storage Unit (LSU) performs confidence tests on the processor and memory, before automatically loading the chosen operating system.
- Parallel Line Printer Port provides the capability of supporting printers with parallel interfaces from 120 characters per second to 1200 lines per minute.

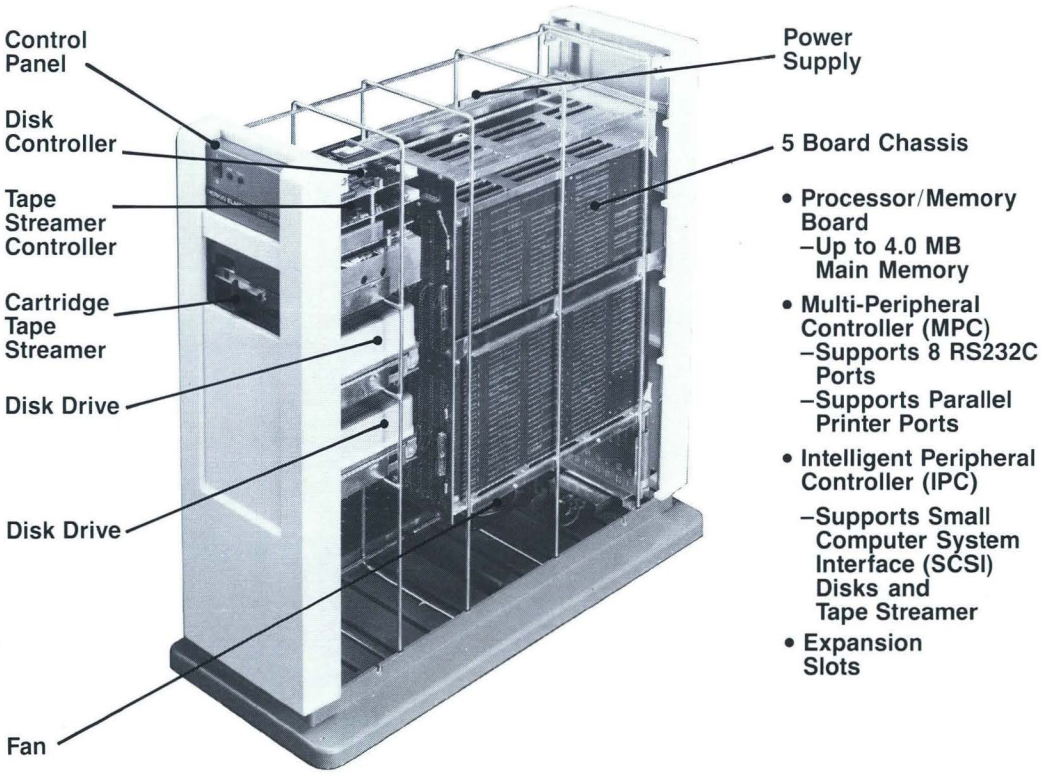
Intelligent Peripheral Controller (IPC)

The Intelligent Peripheral Controller is a full-function controller which interfaces the 3203 System to the Small Computer System Interface (SCSI). The SCSI, an industry standard interface, transfers data between the 0.25" streaming cartridge tape, 5.25" disk drives and the 3203 to maximize throughput effectiveness. The IPC uses its own operating system, drivers and utilities to provide autonomous peripheral operation, optimized to the SCSI, and to minimize processor interaction.

The IPC, utilizing an M68000 microprocessor, executes processor commands autonomously and provides the following capabilities:

- Industry standard Small Computer System Interface (SCSI) bus per ANSI X3T9.2
  - –8-bit bi-directional bus with 1.5MB/sec peak transfer rate
  - –Bus support for a variety of new disk and tape devices from one controller
- Multitasking Controller
  - –Supports CPU commands and DMA access
  - –Supports peripherals aribitration, connect and disconnect
- Up to 128KB of RAM memory for intelligent, outboard peripheral handling giving enhanced performance
- On-line formatting of disk drives and off-line back-up
- System Integrity ensured by self-test feature

Inside The 3203 System



Peripherals

5.25" Disk Drives

There are two high-speed Winchester-type hard disk drives offered for the 3203 System. Unformatted capacity of the disks is 51MB or 85MB. Each disk has a seek time of 30ms and a peak transfer rate of 0.625MB/sec. One or two disks may be housed in the 3203 cabinet in any combination on the IPC, providing a storage capacity of up to 170MB.

0.25" Streaming Cartridge Tape Drive

The streaming tape consists of the tape drive and a removable tape cartridge capable of handling 60MB of formatted data.

Printer Support

The MPC provides one parallel line printer interface which can support character printers up to 180 characters per second and line printers up to 1200 lines per minute.

6100 and 6312 Video Display Units (VDUs)

The Perkin-Elmer 6100 and 6312 desk-top, video display units are the recommended terminals for the 3203 System. Each is self-contained and consists of a display, detachable keyboard, power supply, printer port and modem port for connecting to a computer system. All displayable characters are written into local memory and displayed on the screen simultaneously.

Power and Packaging

The 3203 is ideally suited for office environments, such as businesses, professional services or large departments. It is designed to provide the system builder and end-user with the following conveniences:

- Desk-high cabinet assimilates easily with office furniture
- Self-contained peripherals within a single cabinet
- Cool operation (approximately 1KW)
- Quiet operation (less than 50Db)
- Standard wall socket used for powering system, which provides ease of installation and location selection
- Low electrical consumption–maximum 12 amps @115VAC or 6 amps @230VAC

Reliability/ Maintainability

The 3203 System continues to reinforce Perkin-Elmer's reputation for producing the most reliable 32-bit processors in the marketplace today. Features that provide the highest kind of reliability and maintainability have been designed into all aspects of component production and continue with one of the most extensive testing procedures in the industry. These features include:

- Self-Test–When power is applied to the system, the basic memory and processor are automatically tested. Additional checks are performed when the operating system is loaded.
- Register Parity–Parity is provided on all user-level registers in the system to ensure integrity of data.
- Reduced Component Count–Use of VLSI and LSI technology permits higher density packaging on each board and reduces the number of board interconnects.
- Illegal Instruction Trap–All instruction operation codes are tested for validity prior to execution. Invalid instructions are trapped and execution is prevented. An illegal instruction interrupt is generated.
- Error Checking and Correction (ECC)–This feature detects and corrects all single-bit errors, detects all double-bit errors, and detects some multiple-bit errors.
- Memory Error Logging–The error log is a journal of memory errors that have been detected by the ECC and logged under the operating system. The contents of the journal can be examined at any time in the form of a report. Suspected problems in memory can be easily detected and repaired, eliminating costly downtime.
- Diagnostics–Multimedia diagnostic programs for the processor, memory, and all peripherals are available for local and remote operation.
- Remote Diagnostics–Provides the ability to remotely demonstrate a hardware and software problem to a highly-trained support engineer located in one of Perkin-Elmer's worldwide service centers. The Remote Service Center can completely exercise and diagnose the system.
- Product Testing–An extensive automated test process includes testing through the full operational temperature range.

Software Environments

Perkin-Elmer's software family includes an extensive library of application tools and supports a wide range of specialized third party software for the needs of industry, commerce, government/civil agencies, professional services and technical operations.

The 3203 System will support environments such as:

- Distributed business systems
- Technical workstations
- Network integration
- Decision support
- Timesharing

As part of the EVERYWARE strategy, Perkin-Elmer's focus on software is to provide the most versatile support available for applications such as financial management, database management, transaction processing, office automation, inventory control and program development. System builders are able to integrate EVERYWARE systems with a variety of hardware and software products to provide economic advantages and solutions to a wide area of business problems.

Operating System

OS/32 is Perkin-Elmer's own multi-user, multi-tasking, real-time operating system for supporting software environments such as the Multi-Terminal Monitor (MTM) for timesharing, Reliance PLUS for transaction processing and relational database management and PENnet Plus, BSC or SNA for data communications. OS/32 assists application programmers in all phases of system development and operation support. Additional features are:

- –Task and memory management
- –Simplified user interfacing
- –File management
- –Spooling
- –Data communications

Languages

The 3203 System supports applications written in a wide range of languages including:

C
Assembler
FORTRAN VII
COBOL
Pascal
BASIC
RPG II
Coral 66

Database Management

The 3203 System is naturally suited for commercial and technical applications where transaction processing/database management systems (DBMS) are important.

The 3203 System supports Perkin-Elmer's high-performance Reliance PLUS transaction processing/relational DBMS environment under OS/32. The Reliance PLUS environment includes Fourth Generation Solution Software and a set of utilities called Immediate Reliance, which fully automates the installation, definition and upgrading of the software package.

Reliance PLUS can be effectively used in distributed or centralized applications, and offers the operational simplicity required by today's computer users.

A summary of the facilities offered by Reliance PLUS is given below:

Interactive data entry
Ad hoc queries
Report Writer
Batch and interactive
Database load/unload
Automatic On-line reorganization
On-line Database Backup
Menu-driven
Data Dictionary
Data security
User security
Language support — COBOL, FORTRAN VII, Pascal, C

Data Communications

The 3203 System offers extensive facilities for communication with other local or remote systems.

PENnet Plus, Perkin-Elmer's Open Systems Network, provides the ISO compliant features for:

- –X.25 wide area networking
- –X.29 remote terminal support
- –Ethernet (IEEE 802.3) local networking

Perkin-Elmer continues product development in line with the ISO ratification of the 7+ layer model.

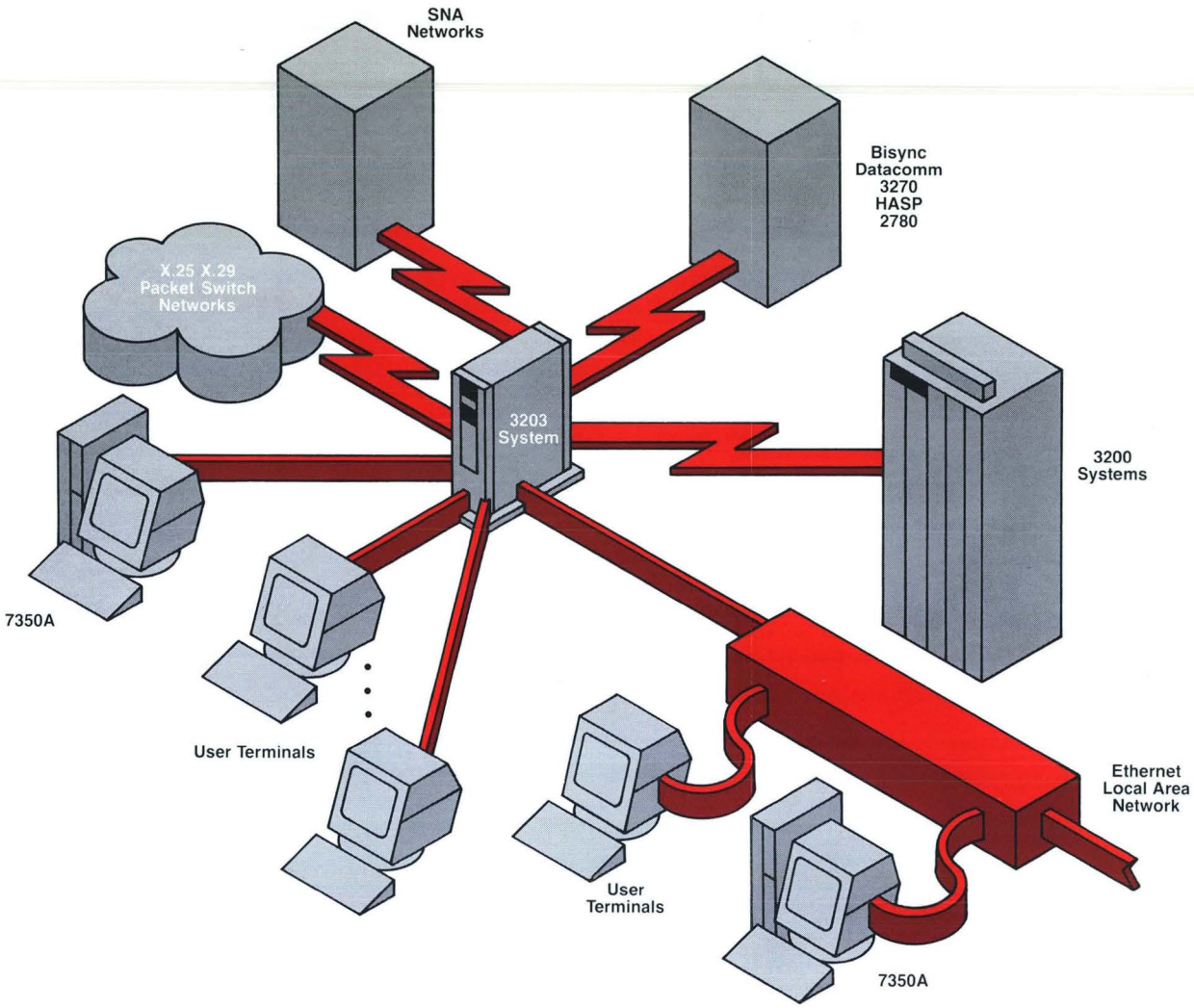
In conjunction with Reliance PLUS, the NEM/32 electronic mail system provides local and remote office connections.

Comprehensive IBM network support is offered for SNA and Bisync operations as follows:

- SNA facilities are among the most comprehensive available:
  - –SNA/RJE
  - –SNA/3270 Emulation
  - –SNA/3270 Support
  - –SNA/HCF
  - –SNA/DSX
- Bisync operations are supported for:
  - –2780/3780
  - –HASP
  - –3270 Emulation
  - –3270 Support

The Data Communications products, in conjunction with Reliance PLUS provide connectivity to the outside world in a variety of ways to facilitate a distributed processing environment.

Network Options



Third Party Products

Agreements have been established with both hardware and software suppliers whose products complement Perkin-Elmer's minicomputer and microcomputer systems for industry-specific applications. In Perkin-Elmer's third party program, START*, a variety of options are offered to vendors for jointly promoting their products.

START products are a further enhancement to an investment with Perkin-Elmer.

Solutions to Applications Requirements... Today (START)

Specifications

Technology

Processor: VLSI, LSI, MSI
Memory: LSI
Multiperipheral Controller: VLSI, LSI, MSI
Intelligent Peripheral Controller: VLSI, LSI, MSI

Processor

General Registers: 8 sets of 16, 32 bits wide
Floating Point Registers: 8 single-precision floating point registers, 32 bits wide; 8 double-precision floating point registers, 64 bits wide
User Instructions: 202 instructions including floating point, commercial and data handling

Address Range: 4MB
Addressing Modes: Direct, program relative, single and double indexing
Micro-Instruction Word Size: 64 bits
Micro-Instruction Cycle Time: 200ns
Control Store Size: 64-bit x 4K words

Main Memory

Types: 64K Dynamic RAM, 256K Dynamic RAM
Correction Mechanism: ECC and Error logging
Access Time: 300ns
Cycle Time: 400ns
Minimum Size: 512KB
Maximum Size: 4MB

Input/Output

Multiplexor Bus
Device Addresses: 1023
Maximum Transfer Rate: 334KB/sec
Priority: 1023 hardware vectored, positional priorities
Interrupt Levels: One

Selector Channel Bus
Maximum Transfer Rate: 1.5 MB/sec.
Maximum Number of Controllers: 3 independent device controllers
Addressing Capability: 16MB
Data Transfer Formats: Bytes (8 bits), Halfwords (16 bits)
Memory Access Method: Memory Cycle Stealing

Multiperipheral Controller
Clock types:
Universal Clock

Precision Interval Clock
Accuracy: +0.1% Crystal Controlled Oscillator
Resolution: 1 microsecond, 10 microseconds, 100 microseconds, 1 millisecond
Interval: 1 millisecond to 4095 milliseconds

AC Line Frequency:
Interval: 8.33 milliseconds on 60Hz line
: 10 milliseconds on 50Hz line

Line Printer Port:
Centronics-type, parallel interface with loopback for self-check
Devices Supported:
120 cps to 180 cps Matrix Printers
300 lpm to 1200 lpm Band Printers
(64 character set 132 column point operation)

Communications Capability:
Number of Lines: Eight full duplex, software selectable for asynchronous or synchronous operation
Communications Line Interface: RS-232C
Data Rate: 50 to 19.2K Baud synchronous or asynchronous, independently selectable baud rate
Character Format: Programmable 5,6,7, or 8 bits
Parity: Programmable, odd, even, or none
Modem Control: Programmable control for asynchronous or synchronous operation
Communications Protocols:
Asynchronous
Synchronous–binary synchronous, zero-bit insertion/deletion (ZBID) and flag insertion/deletion as required for bit-oriented protocols, such as SDLC, HDLC and ADCCP

Intelligent Peripheral Controller
Interfaces with DMA Port/Selector Channel
Connects 3203 System to Small Computer System Interface (SCSI)
Supports I/O to: 5.25" Winchester-type hard disk and 0.25" Streaming Cartridge Tape
Later implementation can support up to six SCSI/device controllers
Based on M68000 to off-load 3200 processor
Image copying between disks and tape
On-line formatting of disk drive
Partial on-board device drivers
On-board Diagnostics

SCSI Disk Controller
Connects to SCSI bus
Supports one or two 5.25" disk devices

SCSI Tape Controller
Connects to SCSI bus
Supports 0.25" Streaming Cartridge Tape Device

Magnetic Storage

5.25" Disk Drive	51MB	85MB
Storage Capacity:		
Unformatted	51.4MB	85.0MB
Formatted (32 x 256 bytes)	40.3MB	66.9MB
Data Tracks	4,935	8,162
Data Cylinders	987	1,166
Disks	3	4
Data Surfaces	5	7
Bytes per Track:		
Unformatted	10,416	10,416
Formatted	8,192	8,192
Sector Format (Bytes)	32 x 256	32 x 256
Access Time:		
Track to Track	5ms	5ms
Average	30ms	30ms
Maximum	65ms	65ms
Average Latency Time	8.3ms	8.3ms
Data Transfer Rate	06.25MB/sec	0.625MB/sec.

0.25" Streaming Tape Cartridge Drive (600 ft.)

Formatted Capacity	60MB
Recording Tracks	9 (Serpentine)
Density	8,000 bits/inch
Transfer Rates	86.7Kbytes/sec.
Cartridge Type	3M DC600A

Power Subsystem

Regulation: off-line switching using pulse width modulation
Frequency: 23 KHz
Protection: Overvoltage, overcurrent, short circuit

AC Power Requirement (Maximum)

AC Voltage	90-132 VAC	180-264 VAC
Frequency	47-63Hz	47-63Hz
	3 wire	3 wire
	Single Phase	Single Phase
Input Current (Max.)	12 amps	6 amps
Circuit Breaker Rating	15 amps	15 amps

Physical Characteristics

Dimensions:			
Width	9" (22.9 cm)	Height	28" (71.4 cm)
Depth	28" (71.4 cm)	Weight	Approximately 70 lbs (32 Kg)

Environment

Operational Temperature: 15°C-30°C (59°F-86°F)
Rate of Temperature Change: 5°F (2.5°C)/hour
Operational Humidity: 20%-80% RH (non-condensing)
Rate of Humidity Change: 5% RH/hour
Acoustic Noise: Less than 50Db

Standards

The 3203 System has been designed to meet the electronic data processing safety standards of UL, CSA, IEC and VDE. This equipment complies with requirements in Part 15 of FCC rules for class A computing devices.

Product Numbers

Systems

M33-800 Model 3203 System including a 32-bit processor, 0.5MB memory, 51MB fixed disk, 8 RS232C ports, printer port, 60MB streaming cartridge tape, user manual and power supply for 115V, 60Hz.
M33-801 Same as M33-800, except 230V, 50Hz power supply.
M33-802 Same as M33-800 with 85MB fixed disk in place of 51MB.
M33-803 Same as M33-801 with 85MB fixed disk in place of 51MB.
M33-804 Same as M33-800, with 1MB memory in place of .5MB.
M33-805 Same as M33-801, with 1MB memory in place of .5MB.
M33-806 Same as M33-802, with 1MB memory in place of .5MB.
M33-807 Same as M33-803, with 1MB memory in place of .5MB.
M33-808 Same as M33-800, with 2MB memory in place of .5MB.
M33-809 Same as M33-801, with 2MB memory in place of .5MB.
M33-810 Same as M33-802, with 4MB memory in place of .5MB.
M33-811 Same as M33-803, with 4MB memory in place of .5MB.
M33-812 Same as M33-800, with 4MB memory in place of .5MB.
M33-813 Same as M33-801, with 4MB memory in place of .5MB.
M33-814 Same as M33-802, with 4MB memory in place of .5MB.
M33-815 Same as M33-803, with 4MB memory in place of .5MB.

Memory Expansion

M33-816 Expansion memory .5MB to 1 MB.
M33-817 Expansion memory 1MB to 2MB.
M33-818 Expansion memory 2MB to 4MB.

Diagnostics

M33-820 Model 3203 diagnostics set.

Upgrade Options

M33-821 51MB Expansion disk.
M33-822 85MB Expansion disk.
M33-823 Expansion MPC (8 ports).

Related Documentation

M33-819 Model 3203 service manual set.
M33-824 Model 3203 owners manual.

The information contained herein is intended to be a general description and is subject to change with product enhancement.

PERKIN-ELMER

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