

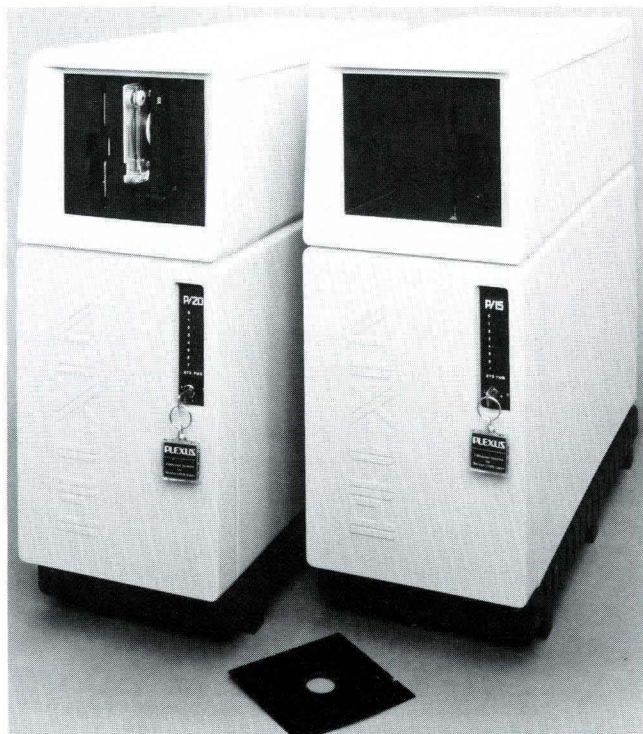
The Plexus P/15 and P/20 are powerful 16/32-bit super microcomputers specifically designed for the popular UNIX operating system.

The P/15 supports 8 users and the P/20 with the addition of the Intelligent Communications Processor (ICP) extends this configurability to 16 users. Both are ideal for applications that demand high processor performance and fast terminal response. They offer superior performance, reliability, and industry-standard hardware and software interfaces for maximum OEM flexibility.

Both systems employ a powerful microprocessor design featuring two MC68010 microprocessors, a large main memory, and a wide selection of industry-standard 5.25-inch peripherals with high speed intelligent controllers. This design closely links the multiprocessor architecture with a tuned implementation of the UNIX operating system to ensure maximum multiuser performance.

For enhanced OEM flexibility, the systems use the industry standard Small Computer Systems Interface (SCSI) for connecting peripheral devices. This allows them to be configured with a wide range of Winchester disks, floppy disks and cartridge tape drives.

The P/15 and P/20 run Sys5.2, the Plexus implementation of UNIX system V release 2, along with many industry-standard programming languages, making them compatible with a wide variety of existing applications. They are software compatible with all other members of the Plexus family allowing a smooth upgrade path as computing requirements expand.



## FEATURES

### Performance

- Multiprocessor architecture
- High performance 68010 processors
- Up to 2 Mbytes of main memory
- Dedicated 68010 I/O processor
- Full SCSI disk interface
- Up to 152 Mbytes of Winchester disk storage
- Floppy disk standard
- Streaming cartridge tape optional

### Reliability

- Parity error control in main memory
- Error checking and correcting disk memory
- Extensive use of VLSI circuitry
- 10,000-hour MTBF disk drives
- UNIX Sys5.2 operating system
- Modular design for easy service

### Compatible Hardware

- Industry-standard peripheral interfaces
- Industry-standard communications

### Standard Software

- Sys5.2 runtime operating system
- Industry-standard languages

### Designed for the Office

- Quiet
- Compact size, office compatible
- Uses standard AC power

## MULTIPROCESSOR DESIGN

The high performance of the machines is made possible by a special multiprocessor architecture optimized for the UNIX operating system.

The architecture links a powerful 16/32-bit job processor with a second 16/32-bit I/O processor of equal power to remove I/O processing overhead from the job processor. During system operation, the job processor performs application processing and operating system functions while the second processor supervises all disk and magnetic tape I/O as well as handling the transfer of all data through the serial I/O ports.

## PERFORMANCE PERIPHERALS

### SCSI Peripheral Bus

The P/15 and P/20 incorporate a full implementation of the state-of-the-art Small Computer Systems Interface as the peripheral bus in the system. This ANSI standard bus is modeled after similar implementations that are widely used in large mainframe computers. The SCSI bus allows attachment of a wide variety of mass storage devices via intelligent full buffered controllers that interface each device to the SCSI bus. Each device controller gains control of the SCSI

bus when it wishes to transfer data. The data is transferred to or from main memory via a DMA operation on the I/O bus. This architecture insures optimum use of all devices on the bus regardless of their speed. In addition to its performance advantages, SCSI provides device independence by allowing the Job and I/O processors to address the peripherals with standard high-level commands.

### Fast, High-Capacity Disk Drives

The disk subsystems consist of one or two 5.25-inch Winchester disk drives. The drives can be chosen from a family with a wide range of capacities and access times.

### Cartridge Tape Drive

When high speed capacity disk backup is required, the system can be configured with a 45 Mbyte streaming tape drive. The cartridge tape can be used in place of, or in addition to, the standard floppy disk unit.

### BUILT-IN RELIABILITY

The P/15 and P/20 design addresses the most common of computer system failure and employs safeguards against loss of data insuring maximum system reliability.

### RAM Memory and Disk

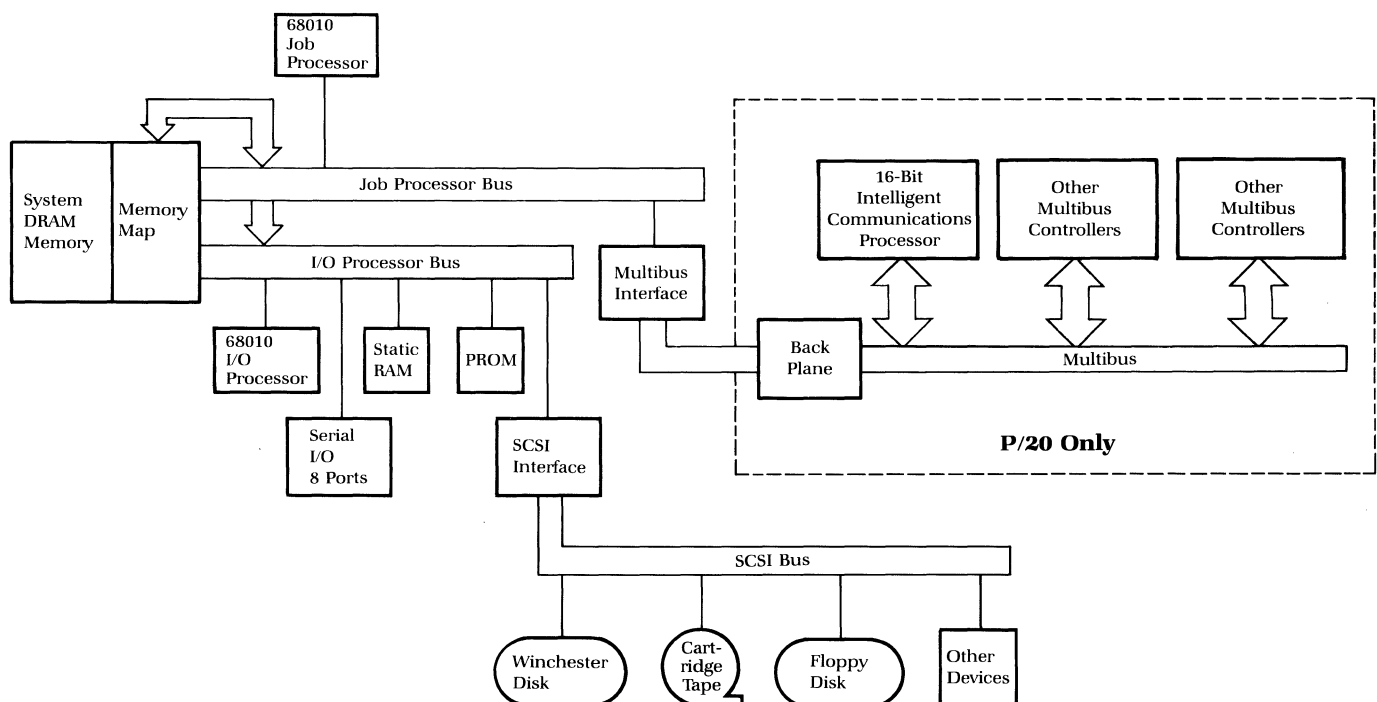
The system utilizes high-reliability hermetically sealed memory chips for maximum MTBF of the main memory subsystem. Parity error control consisting of one bit for each byte of main memory insures detection of single-bit data errors. The disk controller protects the data integrity of each sector with a 32-bit ECC (error correction code) allowing data errors up to 11 bits in length to be detected and corrected. This correction is handled automatically by the controller such that only error-free data reaches main memory.

### Temperature and Power

The machine also allows the connection of an Uninterruptible Power Supply (UPS) between itself and the AC main power. The UPS allows normal operation to continue during brief power outages and provides for an orderly shutdown during lengthy power failures.

If the internal temperature should pass a predetermined threshold, an over-temperature sensing circuit alerts the job processor and an orderly shutdown may be initiated to save all data before a critical temperature is reached and a system failure results.

**P/15-P/20 System Architecture**



### VLSI and LSI Circuitry

Extensive use is made of state-of-the-art VLSI and LSI circuits to minimize the number of components used, resulting in an inherently more reliable system. In addition, the cabinet is designed to channel cooling air to all parts of the system enclosure thus minimizing component heating and maximizing component life.

### Self Test, Easy Repair

The P/15 and P/20 subject themselves to a comprehensive set of diagnostics every time they are powered on. These tests exercise every major subsystem including both processors, main memory, and all peripheral device paths.

Repair of the machines is facilitated by modular design and construction that begins with the easy access cover design that allows removal of the entire system outside cover with only two screws. All system modules, including the single-board of systems, are easily accessible for testing or replacement.

### DESIGNED FOR THE OFFICE

The P/15 and P/20 are designed for ease of integration into the office environment. The dimensions of the system enclosures allow placement of the system in a variety of locations which include both under work tables and adjacent to desks. The systems have been engineered to emit very little sound so as to minimize the impact on office environment sound levels. The enclosure design is modern and the neutral colors blend well with any office decor.

### SPECIFICATIONS

#### Job Processor

Processor	16/32-bit MC68010
Performance features	12.5 MHz CPU clock Operates with no wait states Shared high speed memory map
User Address space	8 Mbytes
Floating-point	Conforms to proposed IEEE standard
Clock/calendar	Battery-powered
Self-test	Standard, via on-board PROMs

#### Memory

Capacity	Up to 2 Mbytes
Word size	16 bits plus 2 parity bits
Access	Job processor bus or I/O processor bus
Technology	256K-bit DRAM
Cycle time	320 nsec

#### I/O Processor

Processor	16/32-bit MC68010
Performance features	12.5 MHz CPU clock
PROM memory	64 Kbytes
Static RAM	16 Kbytes
Address space	8 Mbytes
Self-test	Standard, via on-board PROM

#### P/15-P/20 Communications Standard

Serial ports	8 (full-duplex) standard; all RS-232C 19.2 Kbaud rate
--------------	---

#### P/20 I/O Bus

Bus Standard	Multibus (IEEE 796)
Available Slots	3 (max.)

#### P/20 Communications Option

Intelligence	16-bit processor
Memory	32 Kbytes RAM (with parity); 16Kbytes PROM
Serial ports	8 (full duplex); RS232C interface; 19.2 Kbaud rate (max.); modem support on all ports; hardware support for async and bisync protocols
Parallel ports	1 Centronics-type interface
Configurability	ICP (max.)

#### SCSI Interface P/15-P/20

Subsystem interface	SCSI (ANSI x 3T9.2/822)
Major functions	Error checking and recovery; full SCSI interface functions, multiple channel DMA controller

#### Winchester Disk Subsystem

Drive interface	ST506 compatible
Host interface	SCSI
Configurability	2 drives per system (maximum)
Subsystem capacity	152Mb (maximum)
Disk drive options:	
Formatted capacity (Mb)	12* 24 28 49 76
Positioning time (msec)	83 83 33 33 33
Rotational latency (msec)	8.3 8.3 8.3 8.3 8.3
Transfer rate	625 Kbytes/sec

\* P/15 only

**SPECIFICATIONS (cont.)****Floppy Disk Subsystem**

Disk drive	5.25-in. floppy 96 tracks per inch Double sided double density
Drive interface	SA451 compatible
Host interface	SCSI
Configurability	1 per system
Formatted capacity	640Kbyte
Positioning time (msec)	94

**Tape Subsystem**

Tape drive	Streaming cartridge (3M style)
Recording density	8000 bpi, 9 tracks
Streaming speed	90 ips
Formatted capacity	45 Mbytes
Subsystem interface	SCSI
Controller interface	QIC-36
Recording format	QIC-11
Configurability	1 drive per system

**AC Power Required**    **115 VAC**        **230 VAC**

Line voltage	115 VAC ±10%	230 VAC ±10%
Line frequency	60 Hz ±5%	50 Hz ±5%
Current (max.)		

**PHYSICAL CHARACTERISTICS****Overall Dimensions**        **in.**        **cm.**

Width	9.75	25
Depth	24	61
Height	24	61

**Other Characteristics**

Weight	70 lbs.	32 Kg
Audible noise	< 50db (A)	
Heat dissipation	1710 BTU/hr 431 Kcal/hr	
Operating	41F-95F degrees	
Temperature range	5C-35C degrees	
Relative humidity	up to 90% non- condensing	
Regulatory approvals	UL, CSA, FCC, TUV, VDE	
Altitude	up to 10,000 feet	
Storage temperature	-40F-149F degrees	
range	-4°C-85C degrees	

UNIX is a trademark of AT&T Bell Laboratories.  
Specifications subject to change.  
Plexus is a trademark of Plexus Computers, Inc.