Three Rivers Computer

Three Rivers
Computer Corporation
160 North Craig St.
Pittsburgh, Pennsylvania 15213
412/621-6250

Thank you for your interest in PERQ, Three Rivers' personal computer for professionals. Enclosed is a PERQ brochure and price list for your evaluation. Let me emphasize a few key points:

- PERQ is built around a bipolar microprogrammed processor designed by Three Rivers. The CPU's native instruction set is P-Code, and PERQ can execute one million P-Codes per second.

- PERQ's 32 bit virtual address frees you from the small address space problems of contemporary micros and minis. Its 256 K byte memory gives you a lot of room to run large programs without excessive swapping.

- PERQ has a built in high resolution graphics display which can portray multiple font, proportionally spaced characters as well as crisp, high density graphics--even halftone pictures.

- PERQ systems can be interconnected on Three Rivers' Packet Stream Network, which allows 10 megabit per second communications over a single coaxial cable, connecting up to 64 PERQ workstations.

Finally, let me assure you that Three Rivers Computer Corporation is ready to support you should you decide to purchase PERQ. We are so convinced that PERQ is a solidly built, reliable system, that we offer a <u>one year</u> warranty. Nationwide installation and on-site maintenance service is available, as well as training courses, hotline service, software support and custom hardware/software design and development.

If you have any other questions about PERQ, please contact us. We are certain you will conclude that PERQ is a landmark computer system.

Sincerely,

Robert G. Spuntak
Sales Engineer

di

Enclosures: PERQ
              PERQ-PL

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PERQ PRICING LIST

Basic System Including:

- CPU

- 256K Byte Memory

- 12M Byte Disk

- 768 x 1024 Graphics Display

- Keyboard, Pointer

- RS-232, GPIB Interface

|	Single Unit Price*	Discount Class
- Speech Synthesizer		
- PASCAL Software (PRQ-CPU-001-A)	$19,500	1
10M Bit Network Option (PRQ-NET-001-A)	2,000	1
1M Byte Floppy Disk Option (PRQ-FLP-001-A)	2,000	2
24M Byte Disk Option (PRQ-DSK-002-A)	1,500	2
Memory Parity Option (PRQ-MPR-001-A)	500	1
4K Writable Control Store Option (PRQ-WCS-001-A)	3,000	1

Discount Schedule

QTY.	Class 1	Class 2
1	0%	0%
2-4	5%	0%
5-9	10%	10%
10-24	15%	10%
25-49	25%	15%
50-99	30%	15%
100	35%	20%

*Prices subject to change without notice.

PERQ

A Landmark Computer System

Three Rivers Computer

PERQ

A Complete Single User Workstation
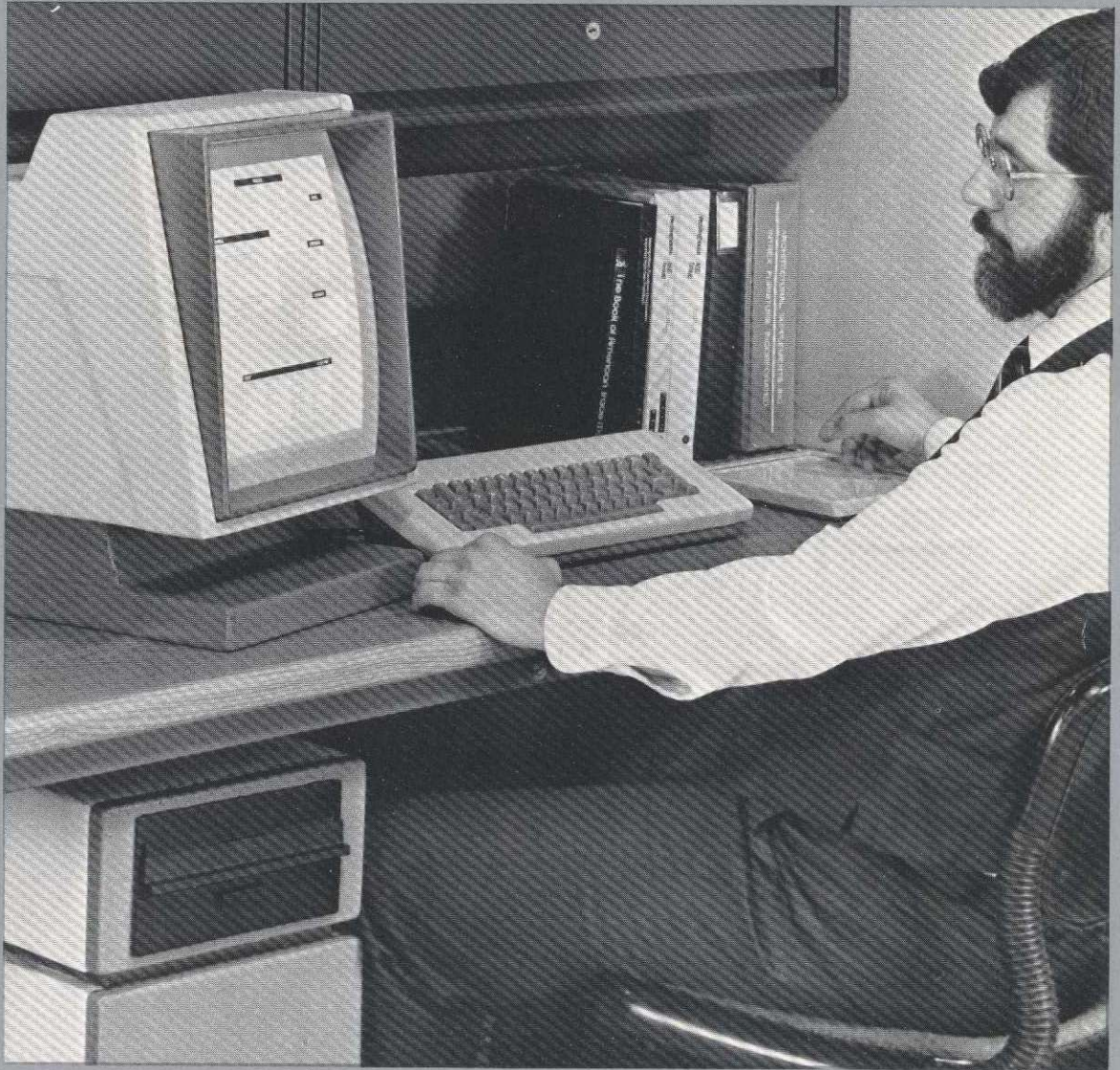
With

- [ ] **Microprogrammed Processor with language directed Architecture**
- [ ] **256K byte MOS memory, expandable to 1 megabyte**

- [ ] **12M byte rigid disk**
- [ ] **Interactive Graphics Display**
- [ ] **10M bit packet broadcasting network**

- [ ] **Keyboard and Pointer**
- [ ] **RS-232 and GPIB (IEEE-488) interfaces**
- [ ] **Speech Output**
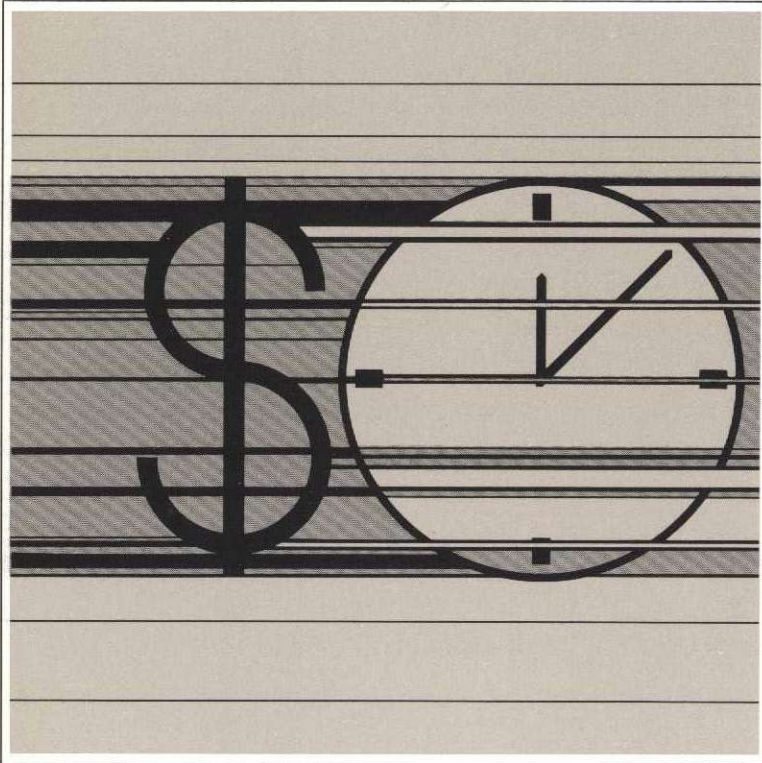
Time Sharing Alternative

Intelligent Terminal

PERQ provides all the benefits of a time shared mainframe without the drawbacks. For about the same cost per user, each user gets a very powerful CPU, a minimum of a quarter megabyte of memory with a big virtual address space, a high resolution video display with full graphics capabilities, a keyboard, and a large capacity rigid disk—integrated into a complete system right at his desk. PERQ has consistent, rapid response time, unaffected by other users' load. System reliability is increased because a failure in one workstation does not affect other

users. A high speed network accesses shared resources such as printers, tape drives, and distributed file systems as if they were local.

And because PERQ workstations provide computing resources on a per person basis, installations can be expanded incrementally.

So, if your response time suffers during prime time, if your users are demanding improved facilities, or if you are seriously considering any new time sharing system, let Three Rivers show you the advantages of PERQ.
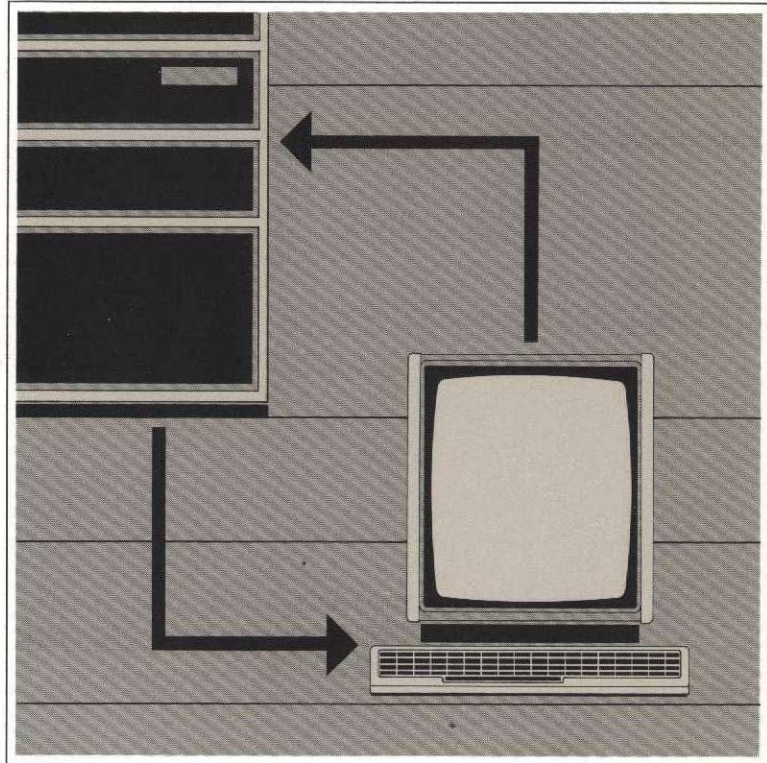
PERQ as an intelligent terminal can stretch your existing system's capabilities. Many of the cycles on your mainframe are used in editors, command processors and debuggers, with very little time spent on the large number crunching problems your computer was designed for. By off-loading many common functions into PERQ, which has been specifically designed to excel at these interactive tasks, you can extend the viability of your current installation.

In addition to prolonging the lifetime of your mainframe, PERQ gives you the capabilities of distributed processing, interactive graphics, online document generation and electronic mail facilities.

If you are looking for a graceful transition from 1960 system architecture to 1980 computing, let PERQ intelligent terminals breathe new life into your existing facilities.

Three Rivers Computer

Plus

☐ **Advanced, multiple process operating system**
☐ **Large, segmented virtual memory**

☐ **Distributed file system**
☐ **Compiler, linker, symbolic debugger**
☐ **Display oriented text editor**

☐ **Low cost**
☐ **Designed for reliability**
☐ **Extensive human factors engineering**

☐ **Flexible packaging concept**
☐ **Nationwide service**

OEM Computer

Lab, Office or Small Business
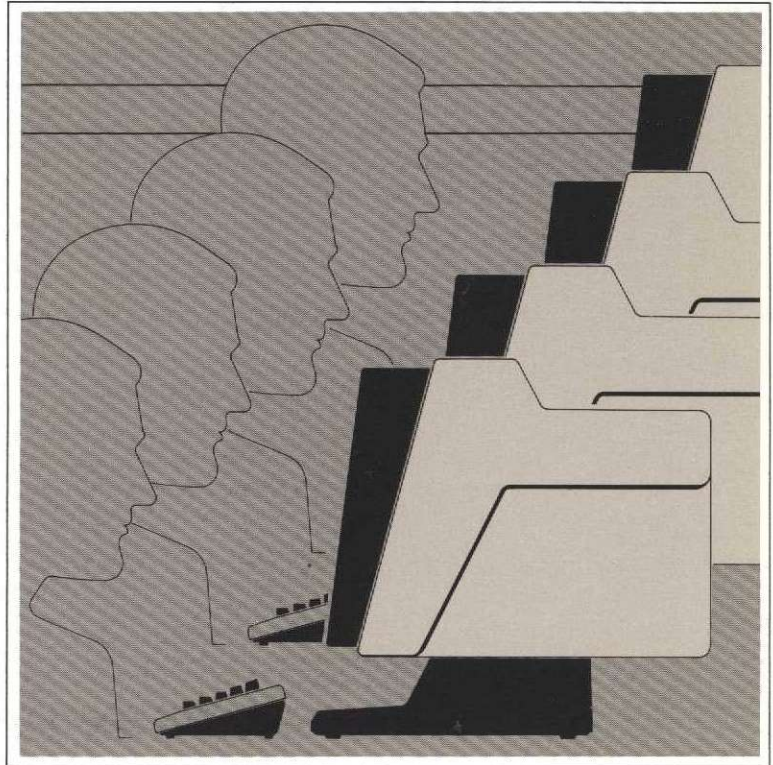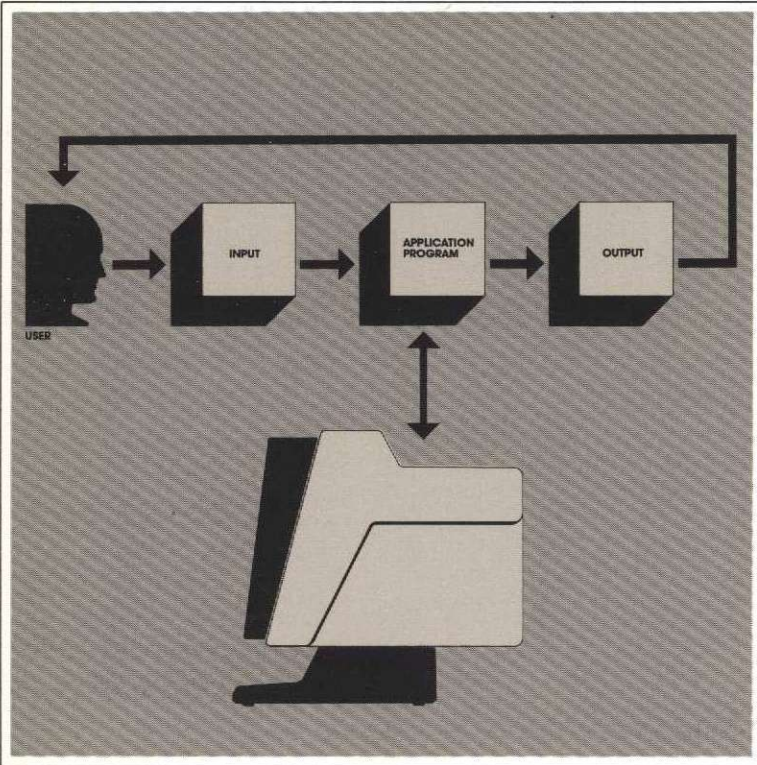
PERQ gives original equipment manufacturers and systems houses no nonsense computing power at a surprisingly low cost. Its high quality text and graphics capabilities, large capacity memory and disk, plus its powerful, language directed processor design make PERQ an extremely flexible OEM computing element.

Extensive reliability and maintainability features, national service facilities, and human factors engineering mean that systems based on PERQ are winners.

OEMs will also appreciate the sophisticated programming environment PERQ provides to get their applications programs written and debugged quickly.

And PERQ has a very attractive OEM discount schedule.

PERQ fits in anywhere a single computer station is needed because its integrated design includes all the facilities of larger systems.

As a laboratory computer, PERQ allows program development in a high level language with the execution speed of machine coded programs. The GPIB interface makes control of laboratory facilities easy and inexpensive.

In an office, PERQ provides superior text processing facilities as well as the computational capabilities of much larger systems. Its distributed processing architecture gives you computing power at the point of need.

Small businesses get much richer facilities and capabilities than those found in microcomputer based systems. Features like big disk, high quality display, large memory and multi-station expandability are standard equipment on PERQ.

PERQ

Software Facilities

Three Rivers Computer

Operating System

PERQ implements a powerful operating system designed to support a single user in an extremely rich environment. Multiple process capability gives the user the ability to have more than one context established at a time. This allows rapid switching from editor to compiler to debugger for instance, without normal "start up" delays. Multiple processes permit background I/O spooling, network access by other systems, etc., without disturbing the user. The operating system also supports the PERQ's virtual memory system which manages very large programs with ease.

File System

PERQ provides a sophisticated distributed file system which features multiple, tree-structured directories, file versions, linked and contiguous files, security protection, and access to files on other PERQ systems as easily as if they were stored on the local disk. PERQ's file system design stresses reliability. All critical information is redundantly stored, and verification checks on disk operations insure the integrity of files.

Display Window Manager

All PERQ subsystems use the display window manager to manipulate screen information. The window manager partitions the screen into separate areas or windows. Windows may be moved around the screen, enlarged or contracted in two dimensions, scrolled and clipped under direct user control. Windows can overlap each other, and can be as large as the entire screen or as small as a postage stamp. Menus and "light buttons" are also supported by the window manager. The process mechanism uses the window manager to allow direct user control of multiple concurrent processes.

PASCAL Compiler

A full PASCAL compiler is included with all PERQ systems. All Three Rivers supplied software is written in PASCAL. The language is extended with strings, separate compilation facilities, dynamic array parameters, "others" clause, and additional predefined types. The compiler has optimization algorithms to minimize code size and execution time.

Symbolic Debugger

PERQ's interactive debugger can access all variables by name, set and clear breakpoints at the source line level, provide variable "watching," and procedure call/return tracing, etc.

Editor

The standard PERQ editor is a very sophisticated document manipulation system which displays on the screen an image of the document as faithfully as possible. Correct placement, size, font, face, and appearance is maintained while editing. The editor has full formatting features including fill and justify, header/footer, and automatic page numbering. Figures and diagrams can be included in the text. Multiple fonts, faces and styles can be used as well as custom logotypes. PERQ's editor uses select-and-act sequences in which the pointer is used to select text to be manipulated, followed by entering the desired command. Making extensive use of the PERQ window manager, the editor can use split screen techniques to display and manipulate more than one section of the text at a time.

Network Support

The PERQ high speed packet broadcasting network is fully supported by all components of the system software. Network support includes processor-to-processor communication at the packet, byte stream, or page level. The network can access files on another PERQ at the sector level. It can also be used as a communications vehicle to other systems or as a pipeline to remote resources such as printers, tape drives, large file systems, etc.

PERQ

Hardware Facilities

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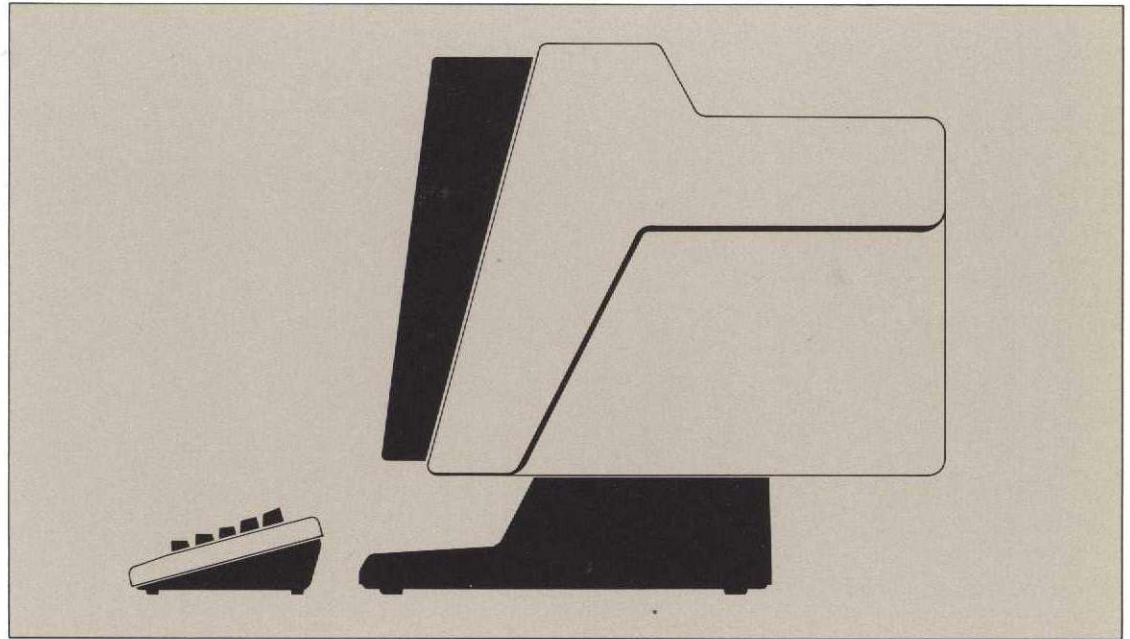
Processor

PERQ includes a high speed, microprogrammed 16-bit CPU with high level language directed architecture and integrated I/O controllers. The native instruction set is the P-code byte sequences that a compiler generates for an "ideal" PASCAL (or other structured language) machine. The PERQ processor executes in excess of 1 million P-codes per second, 10-20 times faster than conventional interpreted P-code. The instruction set is modifiable so that additional languages can be supported without compromising execution speed. A writable control store option is available for users to do their own language development, or to optimize application programs. The microcycle time is 170 ns.

Memory

256 kilobytes of RAM with 680ns (average) cycle time is provided. A 1 megabyte RAM option will be available. PERQ's memory system features a virtual addressing scheme with segmentation, swapping and large address space. A parity option is available for the RAM.

Display

Every PERQ workstation includes a high resolution graphics display. A 768 point by 1024 line, bit mapped, raster scanned image is displayed on a 15" CRT with portrait orientation (long side vertical). The screen surface is approximately 8½ x 11 inches, the same size as a standard page. The display is not interlaced—all 1024 lines are refreshed 60 times per second to provide a flicker-free, high resolution presentation.

The display bit map occupies a part of main memory, and special hardware and microcode in the processor facilitate rapid manipulation of the image. For text, characters are "painted" into the bit map from a software defined font which can be any size, shape or complexity. Multiple fonts are supported as well as proportionally spaced characters to give the screen typeset quality.

Disk

PERQ has a built-in 12 megabyte (formatted) rigid disk. The disk uses Winchester technology with 97ms average access time and 7 megabit/sec transfer rate. The medium is non-removable. As an option, 24 megabyte capacity is available. Also available is a 1 megabyte, double sided, double density, IBM compatible floppy disk drive.

Touch Tablet

The on-screen cursor is positioned by an easy to use "touch tablet." This finger operated pointing device is used to select and manipulate items on the display. As the user moves his finger on the surface of the small rectangular tablet, the cursor moves to track the position of the finger. The mechanism is simple, reliable and easy to operate.

Keyboard

PERQ features a 60-key, high quality, solid state keyboard with good "feel," N-key rollover and autorepeat. The straightforward typewriter layout has large tab and return keys. The keyboard is detachable.

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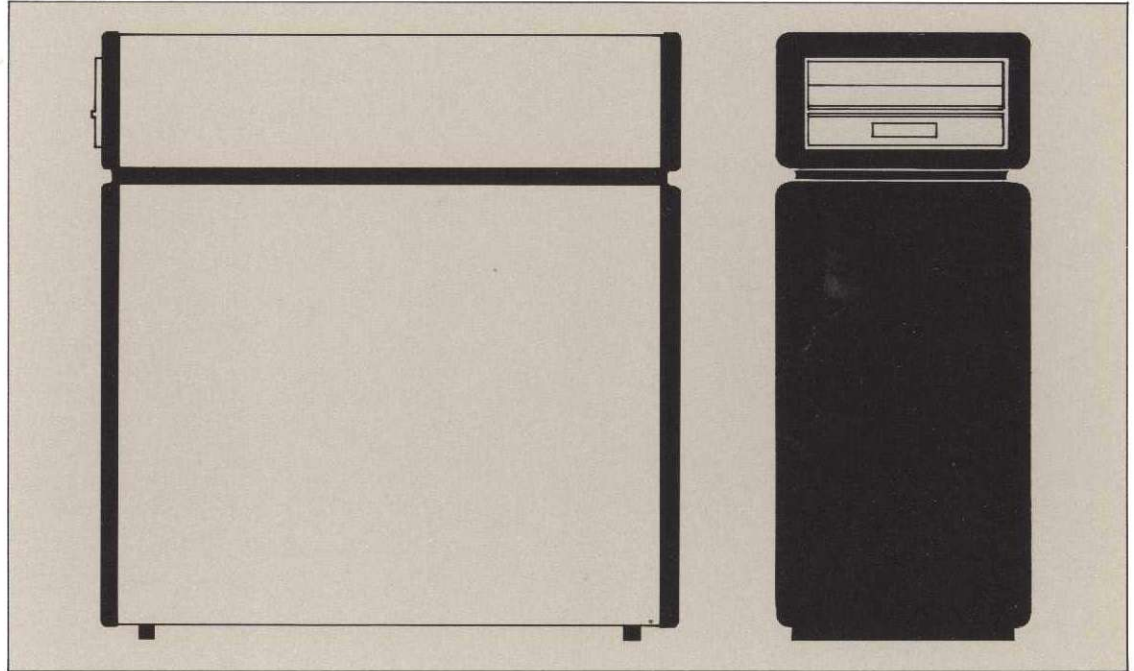
Speech Synthesizer

A Continuously Variable Slope Delta Modulator is employed at a 16 kilobaud data rate to provide arbitrary stored speech output. Pre-recorded CVSD data is stored on the system disk for voice response, audible signaling, and other speech applications.

Network

A proprietary, wide-band network interconnects PERQ systems on a single coaxial cable using cable TV technology. Up to 64 PERQ workstations can be connected on up to 2000′ of cable. Broadcasting packets of data at 10 megabits per second, the network allows one PERQ to access files on another system. The network is also used to provide access to shared resources such as printers and tape drives which cannot be provided to each workstation economically. By connecting a resource to one PERQ on a network, all other PERQ workstations can share that resource.

RS-232 Communications

With a full duplex, multiple protocol, high speed serial data port, PERQ supports asynchronous, bisynchronous and SDLC/HDLC/ADCCP protocols at speeds up to 56K bits per second. All line and protocol parameters are programmable and modem control is standard.

GPIB Interface

PERQ provides a full IEEE 488-1975 standard implementation of the General Purpose Instrumentation Bus. The GPIB provides a simple, compatible way of interfacing a wide range of medium speed peripherals, as well as laboratory facilities, production test equipment and instrumentation.

About Three Rivers Computer

Three Rivers Computer Corporation is a manufacturer of advanced technology computers, peripherals and systems. Active in computer science research and development since 1970, our engineering team has had extensive experience in applying the latest technology to new situations. This experience, coupled with practical innovation is the foundation of Three Rivers' powerful new products for business, government, industry and research.

Incorporated in 1974, the company produces several different product lines in addition to the PERQ system including:

☐ High performance calligraphic (vector) display processors
☐ Color raster display equipment
☐ Management information presentation systems featuring color graphics
☐ Special purpose memory systems
☐ High Fidelity Audio A-D and D-A conversion systems

Installations of these products throughout the US and in several foreign countries has earned Three Rivers an excellent reputation for quality and reliability. Our production facilities are expanding rapidly to meet increasing demand.

Three Rivers is headquartered in Pittsburgh, PA and maintains a close relationship with computer research communities across North America.