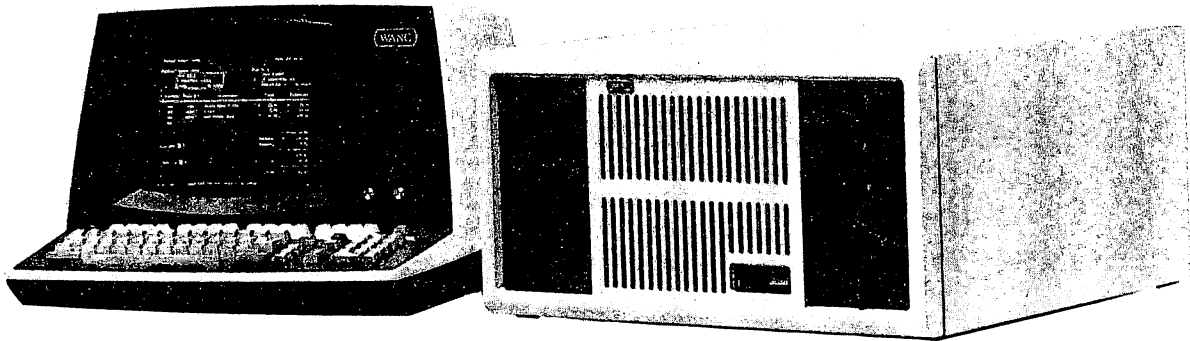


# PRODUCT BULLETIN NO. 189

## THE 2200SVP



### INTRODUCTION

Wang Laboratories, Inc., is proud to announce an exciting new addition to its 2200 Series Product Line -- the SVP. The 2200 Series SVP is a compact, high-performance, single-user system which provides computing speed and capability never before available on a small business computer in its price range. Based upon the popular Wang 2200VP architecture, the 2200SVP offers the following features:

- . Desk Top Office-Style Packaging
- . Single-Sided, Double-Density Diskette Drives with over 500 kilobytes of Storage
- . Optional Winchester Technology Fixed Disk Available in 2 or 4 Megabyte Capacities
- . User Memory Capacity of 32 or 64K Bytes
- . Wang's Powerful BASIC-2 Language
- . Extensive Telecommunications Capabilities
- . Available with the 2236DE Business Graphics Terminal
- . Low Overhead Operating System
- . Supports all 2200 Series Printers

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## MARKET POSITION

The SVP is a single, end-user-oriented system which meets the multi-function demands of all markets - the first-time-user of the Small Business Market, the sophisticated user of the Major Account Market, the problem solver of the Scientific/Engineering Market, and the software developer of the Computer Services (Vendor/System House) Market.

### For Decentralized Processing

The 2200 series SVP can process data within an individual organization or within sub-divisions of a large organization to perform specific identified tasks to increase cost effectiveness and control.

IDEAS, a Wang developed and supported applications development tool, aids programmers in developing software applications quickly and easily.

### For Distributed Processing

The 2200SVP, equipped with a full range of communication protocols, offers the highest price/performance ratio on the market today for data transmission applications in a distributed processing environment.

A major consideration, regardless of the marketplace, is when the user's processing requirements demand more capabilities, the SVP can be field upgraded to a multi-user LVP.

The SVP is a powerful, standalone addition to the small business market. The vendor network will continue to play a vital role in the selling and installation of the system.

In summary, the SVP is ideal for the first-time user marketplace because it fulfills the criteria of the small business computer.

- . Software is immediately available
- . Easy to use
- . Easily upgradable
- . Compact and attractive
- . Low priced
- . High performance

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Besides the advantages offered to the first-time user, the SVP also offers advantages to large companies because it fulfills their more sophisticated needs.

- . Communication capabilities
- . Powerful BASIC-2 language
- . Ability to decentralize or "cluster" CPUs
- . Competitive pricing

## SYSTEM HOUSE/VENDORS

The SVP will provide a tremendous opportunity to our existing vendors, and will assist our upcoming efforts to recruit new vendors. Additionally, vendors will be able to immediately utilize their sophisticated software systems. Thus, with no additional software investment, they can utilize a state-of-the-art system with faster computing power.

## IDEAS

The IDEAS software utility package, which is now available for the 2200 Series product line, is also supported on the SVP. IDEAS (Inquiry Data Entry Access System) is a powerful application development tool which can be used to create and maintain data files, generate sophisticated screen formats, solicit and validate operator-entered data, and produce complex reports. IDEAS is a Wang-developed and -supported software package which offers 2200 users state-of-the-art technology designed for application development. By providing a software package that simplifies application development, IDEAS enhances your market opportunities both to the first-time user and to the major account user.

## THE CENTRAL PROCESSING UNIT

The 2200SVP is operated by a high-performance processor which is based upon the 2200VP architecture. Like the VP, the SVP central processor combines the following features.

- . Memory cycle time of 600 nanoseconds
- . Simple, low-overhead operating system

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## EFFICIENT MEMORY USE

Among the most significant features of the 2200SVP are those which contribute to its highly efficient use of memory. These features include:

- . System Control Memory -- Stores the system programs (the BASIC-2 interpreter, operating system, and system diagnostics). The 2200SVP contains approximately 16K 24-bit words of control memory.
- . User Memory -- The area of memory which is available to the user's programs and data. User memory may comprise 32K or 64K bytes.
- . The BASIC-2 Language -- a high-level programming language designed for interactive programming. BASIC-2 includes a versatile math package, system commands, general-purpose statements (facilitating such tasks as formatting printed output, decision-making, branching, passing data to subroutines, and overlaying program modules), and special-purpose statements (performing such specialized operations as code conversion, sorting, matrix arithmetic, and customized I/O control).
- . Statement Atomization -- each BASIC-2 statement is stored in memory in a condensed format to conserve memory and speed execution.

## DISK STORAGE

Two types of disk drive units featuring some of the latest advances in hardware design are available with the SVP -- a single-sided, double-density diskette drive and an optional fixed, Winchester-style drive. Both drives offer the user an exceptional cost/unit storage value, while surpassing many fixed/removable drives in performance. When combined with the SVP processor, a total cost-effective, disk-based system is created for the small-scale user.

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## Single-Sided, Double-Density Diskette Drive

Since the ability to store the maximum amount of information is extremely important on a single-user system, a single-sided, double-density (SSDD) diskette drive is being introduced as an integral part of the SVP. This expanded capacity diskette drive can store over 500 kilobytes of data (more than twice the available disk space on the Model 2270A Diskette Drive). By doubling the density of the recording area, the normal storage capacity of 250 kilobytes for previously offered diskette drives is more than doubled. In addition to being the primary storage device on dual diskette systems, the SSDD diskette also serves as the medium for transferring system software and application packages obtained on SSDD diskettes. In addition, the SSDD diskette drive also serves as a fast backup medium when the SVP is equipped with the optional Winchester fixed-disk drives.

Because of special sensing circuitry, the diskette drive can differentiate between single-sided, double-density media, and single-sided, single-density soft sectored 2270A media, thus giving us the ability to read/write on 3741 IBM media. In single density mode, the IBM media can be read and written on in the SSDD diskette drive. As a safety feature, the front access door on the DSDD diskette drive cannot be opened when a diskette is installed in the drive and heads are being loaded.

## Fixed-Only Disk Drive

The second major innovation is the development of an 8-inch fixed-only, rigid disk drive utilizing proven, highly reliable Winchester technology. The fixed-only approach eliminates the costly mechanical and electronic requirements of combining a removable platter with a fixed platter, yet provides fast data access in a compact space. Mechanical interlocks and loading devices are eliminated as well as the separation of the chambers housing each type of platter. Fixed-only type heads provide a fast data access due to a decrease in head loading force and a consequent minimizing of the air gap between the heads and the disk surface. The decreased air gap permits a greater data density than was previously possible, enabling the user to access data faster and store more data in the same space. Additionally, this fixed disk drive uses lubricated disk surfaces and a special track which permits the head to "take-off" and "land" on the platter surface during power-up and power-down procedures. This technology greatly reduces the possibility of a "head crash," ensuring the integrity of the data and lessening the chances of expensive downtime that accompany a crash. The combination of these features has created a compact disk drive that retains the high performance and reliability of other models. These new disk drives are available as system options in 2 or 4 megabyte capacities.

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## New Office-Style Design

Both the SSDD diskette drive and an optional Winchester fixed-disk drive or second SSDD diskette drive are mounted directly in the compact office-style packaging, which also contains the central processor, thus saving space which separate drives would customarily occupy. Connections on the back of the CPU are for an interactive terminal, printer, and telecommunications. In summary, a 2200SVP can be configured with:

- . One SSDD diskette drive.
- . A second SSDD diskette drive (dual diskette system).
- . An SSDD diskette drive and a fixed-disk drive (2 megabytes or 4 megabytes).

## SVP SYSTEM UTILITIES

Residing on the SVP Operating System Diskette are the following two new utilities: a backup/recovery utility and a conversion utility. The backup utility, which is operator-interactive and menu-driven, allows the operator to backup the entire used portion of the fixed disk. This is mandatory; since, in the unlikely event of hard disk failure, a complete backup will be available. It is strongly recommended that backups be performed frequently. The complete backup of a 4 megabyte fixed disk requires approximately 5-6 minutes, including operator intervention. In addition to the ability to recover the complete contents of the hard disk, the operator has the option to recover, by name, specific program and data files. The conversion utility allows the transfer of program and data files between the SVP and another 2200 system equipped with either 2270A diskettes or the new dual sided double-density diskettes available on the LVP. Since the SVP diskette drives do not support the standard Wang single-density format, data is recorded in IBM single-density format.

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## THE MODEL 2236DE INTERACTIVE TERMINAL

The Model 2236DE Interactive Terminal with business graphics capabilities is used to communicate directly with the SVP. The terminal consists of an easy-to-read 24 x 80 CRT screen display and a typewriter-style keyboard. The Model 2236DE terminal can also support its own printer, thus providing two printers to the overall system. Special features of the Model 2236DE include the following.

- . Character attributes (bright intensity, reverse video, blinking, and underline)
- . Graphics character set
- . Box graphics
- . Edit mode operations
- . Screen dumps to a printer
- . Self-test diagnostics
- . Repeating keys

The Model 2236DE terminal also generates extensive bar and line graphics by using standard program statements, providing the user with valuable displays for business applications. In addition, the system performs automatic data compression on information transmitted to the terminal. This function increases response time.

## PRINTER CONNECTOR

The SVP supports one printer. Any 2200 Series printer which can be connected to a 22C02 type controller on other 2200 Series systems may be used on the SVP. The printer is connected to a printer connection located on the back of the SVP; however, if a second printer is required, one can also be attached to the 2236DE terminal.

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## COMMUNICATIONS CAPABILITIES

At the customer's option, the 2200SVP may be equipped with a telecommunications controller to enable data transfer between the SVP and another system. Both asynchronous and bisynchronous protocols are supported by the 2200SVP processor.

For communicating with other computer systems, the 2200SVP can be equipped with either of the following single-board communications controllers:

- . Option 27B
- . Option 28B
- . Option 28C

The Option 27B Communications Controller supports asynchronous-only communications in half- or full-duplex at line speeds ranging from 300 to 9600 bps. Both the Option 28B and Option 28C Communications Controllers offer a choice of synchronous or asynchronous communications at speeds ranging from 300 to 4800 bps.

## COMPATIBILITY WITH OTHER 2200 SYSTEMS

Software compatibility is an important consideration when a user contemplates purchasing a new system. The 2200SVP has been designed to preserve maximum compatibility with Wang's other single-user systems as well as the more recent multi-user systems. Since the 2200SVP is totally compatible with the 2200VP, software written for the 2200VP will function on the 2200SVP.

The 2200SVP, like the 2200VP, the 2200MVP, and the 2200LVP, also supports earlier Wang BASIC syntax, providing a significant degree of compatibility with non-VP, -MVP, and -LVP systems. This language compatibility means that programmers familiar with other 2200 systems will quickly become productive on the 2200SVP.

## COMPETITION

Table 1, which appears on the following pages, provides a comparison of the SVP with our major competitors. This information is designed to give an insight into the positioning of the SVP.



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Table 1. Product Specifications -- Wang SVP and Competing Systems

	Wang SVP	IBM 5120	Hewlett Packard 9835	Hewlett Packard 9845	Digital Datasystem 150
<u>Memory (bytes)</u>	32-64K (user)	16-64K	64-256K	56-449K	32-60K
<u>Disk Storage</u>					
<u>Type</u>	SSDD diskette; Winchester	DSDD diskette	1-2 diskettes, cartridge tape	1-4 diskettes, F/R disk, disk pack, integral tape cartridge	1-2 diskettes
<u>Capacity</u>	.5-4.5 Mb	2.4-4.8 Mb.	.5-1.0 Mb	.5-240 Mb	500K
<u>Printers</u>	30-200 cps; 220-660 lpm	80,120 cps	30 cps; 480 lpm thermal	30, 180 cps; 480 lpm thermal	180 cps
<u>Languages</u>	BASIC-2	BASIC, APL	BASIC	BASIC	DIBOL
<u>Communications</u>	2780/3780 2741,TTY	2770,3741,2741	async	async	2780, async
<u>Price</u>	\$12,800 (32K, 2 SSDD diskettes, 120 cps printer)	\$13,015 (32K, 2 DSDD diskettes, 120 cps printer)	\$17,450 (64K, 2 500K diskettes, 30 cps printer)	\$21,950 (56K, 2 500K diskettes, 180 cps printer)	\$11,450 (48K, diskette 180 cps printer)
	\$11,600 (32K, SSDD diskette, 120 cps printer)				

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**WANG**

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Table 1. Product Specifications -- Wang SVP and Competing Systems (continued)

	Wang SVP	Data General CS-20	Datapoint 1500	Texas Instruments DS 990 Mod I	Texas Instruments DS 990 Mod II
<u>Memory (bytes)</u>	32-64K (user)	64K	32-60K (user)	64K	64K
<u>Disk storage</u>					
<u>Type</u>	DSDD diskette; Winchester	3-4 diskettes	diskette	DSDD diskette	DSDD diskette F/R disk
<u>Capacity</u>	.5-4.5 Mb	.6-1.2 Mb	.5-1.0 Mb	2.4-4.8 Mb	20 Mb
<u>Printers</u>	30-200 cps; 220-660 lpm	60, 180 cps; 240, 300 lpm	80, 160 cps	30 cps thermal; 150 cps	150 cps
<u>Languages</u>	BASIC-2	COBOL	DATABUS	BASIC, FORTRAN	BASIC, FORTRAN, ASSEMBLER
<u>Communications</u>	2780/3780 2741, TTY	2780	2780/3780, 3275 TTY	2780/3780, TTY	2780/3780, TTY
<u>Price</u>	\$12,800 (32K, 2 SSDD diskettes, 120 cps printer)	\$14,920 (64K, 2 diskettes (1.2 Mb), 180 cps printer)	\$9,700 (32K, 2 DD diskettes, 120 cps printer)	\$13,595 (64K, 2 DSDD diskettes, 150 cps printer)	\$15,945 (64K, 2 DSDD diskettes, 150 cps printer)
	\$11,600 (32K, SSDD Diskette, 120 cps printer)				

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## SVP MODEL CONFIGURATION

The 2200 SVP will be identified by a model number of the format:

2200 SVP-*xyy*

- 2200 SVP will represent the CPU, 500 Kb of Single-Sided, Double-Density Diskette, and the cabinet.
- *xx* will be a two digit number representing the actual memory size when multiplied by 4. This is the same as the present 2200 CPU model numbers. For example:

2200SVP-8 refers to a 32K Memory CPU  
2200SVP-16 refers to a 64K Memory CPU

- *y* will be a capital letter representing the model for the fixed disk capacity option. The format is as follows:

A - A Second 500 Kb Single Sided Double Density Diskette  
B - 2 Mb Fixed Disk Option  
C - 4 Mb Fixed Disk Option  
X - No Second Disk Option

Note the following examples:

2200SVP-8B refers to a 32K CPU with 2 Mb Fixed Disk  
2200SVP-16X refers to a 64K CPU without a second disk option

A summary of all model descriptions and numbers is given in Table 2.

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Table 2. Summary of 2200SVP Model Numbers

Model	Description	Part. Number
2200 SVP-8X	32K Memory, 500K SSDD Diskette	177-3238
2200 SVP-16X	64K Memory, 500K SSDD Diskette	177-3239
2200 SVP-8A	32K Memory, Dual 500K SSDD Diskette	177-3240
2200 SVP-16A	64K Memory, Dual 500K SSDD Diskette	177-3241
2200 SVP-8B	32K Memory, 500K SSDD Diskette, 2 MB Fixed Disk	177-3242
2200 SBP-16B	64K Memory, 500K SSDD Diskette, 2 MB Fixed Disk	177-3243
2200 SVP-8C	32K Memory, 500K SSDD Diskette, 4 MB Fixed Disk	177-3244
2200 SVP-16C	64K Memory, 500K SSDD Diskette, 4 MB Fixed Disk	177-3245

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## 2200SVP SPECIFICATIONS

<u>Size</u>		
Height .....	12.0 in.	(30.4 cm)
Width .....	21.0 in.	(53.5 cm)
Depth .....	26.0 in.	(66.0 cm)

Memory Cycle Time  
600 nanoseconds

User Memory Size  
32K bytes (standard); expandable to 64K.

Control Memory Size  
16K 24-bit words

Numeric Range  
-100 to 100, floating point with 13 significant digits

Power Requirements  
115 or 230 VAC  $\pm$  10%  
50 or 60 Hz  $\pm$  1.0 Hz  
230 Watts

Fuses  
3.0 amp (SB) for 115 VAC  
1.5 amp (SB) for 230 VAC

Operating Environment  
35% to 65% relative humidity, noncondensing (recommended)  
20% to 80% relative humidity, noncondensing (allowable)  
50 to 90 °F (10 to 32 °C)

Heat Output  
1,050 Btu/hr

# PRODUCT BULLETIN NO. 189

## SINGLE-SIDED DOUBLE-DENSITY DISKETTE DRIVE SPECIFICATIONS

### Rotational Speed

360 rpm

### Seek Time

Minimum 20 ms

Average 264 ms

Maximum 280 ms

### Latency Time

Average 84 ms at 360 rpm

### Data Rate

250 KHz at 360 rpm

### User Storage Capacity

Approximately 500 kilobytes

## FIXED DISK DRIVE SPECIFICATIONS

### Rotational Speed

3,125 rpm

### Seek Time

Minimum 19 ms

Average 100 ms

Maximum 150 ms

### Latency Time

Average 9.6 ms

### Data Rate

4.3 MHz at 3,125 rpm

### Track Density

172 Tracks per Inch (TPI)

### User Storage Capacity

Option 1 -- Approximately 2 megabytes

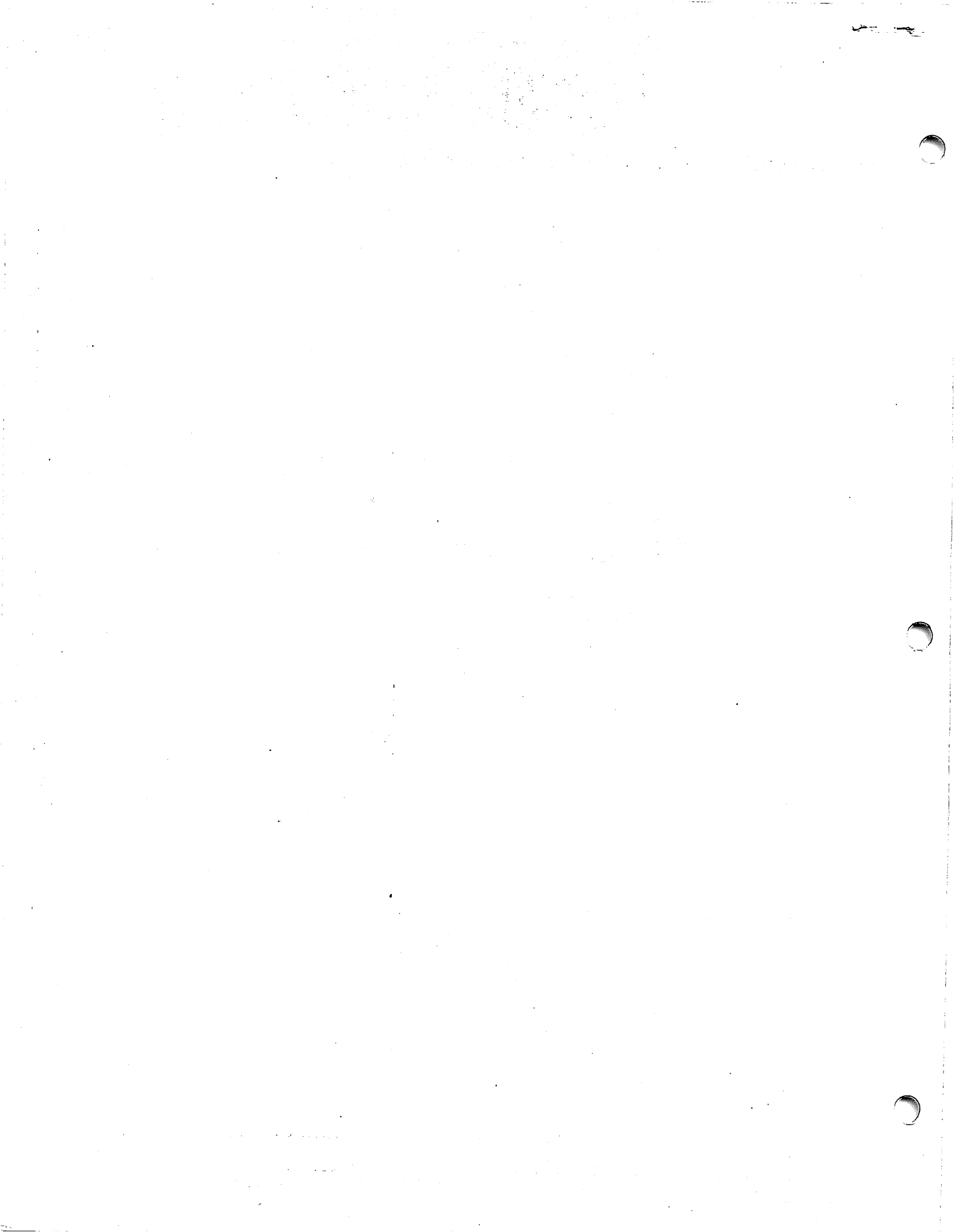
Option 2 -- Approximately 4 megabytes

# PRODUCT BULLETIN NO. 189

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## SVP Product Statistics

Model Number: See Model Configuration Table  
Part Number: See Model Configuration Table  
Release Date: April 21, 1980  
Availability: August 1, 1980 (Selected City Program)  
Classification: Mechanical  
Warranty: Standard  
Commission: 5%





## Computers

TO DISTRIBUTION	PUBLICATION #
FROM TINA CASTEN - 2200 SYSTEMS MARKETING	DATE APRIL 3, 1980
SUBJECT SVP SELLING STRATEGY	REORDER FROM:
THIS RELEASE SUPERSEDES:	DESTROY SUPERSEDED INFORMATION <input type="checkbox"/> YES <input type="checkbox"/> NO

The SVP as a single, end-user-oriented system is perfect for dedicated operations in either the small business or major account market and for distributed operations functioning as a node in a network.

### The SVP-A Dedicated Processor

The first-time user associated with the small business market is attracted to the bundled hardware and systems software provided by a single responsible source. In addition, there is a wide range of available software that can process general accounting transactions, control inventory levels, produce mailing lists, and complete payroll reporting functions. The system is affordable and supported by a large service organization.

The major account is attracted to the SVP as a dedicated, powerful processor. Because the SVP supports a full range of communication protocols, data collected at remote sites can be transmitted to the headquarter's host. In addition, I.D.E.A.S. as a data base maintenance utility allows the major accounts DP staff to bring up applications with a minimum of development time and effort.

The Scientific/Engineering market is attracted to the SVP because of its sheer number-crunching capabilities and enhanced BASIC language.

The Computer Services Market (vendors and system houses) is attracted to the SVP because of its software compatibility with other 2200 family members. As a customer upgrades to an LVP or MVP, no costly conversions or reprogramming is required.

In addition, because of its price, the Computer Services Market can offer "canned" software developed in their particular vertical area of expertise to be sold and installed "off the shelf."

### The SVP - a Distributed Processor

The SVP, like all 2200 series family members, is ideally suited for distributed processing applications. The SVP is a distributed processing environment can access many different host systems in both interactive and batch modes providing the flexibility that users desire. The SVP has a full range of telecommunication capabilities such as 2780, 3780, 3741, HASP, 3275, Burroughs TC 500, Teletype, and 2741. Not a single competitor can offer these capabilities in this price range.

## SVP Eliminates Upgrade Headaches!!.

The SVP is based on the VP/LVP/MVP family architecture. Therefore, it eliminates upgrade headaches inherent in the WCS-15 and T processor design.

It supports all current 2200 printers, all TC options, and features the new Winchester-type fixed disk.

This high commonality of parts gives you the confidence and security to propose a single-user system like the SVP, knowing that upgrade to a multi-user system like the LVP can be made with little or no software conversion.

### The Benefits to You?

The SVP provides you, the Wang sales force, with a highly competitive, high-performance system that meets the buying criteria of the single-station, end-user-oriented system prospect.

That buying criteria consists of:

- The system's capability to perform an "identified" task.
- The system's capability to perform as a node in a distributed processing network.
- The system's ability to improve productivity and profit.
- The system's maintenance network.
- The system supplier's financial stability and capability to provide single-source responsibility.

The SVP provides you with both a dedicated and/or distributed processing systems offering to:

- the small business computer market,
- the scientific/engineering market,
- the computer services market, and
- the major account market

with four distinct advantages:

1. price - an end-user-oriented system - bundled for \$8,700,
2. field expansion capabilities,
3. a unique product mix - PCS-III, VP, SVP, LVP, MVP, and
4. the throughput of the VP/LVP/MVP family architecture benchmarked as outperforming the competition 20:1.

Wang's SVP meets the buying criteria of today's prospect looking for a single-station, end-user-oriented system. The design of the SVP is proven, its performance established, and its supplier (Wang) provides single source responsibility for systems and support. Now its up to you, the seller, to "sell" the prospect on your ability to meet his additional criteria - that of your systems capabilities to provide solutions.

In order to do so effectively, you, as sellers, must know your product.


Let's review the features of the SVP.

- Based on the VP/LVP/MVP family architecture.
- Supports all printers currently available on 2200 products.
- Supports a full range of TC options.
- Capable of disk expansion from 500K bytes on a Single-Sided, Double-Density diskette to 4 megabytes of Winchester-type, fixed disk for a total of 4.5 megabytes of storage.
- Supports BASIC-2 which improves program efficiency and makes the task of writing, documenting, and debugging easier and faster. BASIC-2 is a high-level programming language designed for interactive programming on the 2200 series. It includes a math package which has many system-defined math and trig functions. There is also a set of general-purpose statements such as formatting printed output, decision making and branching, passing data to subroutines, and overlaying program modules. Special-purpose statements perform code conversion, sorting, matrix arithmetic, and customized I/O control.
- Supports I.D.E.A.S.
- Supports only the 2236DE terminal.
- Wang-developed application software (GBS) as well as software developed by Wang software vendors in specialized vertical industries.
- Hardware field-upgradable to multi-user systems complete with software compatibility.
- Bundled hardware and system software.

- Range in price from \$8,700 for a 32K CPU, one 2236DE terminal, one SSDD diskettes (600K bytes of storage) to \$13,100 for a 32K CPU, one 2236DE terminal, one SSDD diskette (600K bytes), and a four-megabyte Winchester-type, fixed drive.

Knowing your system, promoting its advantages, and not limiting yourself to a particular market or market segment is a strategy that works. The addition of the SVP to the 2200 product line provides you with a "true" family of computer offerings - totally compatible and expandable, each with enough distinction to attract any prospect regardless of size, industry code, or budget.

Good luck and happy Systems Selling!!!

  
Tina Casten  
2200 Systems Marketing

TC:dm:0641R

**Computers**

<b>TO</b> DISTRIBUTION	<b>PUBLICATION #</b>
<b>FROM</b> 2200 SYSTEMS MARKETING-JANICE SOCHALSKI	<b>DATE</b> APRIL 1980
<b>SUBJECT</b> 2200 SVP COMPETITIVE ANALYSIS	<b>REORDER FROM:</b>
<b>THIS RELEASE SUPERSEDES:</b>	<b>DESTROY SUPERSEDED INFORMATION</b> <input type="checkbox"/> YES <input type="checkbox"/> NO

2200 SVP COMPETITION

Attached is competitive information prepared by Barbara Mende and Wendy White of the Competitive Analysis Department. The 2200 SVP is compared to six (6) competitive products:

Datapoint 1500

Data General CS/20

Texas Instrument DS990 MOD I and MOD II

IBM 5120

Digital Datasystem 150

Hewlett-Packard - 9835, 9845

With the exception of Datapoint 1500, the 2200 SVP is lower priced but in all cases, the 2200 SVP offers considerably more processing power and flexibility in storage and peripherals.

Take particular notice of the limited storage and printers available on the competitive products. In addition, most of these products only support the floppy diskettes which are far inferior to the advantages of Wang's fixed drives.

There is no doubt that the 2200 SVP offers tremendous advantages to the Small End User as a Total Solution System and as a flexible and powerful tool to large multi-location companies. In both cases, the aggressive pricing of the 2200 SVP provides you a product with a price/performance ratio that competition can't match.

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## TEXAS INSTRUMENTS

### Corporate Abstract

Revenues 1979: \$3.2B

Besides processors, the well known semiconductor giant's product lines include a wide line of printing terminals and the DS 990 and FS 990 small computer series.

### Marketing Organization

- . Large supplier of OEM printers and printing terminals.
- . Due to difficulties with OEM's, they are now on campaign to recruit a dealer network.
- . Sales locations have been selected at random.
- . Support, previously geared to terminal servicing, is being strengthened.
- . DS 990 Mod 1 sometimes seen in computer stores.
- . In-house development of system software, including programming aids, is another thrust.

At this stage of market development, application software and support are only as good as the dealer or OEM - and it's not likely to be abundant.

### Product line

Most of TI's packaged computers and intelligent CRT's have been consolidated into the DS 990 line. They use the 990 and 9900 minis that TI formerly offered at board level. The line slices roughly into three parts:

- . DS 990 Models 1 and 2 - small, inexpensive, microprocessor-based, OEM-oriented; limited in software and peripheral support.
- . 990/10 based systems - a range of languages, user aids and peripherals; can support 8 terminals in a pinch.
- . 990/12 based systems - cache, more processor power, more storage. There's some upward compatibility through the line.

### The DS 990 Model I and II

Model I is based on the 9900 microprocessor, the baby of the TI family; Model II on the 990/5. Both have been proven in benchmarks to be far behind our processors in performance. The Basic interpreter is known to have high overhead. There's some upward compatibility, but these small systems have limited configurations, and the next step up is a big one.

### Marketing Strategy

- . TI is relatively new to the commercial market
- . Sell on low price, but
- . Maintenance pricing is unusually high.
- . Building up OEM network now, and having difficulty keeping up standards. Marketing and support varies with the region.

### Wang's Strategy

- . Strong service organization.
- . Sell direct to end users.
- . SVP gives high performance at low cost, more flexibility in configuring an entry-level system, and an easy upgrade path.

Wang has established itself successfully selling to the first-time user and major accounts. Through our nationwide vendor network and our own direct marketing organization, we can promise a high quality product anywhere in the world.

### Comparative Specifications

	DS 990 Mod I	DS 990 Mod II	SVP
Memory (bytes)	64K	64K	32K-64K (user)
Storage Type	DSDD diskettes	DSDD diskettes, F/R disk	DD diskettes, Winchester disk
Capacity	2.4 - 4.8 MB	20 MB	500K - 4.5 MB
Printers	30 cps thermal; 150 cps	150 cps	30-200 cps; 220-600 lpm
Languages	Basic, Fortran	Basic, Fortran, assembler	Basic II
Communications	2780/3780, TTY	2780/3780, TTY	2780/3780, 2741, TTY, HASP
Price:	\$13,595 (64K, 2 DSDD diskettes, 150 cps printer)	\$15,945 (64K, 2 DSDD diskettes, 150 cps printer)	\$12,800 (32K, 2 DD diskettes, 120 cps printer)

#### SVP vs. the DS 990 Mod 1 and 2

- . Higher performance
- . More efficient operating system and interpreter
- . More cost-effective
- . Lower entry-level price
- . Line printers available
- . More versatile
- . More application software available

## IBM GENERAL SYSTEMS DIVISION

### Corporate Abstract

Revenues 1979: \$21B (IBM total)

### Marketing Organization

- . 5120: Sold through IBM retail outlets as off-the-shelf products. GSD sales force is also selling this product on the street. A "Hot Line" number is available to call for hardware and software questions. This represents a break from IBM's typical marketing patterns, and is one of many examples of the lack of cohesiveness found in IBM's new product and marketing patterns.

### Product line

Formerly products for small and medium users, now getting to be a grab-bag:

- . System/3 - IBM's largest selling computer ever, now near the end of the line.
- . System/32 and System/34 small business computers (S/32 fading, too).
- . System/38, the big one, not yet installed.
- . Series/1, the plain vanilla mini.
- . The 5520, GSD's entry into the automated office.
- . The 5280 intelligent terminal.
- . The 5120 desktop (replacing the 5110).

### The 5120

A 5110 without the old 5110's most glaring faults: the small screen and the high price. The screen is still limited to 1024 characters, but you can see them now. The processor is the same, and it's not in our league in performance. There's no growth path for this product; in typical GSD style, it has no compatibility with any of the larger systems. The next system up, the 5280, doesn't even use the same languages.

### Marketing Strategy (5120)

- . Selling on price.
- . Selling this as a new product, although it is simply a new version of the 5110, but on the other hand . . .
- . Showing that it's a proven product, where necessary, by referencing 5110 accounts.
- . Seen as IBM's experimental entry into consumer computing.
- . Heavy consumer advertising in local newspapers and on local radio stations.
- . Sales reps carrying it door-to-door to small accounts in their cars, in the style of office equipment sales.

### Wang's Strategy

- . The SVP is a full service, cost effective system in contrast to the partial solution offered by the 5120.
- . Sell first-time and DDP user with growth path.
- . Provides reputable support to all users regardless of the product line sold.
- . Demonstrate product performance.

Wang has coordinated marketing efforts to support all levels of sales. IBM is experimenting with channels for the 5120; it is unaccustomed to selling products as commodities and supporting them at low cost. Being part of a family, the SVP can fit in where the 5120 can't - into distributed processing installations as well as with first-time users. Any customer who wants to grow must know he's at a dead end with the 5120, but can stay with the 2200 for a long time.



### Comparative Specifications

	5120	SVP
Memory (bytes)	16-64K	32-64K (user)
Storage Type	DSDD diskettes	DD diskettes, Winchester disk
Capacity	2.4 - 4.8MB	.5 - 4.5 MB
Printers	80, 120 cps	30-200 cps; 220-600 lpm
Languages	Basic, APL	Basic II
Communications	2770, 3741, 2741	2780/3780, 2741, TTY, HASP
Price:	\$13,015 (32K, 2 DSDD diskettes, 120 cps printer)	\$12,800 (32K, 2 DD diskettes, 120 cps printer)

#### SVP vs. the 5120

- . Part of a family of compatible systems; growth path available
- . An extension of a successful product line; rather than a replacement for an unsuccessful product.
- . Lower-priced entry-level product; you pay for the storage you need.
- . Line printers available
- . 1920-character screen option
- . More processing power and performance
- . More versatile

## DIGITAL EQUIPMENT CORPORATION

### Corporate Abstract

Revenues 1979: \$1.8B  
No. Employees: 13,000 (U.S.)

DEC, the largest minicomputer manufacturer: \$1.8B revenues in 1979 and still growing. Presumably, their growing pains will be familiar to our prospects: long lead times, slipped deliveries, unacknowledged orders, lack of software support, and the vanishing customer engineers.

### Marketing Organization

No. Employees: 2,450 (U.S. Sales)

- . Their marketing umbrella includes several sales organizations who sell varying configurations of the same product.
- . OEM company
- . Dealer network - often competing with each other and DEC itself.
- . Expanding in company-owned retail stores.

A new program of "authorized" distributors has begun in response to the uneven quality of support. There may be disruption in the ranks before it's in place.

### Product line

You name it, DEC makes it. It has many products and many divisions, and the dividing lines are not always clear. Two divisions may sell the same box under two different labels (see the Datasystem 150 below). A rough cut of the computer line:

- . PDP-11 bread-and-butter mini, which comes in many sizes; and its predecessor the PDP-8.
- . LSI-11 microprocessors, also in several sizes.
- . Big machines: the VAX supermini and timesharing DECsystems.
- . Datasystems - packaged configurations of the various minis, tied together by their own operating system and the "DIBOL" language.
- . Terminals; word processing; scientific and commercial desktops.

### The Datasystem 150

DEC makes many kinds of desktop products. The Datasystem 150 should be the closest SVP competitor because, unlike the retail and laboratory desktops, it's upward compatible with the rest of the Datasystem line. (It's also marketed by the Components Group as a PDT-11/150.) It's also based on a PDP-11 rather than a PDP-8. However, the small CPU is no match for our performance, and Datasystem users have to wrestle with a proprietary language. The Datasystem 150 itself is limited in storage, and the next step up is considerably higher in cost.

### Marketing Strategy

- . Sell to small/medium accounts
- . DEC prefers to sell through third parties, who handle most of the support.
- . Datasystems, in particular, are generally marketed indirectly. The OEM provides all the application software.

### Wang's Strategy

- . Sell to small, medium and large accounts.
- . Strong support for end users.
- . Wang and vendor expertise in end-user support.

Wang cares. We sell total systems and don't forget our customers after the sale.

### Comparative Specifications

	Datasystem 150	SVP
Memory (bytes)	32-60K	32K - 64K (user)
Storage Type	1-2 diskettes	DD diskettes, Winchester disk
Capacity	500K	500K - 4.5 MB
Printers	180 cps	30-200 cps; 220-600 lpm
Languages	Dibol	Basic II
Communications	2780, async	2780/3780, 2741, TTY, HASP
Price:	\$11,450 (48K, diskette, 180 cps printer)	\$11,600 (32K, DD diskette, 120 cps printer)

#### SVP vs. the Datasystem 150

- . Industry standard language
- . Easier to program
- . Full line of printers
- . More storage capacity, and wider choice of storage media
- . More versatile
- . Higher performance
- . Upgradeable without a quantum jump in price

## DATA GENERAL

### Corporate Abstract

Revenues 1979: \$507M  
No. Employees: 13,000

Data General has enjoyed financial success with almost tripled revenues of \$179M in 1976 to \$597M in 1979. There was a slight decline in profits in the 4th quarter, leading industry watchers to fear for the company's health. Also, their inability to meet deliveries and provide adequate service has been of some concern.

### Marketing Organization

- . 70% OEM
- . Field service force expanded over 40% to 1422; becoming a "full service company".
- . System Division, a low profile arm of DG, will do software development for customers who insist on a total DG solution.

### Product Line

- DG has a full line of minis, plus peripherals. There are four lines:
- . The Nova - the traditional 16-bit mini; a widely emulated standard.
  - . The Eclipse - a more powerful mini: scientific and commercial versions.
  - . The microNova - a Nova on a chip.
  - . The CS (Commercial Systems) - packaged configurations using interactive COBOL. Range: microNova-based CS-20 to Eclipse-based CS-60.

### The CS-20

This entry-level standalone is software-compatible with the other CS systems, but is constrained in programming capabilities as well as hardware.

While it does offer an upgrade path, the entire CS series is limited in performance and functionality. The CS-30, the next step up, can support 4 terminals but lacks real multiprogramming capability. Even the CS-40 and CS-50, which are rated for nine terminals, face operating system constraints which require small program size, and run slowly with several concurrent users.

The choice of COBOL virtually limits the customer list to systems houses and large accounts with COBOL programmers. CS COBOL is hard to use even for experienced mainframe programmers, due to the program size restrictions. Some development aids were just released, but have a long way to go.

### Marketing Strategy

- . Only recently have begun to penetrate major accounts.
- . Virtually no direct sales to end users.
- . Heavy price discounting.
- . Span most markets: medical, industrial, scientific and commercial.

The CS systems are usually marketed through systems houses; are barely surfacing at major accounts; the 20 and 30 are appearing in retail outlets.

### Wang's Strategy

- . Sell to end users.
- . Sell to small and major accounts.
- . First-time user benefits as well as dedicated or distributed sites.
- . Approved vendor network for software support applications.

Wang's proven reliable, high performance products have been successful both in small businesses and in distributed processing. Our vendor support will be appealing to the first-time user. The CS/20, while inexpensive, is restricted in hardware and software; it's not cost-effective for what it does, and it's hard to use. We have a better package in every way.

### Comparative Specifications

	CS-20	SVP
Memory (bytes)	64K	32-64K(user)
Disk storage Type	2-4 diskettes	DD diskettes; Winchester disk
Capacity	.6 - 1.2 MB	.5 - 4.5 MB
Printers	60, 180 cps; 240, 300 lpm	30-200 cps; 220-600 lpm
Languages	COBOL	Basic II
Communications	2780/3780	2780/3780,2741,TTY,HASP
Price:	\$14,920 (64K, 2 diskettes (1.2 MB), 180 cps printer)	\$11,600 (32K, 1 DD diskette (.6 MB), 120 cps printer)

#### SVP vs. the CS-20

- . Higher performance.
- . More cost-effective.
- . Easier to program.
- . Easier to operate.
- . More storage available, at low cost.
- . More efficient operating system.
- . Wider choice of printers.

## DATAPOINT

### Corporate Abstract

Revenues 1979: \$232M  
No. Employees: 5,066

Originally a terminal supplier, Datapoint has realized a revenue growth of \$47M in 1976 to \$232M in 1979. Their growth can be attributed to various configurations that stem from basically one product: a small computer/intelligent terminal.

### Marketing Organization

- . locations: 51 major U.S. cities

Due to a weakness in "people management" within the organization, they have had frequent personnel changes in the sales force.

### Product line

Datapoint CPU's, from the 1500 desktop to the 6600 which allegedly supports 24 users on 256K memory, are small and low-powered. A Datapoint user who wants to expand can acquire an ARC, a high-speed coax network of small "file" and "application" processors which can share files (an extension of what Wang calls disk multiplexing). Every Datapoint CPU except the 1500 can attach to an ARC.

### The 1500

It has one outstanding feature: the base price is the lowest anywhere, although we come close. The other frill is Datapoint's so-called word processing package, a very limited offering. The 1500 shares the slow performance and proprietary Databus language with the other systems; it lacks their choice of peripherals, ARC compatibility and standard compilers. At this writing, the hard disk option has been on and off the market several times.

### Marketing Strategies

- . 92% of U.S sales are to end users.
- . Concentrate on major accounts.
- . Lack of success in the small business market has led to a lack of commitment to their end users.
- . New vendor program starting from scratch; success remains to be seen.
- . The lease rather than the sale has been encouraged. The 1500, however, was introduced as a purchase-only product - rental came later.
- . Heavy discounting - the pitch is the price for quantity rather than the price for quality.

### Wang's Strategy

- . Financing options: purchase, lease or rental.
- . Optimum price/performance.
- . The SVP as an entry-level offering, or in a multiple-system site with other 2200 products, can offer high performance and ease of use to the full range of customers - from new users to large accounts.
- . The SVP, and Wang, can show a record of continuous commitment to users of every size.

### Comparative Specifications

	1500	SVP
Memory (bytes)	32-60K (user)	32-64K (user)
Storage Type	diskettes	DD diskettes, Winchester disk
Capacity	500K - 1 MB	500K - 4.5 MB
Other peripherals		plotter, instrument interface
Printers	80, 160 cps	30-200 cps; 220-600 lpm
Languages	Databus	Basic II
Communications	2780/3780, 3275, TTY	2780/3780, 2741, TTY, HASP
Price:	\$9,700 (32K, 2 DD diskettes, 120 cps printer)	\$12,800 (32K, 2 DD diskettes, 120 cps printer)

#### SVP vs. the 1500

- . Higher performance
- . Easier to program and to use
- . Industry standard language
- . More application software available
- . Line printers available
- . More versatile

## HEWLETT-PACKARD

### Corporate Abstract

Revenues 1979: \$2B

H-P is best known as an instrument company; however, almost half of its \$2B revenues are minicomputer-related.

### Marketing Organization

- . Recently organized a third-party marketing group to sell to OEM's.
- . New users will find little application software and an organization unfamiliar with supporting them.
- . New to small business market.
- . Engineering oriented.

### Product line

H-P is probably the company whose product line is the closest match to ours. Its computer families are:

- . HP 3000 - large interactive commercial minis, VS competitors.
- . HP 1000 - the scientific processor family.
- . HP 250 and HP 300 - small business systems.
- . The 98xx (Systems 35 and 45) family of number-crunching desktops.

### The 98xx line

Systems 35 and 45 are the current models of this established series of desktops. Like ours, they use a firmware BASIC interpreter. Their natural habitat has been the lab and the engineering department, so their power and much of their software are geared to number-crunching. They can attach many kinds of peripherals, including a hard disk in the case of the 45, but they can't be clustered and aren't compatible with other HP products. Furthermore, both the basic units and the added-on features are expensive.

### Marketing Strategy

- . Traditionally sells to technical end users in large companies.
- . H-P 98 targeted mainly to labs and scientific users, although some business software is offered.
- . Trying to establish image of "friendliness."
- . Sold with specialized hardware and software features.

Until recently, its marketing thrust has been toward engineering and plant-floor applications. H-P has not been successful in penetrating the OEM market, thus the need to revamp their third-party marketing group.

### Wang's Strategy

- . Proven success with the small user- first-time or distributed.
- . Wang systems have always been "friendly" and price/performance is an added bonus.
- . Address a wider range of applications, including scientific/technical community.
- . H-P's level of support is no match for ours.
- . Solid vendor network and software compatible.

The SVP should be able to cross most vertical market boundaries since Wang has not attempted to get locked into any one specific area. We have the software and the expertise for the commercial market. Furthermore, an SVP user has a natural migration upward, where an HP user needs a new kind of system. Sell the performance - stress our service - and a lot more at a better price.

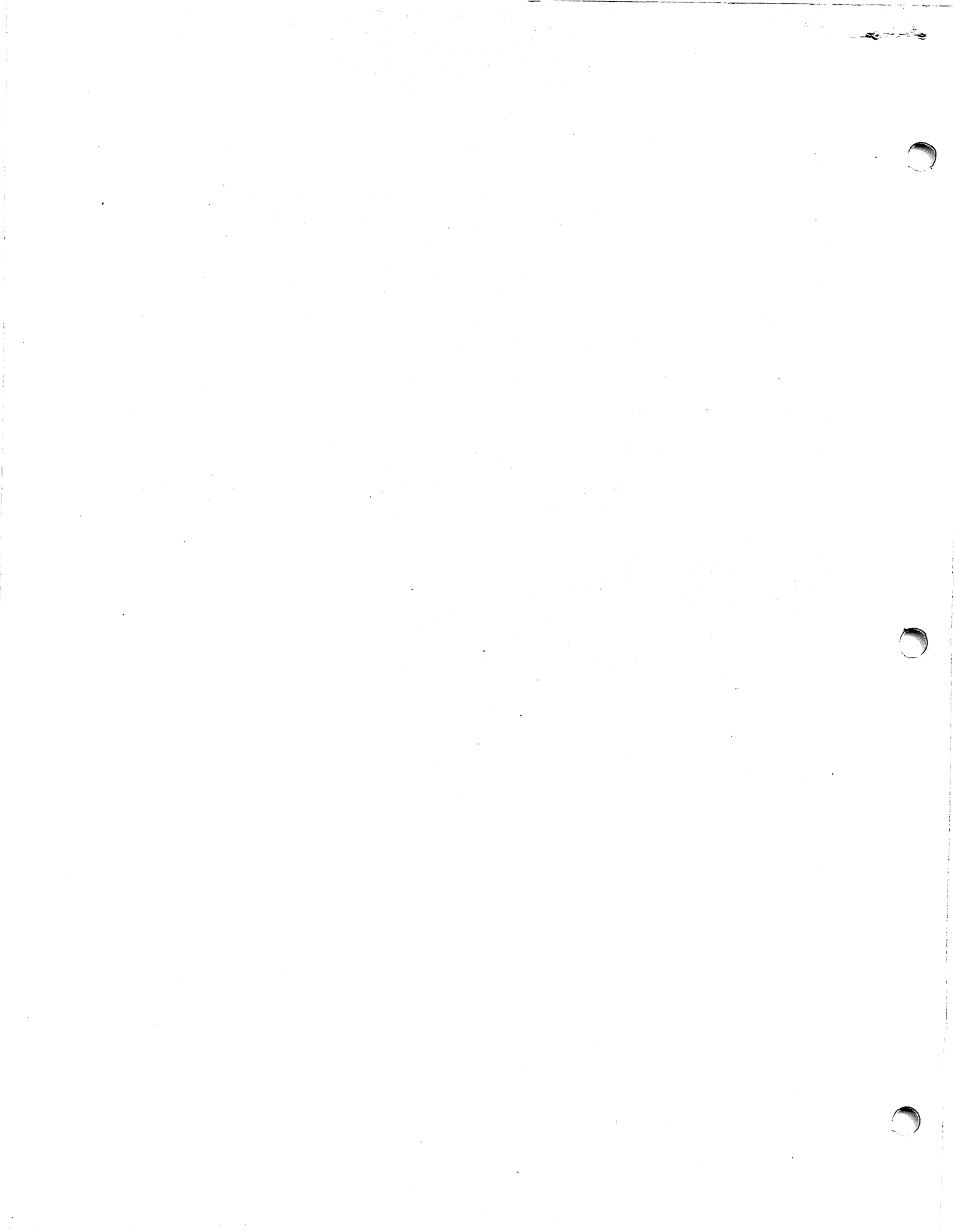


### Comparative Specifications

	9835	9845	SVP
Memory (bytes)	64-256K	56-449K	32-64K (user)
Storage Type	1-2 diskettes, cartridge tape	1-4 diskettes, F/R disk, disk pack, integral tape cartridge	DD diskettes, Winchester disk
Capacity	.5-1 MB	.5-240 MB	500K - 4.5 MB
Printers	30 cps; 480 lpm thermal	30, 180 cps; 480 lpm thermal	30-200 cps; 220-600 lpm
Languages	Basic	Basic	Basic II
Communications	async	async	2780/3780, 2741, TTY, HASP
Price:	\$17,450 (64K, 2 500K diskettes, 30 cps printer)	\$21,950 (56K, 2 500K diskettes, 180 cps printer)	\$12,800 (32K user memory, 2 DD diskettes, 120 cps printer)

#### SVP vs. the 98xx series

- . Much more cost-effective
- . Part of a family; upward growth path
- . Storage can be expanded without a quantum jump in cost
- . More commercial software available
- . Full line of printers available
- . More versatile



## Computers

TO DISTRIBUTION	PUBLICATION #
FROM 2200 SYSTEMS MARKETING-JANICE SOCHALSKI	DATE APRIL 1980
SUBJECT SVP MARKETING RELEASE	REORDER FROM:
THIS RELEASE SUPERSEDES:	DESTROY SUPERSEDED INFORMATION <input type="checkbox"/> YES <input type="checkbox"/> NO

**THE PERFORMANCE/PRICE COMPROMISE IS OVER!**

Thanks to Wang's exciting breakthrough in low cost Small Business Systems, there is no need to compromise on price or performance.

Wang announces the new 2200 SVP; the system that brings it all together for the First Time User. The new 2200 SVP has high performance, versatility, is user-oriented and offers a high cost/performance ratio. Never before has Wang offered such a powerful start to the Small Business Market, with prices starting below \$10,000.

**\*\*SVP PROFILE\*\***

A Standard SVP comes in an attractive desk-top design with:

- . 32K of User Memory
- . 1-2236DE Terminal with Business Graphics
- . 500K of Industry Compatible Diskette Storage (Single Sided Double Density)

**ALL FOR \$8,700!!!**

**OPTIONAL ADD-ON EQUIPMENT**

- . Additional 500K of diskette storage
- . 2 or 4 Megabytes of Micro-Winchester Fixed Disks
- . Any 2200-Family Printer (except the Flat Bed Plotter)
- . Additional 32K of User Memory
- . Telecommunication - Option 27B, Option 28B, and Option 28C

### WHAT DOES THIS MEAN??

- High Performance - Winchester disks for more storage per dollar; reliable and fast.
- The architecture of the VP, LVP, MVP processor; outperforms competition up to 20 to 1; fast throughput of data and quick response, 48K of internal control memory for execution of sophisticated programs to meet all needs.
- Versatile - A wide array of printers are available; add on telecommunications; as a 2200 family member, upgrade later to an LVP; immediately implement proven vendor software; or program your own through I.D.E.A.S. software package
- User Oriented - The SVP comes standard with the 2236DE terminal. This means easy-to-learn and use, business graphics, high quality display; floppy diskettes for fast, easy back-up and software transfer.
- High Price/Performance - Never before has Wang offered a system with this amount of power at such a low price. Compare the SVP against the competition! No price/performance compromise here!!

### WHY AN SVP??

In addition to substantial growth, Wang Laboratories has gained a respected reputation in the computer industry in the last several years. A major portion of this success is due to the planned positioning of our product lines. With our total computer product lines, we have reached a position of providing high quality solution-oriented computer products to business representing almost all vertical and horizontal market segments.

Having reached this position, Wang Laboratories has broadened its goals not only to maintain our respected position, but to expand our marketshare. The only way to achieve this task is to continue to provide products which are of the highest quality while competitively priced.

The SVP does just this.

## MARKET POSITION

### LOW END MARKETPLACE

The SVP has significant impact in the First Time User or Small Business Marketplace because, for the first time, Wang has combined the best performance small business processor and a low price (under \$10,000) providing a Total Solution System. This is part of Wang's End User Philosophy - to provide a proven, affordable system with application packages ready for implementation. Few major manufacturers are able to provide the wide array of industry-oriented packages. Here are some opportunities for you:

- . Low end businesses who cannot afford a large dollar investment but need the total solution benefits associated with a computer system. This means the extensive library of proven applications through our vendor network.
- . Scientific and engineering companies who require fast calculation of data to solve technical problems. Previously there were affordable systems but too slow to produce profitable results.
- . Government, Universities, Agencies, who require that dedicated jobs get done but within budgetary requirements.

Here's what you have to offer them with the SVP:

- . Fast SVP processor - this means the work gets done quickly. In fact, the SVP processor outperforms competition up to 20 to 1.
- . 2236DE terminal capabilities - this means easy-to-use keyboards, and the screen easy-to-read, with high quality display. Business Graphic Capabilities are standard on the 2236DE.
- . Proven vendor applications currently running on other 2200 series systems - Benefits are immediately realized with a Total Solution Product.
- . Network of vendors ready to provide additional programs - no wasted time or money in searching for programmers.
- . Attractive, quiet, desk-top model. This means it will fit anywhere. No special requirements in office space. Fits into modern office decor.
- . Additional disk capacity with fast, reliable micro-winchester disks. Their investment is always protected if their processing requirements grow.
- . The full line of 2200 Series printers. There is a printer to handle any need.
- . Wang knows the Small Business Marketplace. We have over 35,000 installed systems. This means we get the job done.

AT A VERY AFFORDABLE PRICE!!!

## MULTI-LOCATION COMPANIES

Recent studies have shown that almost all large multi-location companies have either implemented or investigated decentralization.

Decentralizing requires investigating the computer requirements of each branch or department so that processing needs are properly satisfied. The SVP offers a new dimension to satisfy these requirements. Here are some examples of what we have to offer:

- . The SVP as a remote stand alone processor with 500K or dual diskettes of storage for under \$10,000.
- . Through existing programs, additional storage and memory, the SVP can provide all departments with applications to handle their unique day-to-day processing needs.
- . Utilizing the I.D.E.A.S. software package and the capabilities of the 2236DE terminal, the SVP can be quickly programmed to satisfy the custom applications of each department.
- . Selected vital data can then be transmitted to the home office via telecommunications or mailing the industry compatible diskettes.

The Bottom Line? Here's what you have to offer:

1. The proven, cost saving benefits of decentralization.
2. The SVP, a proven processor, versatile, performance-oriented system at a low price.
3. A network of proven software packages.
4. The ability to upgrade when required - hardware and software.

This means their initial investment is always protected.

### FEATURE/BENEFIT

Let's look closer at some of the benefits of the new SVP:

#### Feature

Single sided, double density industry compatible Diskette

#### Benefits

- . 500K of storage; twice as much storage as single density. This means more storage per dollar spent.
- . Faster Back-Up of Data.

- . Industry compatible means additional marketplace potential.
  - Easy conversion from current IBM systems using 3741 Format.
  - Easy transfer of data; no special programming required.
  - Greater compatibility in adding Wang equipment to current in-house equipment.

#### Feature

The SVP utilizes micro-winchester disks as optional storage.

#### Benefit

- . Cost effective
  - Winchester technology offers the speed and reliability of hard disks at a more effective price/performance per megabyte
  - There are two (2) or four (4) contiguous megabytes of disk storage. This means larger files can be stored per disk. No need to worry about fixed/removeable file separation.
- . Increase in reliability
  - Fixed disk design means a controlled, clean environment!
  - Fewer movable parts means fewer service visits
- . More suited to day-to-day processing
  - Unlike the non-fixed disks of competitive products, the SVP is more suited for fast transaction-oriented processing.

#### Feature

The SVP is based on VP/LVP/MVP architecture.

#### Benefit

- . This architecture outperforms competitive products up to 20 to 1 times faster according to an independent study by Benchmark magazine. This means:
  - More throughput due to faster processing of data.
  - Faster response time from data entry to screen printing.
  - The SVP is ideal for the day-to-day quick processing requirements of transaction oriented companies.
- . The SVP processor has either 32K or 64K of user memory available. This means large programs can be executed.
- . The SVP can be upgraded to the LVP since they both share the same architecture. This means multi-terminal capability is available when required.

Feature

The SVP is an attractive desk-top design.

Benefits

- . The SVP is quiet and will fit in any office space and any office decor. It's built for the modern office.

Feature

The SVP supports Wang's Option 27B, Option 28B, and Option 28C telecommunications processors. In addition, Wang's four emulation software packages are available.

Benefits

- . The SVP supports asynchronous and synchronous transmission. This means more flexibility for users to transmit data. Current programs can be utilized, minimizing implementation time.

HERE'S HOW THE SVP SHAPES UP!!

The following are sample configurations of the SVP. You will find no compromise in price/performance.

SAMPLE 1

32K user Memory  
500K of Diskette Storage  
120 c.p.s. printer  
1-2236 DE Terminal

\$11,600

SAMPLE 2

32K User Memory  
Dual 500K Diskette Storage  
120 c.p.s. printer  
1-2236 DE Terminal

\$12,800

CONFIGURATIONS WITH  
ADDITIONAL STORAGE

SAMPLE 3

32K User Memory  
500K of Diskette Storage  
1-2236 DE Terminal  
2 Megabytes of Fixed Disk  
120 c.p.s. printer

\$14,800

SAMPLE 4

32K of User Memory  
500K of Diskette Storage  
1-2236 DE Terminal  
4 Megabytes of Fixed Disk  
120 c.p.s. printer

\$16,000



M-E-M-O-R-A-N-D-U-M

*Frank,*  
*Have someone*  
*review, then*  
*have Jeanie file in*  
*Library.* *G*

TO: Distribution  
FROM: Ken Vivenzio  
DEPT: 2200 New Products Group  
DATE: May 3, 1982  
SUBJ: Multi-Terminal SVP Controller  
preliminary maintenance plan

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The attached maintenance plan is to introduce those listed to the "Multiple Terminal SVP Controller".

A final revision of this plan will be distributed approximately 30 days after the first customer delivery.

Regards,

*Ken Vivenzio*  
Ken Vivenzio

MAINTENANCE PLAN  
MULTIPLE TERMINAL SVP CONTROLLER

PRELIMINARY: APRIL , 1982

PREPARED BY

PRODUCT LINE MANAGEMENT ORGANIZATION  
NEW PRODUCTS GROUP  
CUSTOMER ENGINEERING

KEN VIVENZIO  
MS 8236A

DISTRIBUTION:

Frank Andreano	MS 8236A	Hans Horikx	RDB 9911
Joe Beltrano	RDB 9921	Dick Klaxton	MS 8240A
Dick Boynton	RDB 3405	Chet Kasprzak	RDB 3105
John Bucsi	MS 8239A	Roupen Kiredjian	MS 8233
Alan Butt	RDB 9911	Ernie Lum	RDB 9917
John Carpentier	MS 8530	Roger Martin	RDB 9918
Steve Chandler	RDB 9921	Gary McMann	MS 8239B
Edward Chiu	RDB 9919	Mike Morrow	RDB 3800
Nancy Christie	MS 8231	Ricky Ng	RDB 9906
Ray Cullen	MS 8236	Erv Nork	MS 8239
George Debin	MS 8236B	Jim Parsons	RDB 9906
Bob Donovan	MS 8240	John Proulx	MS 8236A
Earl Emerick	MS 8236A	Jim Riley	MS 8240A
Lou Fick	RDB 9210	Rick Sample	RDB 3700
Don Fitch	MS 8230F	Thomas Sharkey	RDB 3600
Bill Frevold	MS 8237	Walter Sullivan	RDB 3505
Don Gangemi	MS 8236B	Charlie Torrielli	MS 2318
Alex Glikberg	MS 2544	Cliff Wallum	RDB 3200
Bob Goldschneider	MS 8110	George Wei	RDB 9908
Ray Harrison	RDB 3700	Bill Williams	RDB 9911
Peter Hibberd	MS 8240	Michael Woo	RDB 9906
		Janis White	MS 8231B
		Tom Worthington	RDB 9902

- I PRODUCT DESCRIPTION
- II MARKET
- III DESIGN SPECIFICATIONS
- IV MAINTENANCE GOALS
- V MAINTENANCE PHILOSOPHY
- VI SUPPORTING ELEMENTS

SCOPE

This document is to be used as an addendum to the existing  
SVP Maintenance Plan.

\* \* \* \* \*  
\* CHANGES ADDITIONS ETC, WILL BE INCLUDED IN THE FINAL \*  
\* REVISION. EXPECTED DATE OF FINAL, 30 DAYS AFTER FCS \*  
\* \* \* \* \*

## I PRODUCT OVERVIEW

1.1 The Multiple - Terminal SVP is a single board controller option that supports 1 - 3 terminals and a printer. This new controller replaces the existing "terminal/printer controller" Part number 210-7789.



MVP  
32K

### 1.2 MARKET

#### 1.2.1 Forecast

##### DOMESTIC

<u>Q4/82</u>	<u>Q1/83</u>	<u>Q2/83</u>	<u>Q3/83</u>	<u>Q4/83</u>
50	120	150	175	200

##### INTERNATIONAL

25	50	70	100	125
----	----	----	-----	-----

## II PRODUCT DESCRIPTION

### 2.1 HARDWARE

The Multi-Terminal Controller is a new design single board consisting of a Z80 microprocessor, 2 UARTS and approximately 100 chips.

The new part number is... "210-7846".

The rear connector plate on the SVP will be modified to accept (2) RS232 connectors. Two new ribbon cables will connect the RS232 connectors to the controller.

## III DESIGN SPECIFICATIONS

3.1 This product will be UL and CSA approved in accordance with existing requirements:

#### IV MAINTENANCE GOALS

Mean Time Between Failures (MTBF)

Multiple Terminal Controller (MTC), PN 210-7846 has a calculated MTBF of 8976/III @ 10-6.

#### V MAINTENANCE PHILOSOPHY

##### 5.1 Installation

Installations will be accomplished by a trained customer engineer.

##### 5.2 Corrective Maintenance

Corrective maintenance will be performed by a trained CE using the latest diagnostic and repair techniques. Faults will be isolated to the board level.

#### VI SUPPORTING ELEMENTS

##### 6.1 New Products Assurance

New Products Assurance will coordinate between the various support groups.

##### 6.1.1 Project Team

New Product Support  
Training  
ATE

Technical Documentation  
Logistics

Product Support  
Business Planning  
International  
Marketing  
Diagnostics

Ken Vivenzio  
John Carpentier  
Jim Riley  
Ed Bogusz  
Charles Tharp  
Mike Riley  
Lorrie Sullivan  
Roupen Kiredjian  
Gene Mantoni  
Harry Hegg

## 6.2 DIAGNOSTICS

### 6.2.1 Responsibilities

The Multi-Terminal SVP option diagnostics will be written and supported by the Diagnostic Development Group in Lowell.

### 6.2.2 Diagnostic Goals

To support the new controller part No. 210-7846 with a BIT (built in test) in prom and board repair diagnostics.

### 6.2.3 System Diagnostics

LVP/SVP System Exerciser                      Part No. 732-0002B

### 6.2.4 Remote Diagnostics

N/A

### 6.2.5 Device Diagnostics

See Diagnostic Goals

### 6.2.6 Schedule

LVP/SVP System Exerciser	Available	11/11/82
Built In Test	Available	May, 1982
Board Repair Diagnostics	Available	May, 1982

## 6.3 Technical Documentation (Preliminary Input)

### 6.3.1 Documentation Rationale (Domestic and International)

The documentation rationale for the Multiple-Terminal SVP is derived from the following unit maintenance philosophy.

- A. Installations -- The CE performs the installation including all necessary cabling, initial turnon and startup, and verification of correct operation.
- B. Corrective Maintenance: Performed on-site by the CE using diagnostic programs to identify faults down to the PCB level.
- C. Special tools and test equipment -- None required other than the standard items provided in the Wang CE Tool Kit.

### 6.3.2 Types of Documentation

#### 6.3.2.1 New Products Phase Manual

The initial documentation effort for the Multiple-Terminal SVP will consist of a New Products Phase (NPP) manual to meet the documentation rationale specified in section 6.3.1 above. The NPP manual will include the following:

- A. An overview of the Multiple-Terminal SVP (functional, electrical, and mechanical).
- B. Theory of operation down to the chip level.
- C. Procedures for:
  - a) Installation
  - b) Cabling
  - c) Initial turn-on and start-up
  - d) Performing diagnostic tests
  - e) Analyzing failure indications
  - f) Removal and replacement
  - g) Adjustments
- D. An IPB for all BOM components.

#### 6.3.2.2 Product Support Phase Manual

The contents of the Product Support Phase manual will be defined at a later date (equipment transition phase).



### 3.3 Responsibilities

#### 6.3.3.1 Customer Engineering Product Support Technical Documentation (CEPSTD)

The New Products Phase Writing Group (RDB 3951) will be responsible for gathering information (verbal, written, tape-recorded, hands-on, etc.) for inclusion in the Multiple-Terminal SVP New Products Phase manual to meet the documentation rationale specified in section 6.3.1.

#### 6.3.3.2 Logistics

Logistics is responsible for document distribution as specified below in section 6.3.4.

#### 6.3.3.3 New Products Assurance Group

The New Products Assurance Group is responsible for providing sources of information, access to equipment, arrangement of seminars, etc. for the technical writer.

#### 6.3.4 Distribution/Media

##### 6.3.4.1 Standard

Logistics will supply printed copies of the Multiple-Terminal SVP documentation for distribution to customer engineers. Extra copies of all documents will be printed to allow a reserve in the stockroom for future requisitions.

##### 6.3.4.2 Printing

An initial printing of 2500 copies of the Multiple-Terminal SVP New Products Phase manual will provide 1300 copies for initial distribution, 600 copies for International follow-up distribution, and 600 copies for stock.

### 3.5 Schedules

The schedule for the Multiple-Terminal SVP New Products Phase manual is shown on the chart below. CEPSTD responsibilities are defined as items A thru F and the New Products Assurance Group responsibilities are shown as items G thru O. The schedule for Product Support Phase documentation will be defined at the New Product Assurance/Product Support equipment transition meeting time.

#### PMM SCHEDULE

APRIL			MAY				JUNE		JULY
20	27	30	5	12	17	21	4	15	8
A	B	C					D	E (FCS)	F
G			H, I	J, K		L, M, N, O			

#### CEPSTD Responsibilities

- A - Input to Maintenance Plan
- B - Writer Assigned
- C - Detailed Outline Complete
- D - Manual Provided for Engineering Review
- E - Manual to Printing (FCS) and Available for Early Field Support
- F - Printed Copies Available

#### New Products Assurance Group Responsibilities

- G - Equipment Specifications, Marketing Data Sheets, and Schematics
- H - Cabling and Interconnection Wiring Diagrams
- I - Block Level Basic Theory Seminars
- J - Installation Procedure
- K - Turn-On Procedure
- L - Equipment Available for BOM Photographs
- M - BOM
- N - Fault Analysis and Diagnostics
- O - Equipment Available to Writer for Validating Procedures

### 6.3.6 Costs

Initial New Products Phase Documentation.....	\$XX,XXX.00
Documentation Update Program.....	\$X,XXX.00

Product Support Phase documentaion costs will be defined at the New Product Assurance/Product Support equipment transition meeting time.

## 6.4 TRAINING

### MULTIPLE-TERMINAL SVP (OPTION)

#### 6.4.1 DOMESTIC

##### 6.4.1.1 PHILOSOPHY: (as of 4/23/82)

There are NO Initial Specially Selected Field Personnel/Instructor level training classes planned pertaining to the Multiple-Terminal SVP (Option). The Multiple-Terminal Option is a modified version of the existing SVP. Multiple-Terminal operation is accomplished by the addition of a new controller PCA (210-7846), 2 (two) RS-232 connectors to the unit rear connector plate, and 2 (two) ribbon cables between the rear panel connectors and the controller PCA (210-7846).

Training on the Multiple-Terminal SVP (Option) will be offered by the 2200 Technician Training group as an addition to the existing Phase I course - approximately June/July 1982.

##### 6.4.1.2 RESPONSIBILITIES:

###### COORDINATOR AND ASSIGNED PERSONNEL

John R. Carpentier (Supervisor)

##### 6.4.1.3 GOALS:

- I. To acquire and forward all available documentation regarding the controller, mounting hardware, and diagnostics to the 2200 Technician Training supervisor and International Training Organizations for inclusion into the existing 2200 course curriculum.

##### 6.4.1.4 COURSE PREREQUISITES:

###### 6.4.1.4.1 INITIAL TRAINING

. There are NO Initial Specially Selected Field Personnel/Instructor level training classes planned to support Beta sites and initial customer shipments of this 2200 Product.

#### 6.4.1.4.2 ON-LINE TRAINING

Multiple-Terminal SVP (Option) training will be incorporated into the 2200 Phase I on-line Technician Development Training class.

#### 2200 Phase I

- . Qualifications A.F.E.T. or Above
- . Pre-requisites Completion of 2200 Phase I Self Study.

#### 6.4.1.5 MODULE SECTION OUTLINE:

Not Applicable.

#### 6.4.1.6 TRAINING SUPPORT SPARES:

I 210-7846 PCA.

#### 6.4.1.7 SPECIAL TOOLS and TEST EQUIPMENT

None known.

#### 6.4.1.8 DOCUMENTATION SUPPORT

Technical Training Center (TTC) requires Twenty-five (25) copies of the Multiple-Terminal SVP (Option), New Product Phase documentation from Technical Documentation to support Multiple-Terminal SVP (Option) training for a two week period. The remaining documentation requirements will be met by the TTC until the Multiple-Terminal SVP (Option) Product documentation becomes a stocked item.

6.4.1.9 CAPITAL EQUIPMENT

Not yet determined.

6.4.1.10 COSTS

Equipment (approximate)

Not yet determined.

6.4.1.11 SCHEDULE (as of 4/23/82)

6.4.1.11.1 Project Schedule

MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.
------	------	-----	------	------	------	-------	------	------	------	------

X-X Research Multiple-Terminal SVP (Option)

X-X Familiarize Instructors with changes

X FCS (First Customer Shipment)

X-X Incorporate into on-line 2200 training

\*\*\*\*\*  
 \* Curriculum Development and Technician Training classes are \*  
 \* highly dependent on equipment and documentation availability. \*  
 \* Project slippage with regard to the availability of equipment \*  
 \* and/or documentation will effect the Curriculum Development \*  
 \* Project Schedule accordingly. \*  
 \*  
 \* \*\*\*\*\*

6.4.1.11.2 Course Schedule

NOT APPLICABLE - Training to be incorporated into existing scheduled 2200 Phase I classes.

6.4.1.12 TRAINING SUPPORT TO INTERNATIONAL

1. HOME OFFICE TRAINING

None applicable to this product

2. DOCUMENTATION

None specific to this product.

3. OUTREACH TRAINING

None Planned

6.4.2 INTERNATIONAL

\* \* \* \* \*  
\* This portion of the maintenance plan to be \*  
\* submitted to the Curriculum Development Group by \*  
\* the International Area Offices for inclusion in \*  
\* the Product Maintenance Plan following \*  
\* distribution of the PRELIMINARY Maintenance \*  
\* Plan. \*  
\* \* \* \* \*

- 6.4.2.1 PHILOSOPHY
- 6.4.2.2 RESPONSIBILITIES
- 6.4.2.3 CAPITAL EQUIPMENT
- 6.4.2.4 TRAINING SUPPORT SPARES
- 6.4.2.5 SCHEDULE

## 6.5 LOGISTICS

### 6.5.1/Logistics Support Philosophy (Domestic/International)

Logistics support for the Multi Terminal SVP will follow the standard Logistics support plan for New Products. Unique Branch level spares will be distributed to individual branches based upon unit population and fail data information.

### 6.5.2/Responsibilities

Controlled Products

### 6.5.3/Recommended Spares List

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>A</u>	<u>B</u>	<u>HO</u>	<u>COMMENTS</u>
210-7846	Controller		X		RIL

### 6.5.4/Special Tools

Logistics is not aware of any special tools for this product.

### 6.5.5/Field Ordering Requirements

Standard ordering procedures are to be used for non RIL branch level spares. RIL spares are based upon population.

### 6.5.6/Test Site Support

Standard support procedures will be employed for any Beta Site.

### 6.5.7/Financial Analysis

The financial analysis will be available when the RSL is finalized.

### 6.5.8/Special Packaging and Handling

Special packaging and handling is not required.

### 6.5.9/Schedule

Spares forecasted	April	1982
Spares Due	June	1982

## 6.6 REPAIR

### 6.6.1 Repair Plan Objective

The goals of the repair plan are:

To insure there are repair methods available for the product at Beta Site introduction

List the initial repair methods that will be available during the initial product introduction

List the primary repair methods to be used when available in the Field Service Centers.

List those Field Service Centers (Domestic and International) responsible for the initial repairs of the product.

#### 6.6.1.1. Multiterminal SVP Board (210-7846) Preliminary Repair Plan

The Preliminary Repair plan for the 210-7846 Multiterminal SVP PCB is to initially use Board Level Diagnostics developed by the Lowell Corporate Diagnostic Group during the initial stages of production. A Millennium Signature Analysis program developed by the Customer Engineering Test Equipment Engineering group is scheduled to be made available to all FSC's for repair of this board by July 16, 1982. (This repair plan assumes that the appropriate board level diagnostics will be available in an approved, orderable part number prior to first customer ship to properly support repair of this product).

### 6.6.2 New Products Needs/Requirements

6.6.2.1 The Customer Engineering Test Equipment Engineering Group will require a 210-7846 PCB for Millennium program Development by April 30, 1982 to complete the Millennium Signature Analysis program by July 16, 1982.



## 6.6.2.2 Minimum Recommended Capital Equipment Requirements

Item	QTY	Description	CET #
210-7846 PCB	1	Multiterminal SVP-PCB	---
*SVP	1	SVP 8X - 32K 1MB Floppy Disk	177-3228
2236DE	1		177-3236
Millennium	1	Millennium Micro System Analyzer	727-0301
Millennium			
Z80 POD	1	Millennium Z80 Emulator POD	727-0302
210-T249-X	1	With Millennium Universal Tst Fix	

\*(Any model SVP can be modified to accept this new Controller)

### 6.6.2.2.1 Domestic Capital Equipment Requirements

All Domestic FSC's should plan for the repair of this board. Please provide the FSC Support Group Manager (Bob Donovan-MS8240, X6341) with tentative schedules for repair capabilities of this board by May 24, 1982.

### 6.6.2.2.1 International Capital Equipment Requirements

All International FSC's should plan for the repair of this board. Please provide the FSC Support Group Manager (Bob Donovan-MS8240, X6341) with tentative schedules for repair capabilities of this board by May 31, 1982.

## 6.6.3 Repair Methods

### 6.6.3.1 ATE (Millennium)

The Customer Engineering Test Equipment Engineering Group will design a Millennium Signature Analysis program for use in Repair of this board (210-7846). This program will also encompass the existing (210-7789) Terminal Processing Unit (TPU) PCB now in use with existing SVP CPU's.

The Customer Engineering Test Equipment Engineering Group is developing a Millennium Universal Power Supply Chassis which is designed to replace existing power supplies now recommended in the Millennium Module Repair Guides (MRG).

A Universal Motherboard test fixture \*(210-T249-X) is also being developed for use in conjunction with this power supply chassis. This universal mother board test fixture will be configured for each application. Where applicable, the motherboard test fixture will

be used for multiple boards such as the 210-7789 TPU and the 210-7846. The motherboard test fixture can also be used with power supplies now in use with existing Millennium programs, until the Millennium Universal Power Supply chassis becomes available in all FSC's.

\*NOTE: (The X designation at the end of the 210-T249 will be used to note what program the fixture is to be used with)

6.6.3.2 Diagnostics

Diagnostics are being developed by the Lowell Corporate diagnostic group which will initially be used for repair of this board. Part number will be made available in the next revision of this repair plan. These diagnostics are planned to be available at First Customer Ship in an orderable part number for FSC purposes.

6.6.3.3 Special Tester

N/A

6.6.3.4 OEM

N/A

6.6.3.5 Capital Equipment Costs for the 210-7846 Repair/System Test

Item	Description	US Cost
210-7846	MultiterminalSVP PCB	Not available
177-3228	SVP-8X 32K1MB Floppy Disk	Not available
177-3236D	2236DE Workstation	921.45
727-0300	Millennium MicroSystem Analyzer	4,675.00
727-0302	Millennium Z80 Emulator POD	1,375.00
270-T249X	Motherboard Testfixture for 210-7846/ 210-7789 use w/Millennium	Not available
Not avail	Millennium Universal PS Chassis	Not available

6.6.4 FSC Training

None

6.6.5 Implementation Plan

Domestic/International Repair Plan

(Lawrence FSC, Western FSC, Southern FSC, Ottergem FSC, Australia FSC, Hong Kong FSC, Canada FSC)

All Domestic and International FSC's should plan for the repair of this board.

Coral Gables - (Latin America)

Coral Gables should return all 210-7846 PCB's requiring repair to the Lawrence FSC.

6.6.6 Reference Documents  
Not available at this writing

6.6.7 Unique Components  
Not available at this writing

The 210-7846 PCB (Multiterminal SVP PCB) Field Service Center Repair Plan will be revised as more information becomes available.

## 6.7 PRODUCT SUPPORT

Product Support will be available upon first customer ship.

# PRODUCT SERVICE NOTICE

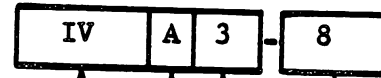
DATE: 12/15/82

CLASSIFICATION 2200 SYSTEMS

CATEGORY MAINFRAMES

PRODUCT/APPL. VP/MVP/LVP/SVP/CPU's

SEQUENCE # \_\_\_\_\_



TITLE:

2200 SVP OPTION W BOARD INSTALLATION

## ADVANCE COPY

This PSN provides installation, checkout, and operating instructions for the optional 210-7486 Multi-Terminal SVP Board (Option W) used to replace the original 2200 SVP Board (P/N 210-7789). The Multi-Terminal SVP Board supports one, two, or three workstations and a printer. The original 7789 board supports only one workstation and a printer.

The information in this PSN is presented under the following headings:

- 1.0 RELATED DOCUMENTATION
- 2.0 EQUIPMENT REQUIRED
- 3.0 INSTALLATION PROCEDURE
- 4.0 OPERATION.

## 1.0 RELATED DOCUMENTATION

Refer to the following publications for further information concerning the equipment described in this PSN:

2236 MXE TERMINAL CONTROLLER: reorder number 729-1127

2200 SVP MANUAL: reorder number 729-0935

## 2.0 EQUIPMENT REQUIRED

A standard loopback connector (P/N 210-1040) is the only special item required. This connector is used during the testing of the 7846 board in the system.

### NOTE

If the 2200 SVP system's rear panel does not contain a mounting plate hole (See Figure 1), a replacement rear plate (P/N 270-0683) must be ordered. Equally important, the 7846 option W requires that the system contains a 210-7588-1 (32K control memory) board (See Figure 1). Check to ensure this board is included before running the 2.4 MVP system software.

## 3.0 INSTALLATION PROCEDURE

1. Turn system power OFF.
2. Using a Phillips screwdriver, remove the six screws, three on each side of the unit, that secure the sides of the cover. Next, remove the two screws that secure the cover to the rear of the chassis.
3. Slide the cover to the front of the unit, and then lift the cover off.
4. Remove the original 7789 board. See Figure 1.
5. As shown in Figure 2, set switches on the 7846 board as follows:-

### KEY:

0=OFF

1=ON

SW1 (Baud Rate)		SW2 (Baud Rate)		SW3 (Device Address)	
<u>SW1</u>		<u>SW2</u>		<u>SW3</u>	
1	ON	1	ON	1	OFF
2	OFF	2	OFF	2	OFF
3	ON	3	ON	3	OFF
4	ON	4	ON	4	OFF

REAR CONNECTOR PLATE MOUNTING HOLE      210-7588-1 PCB      ORIGINAL 210-7789 PCB

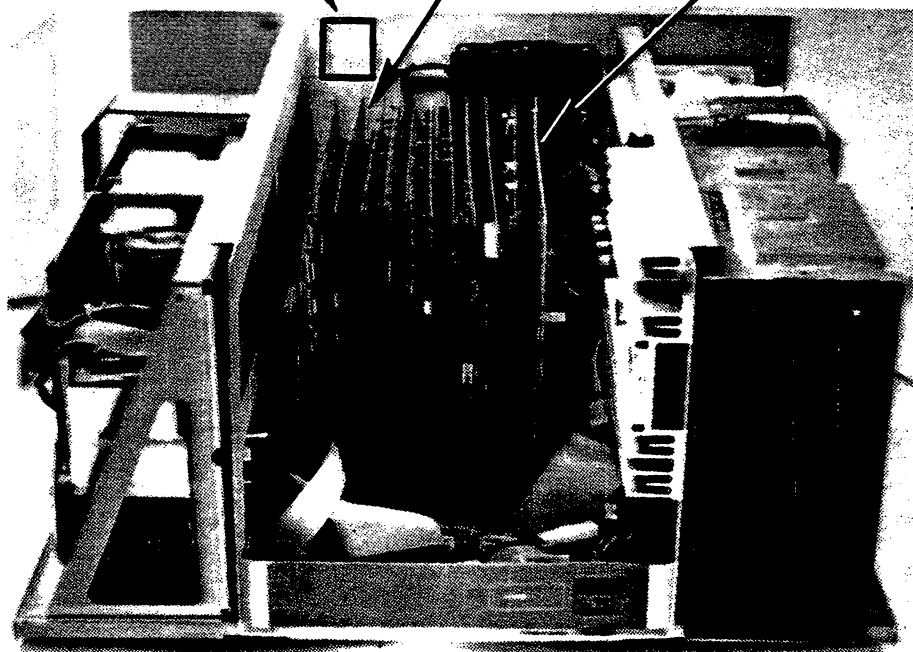


Figure 1. Component Locations

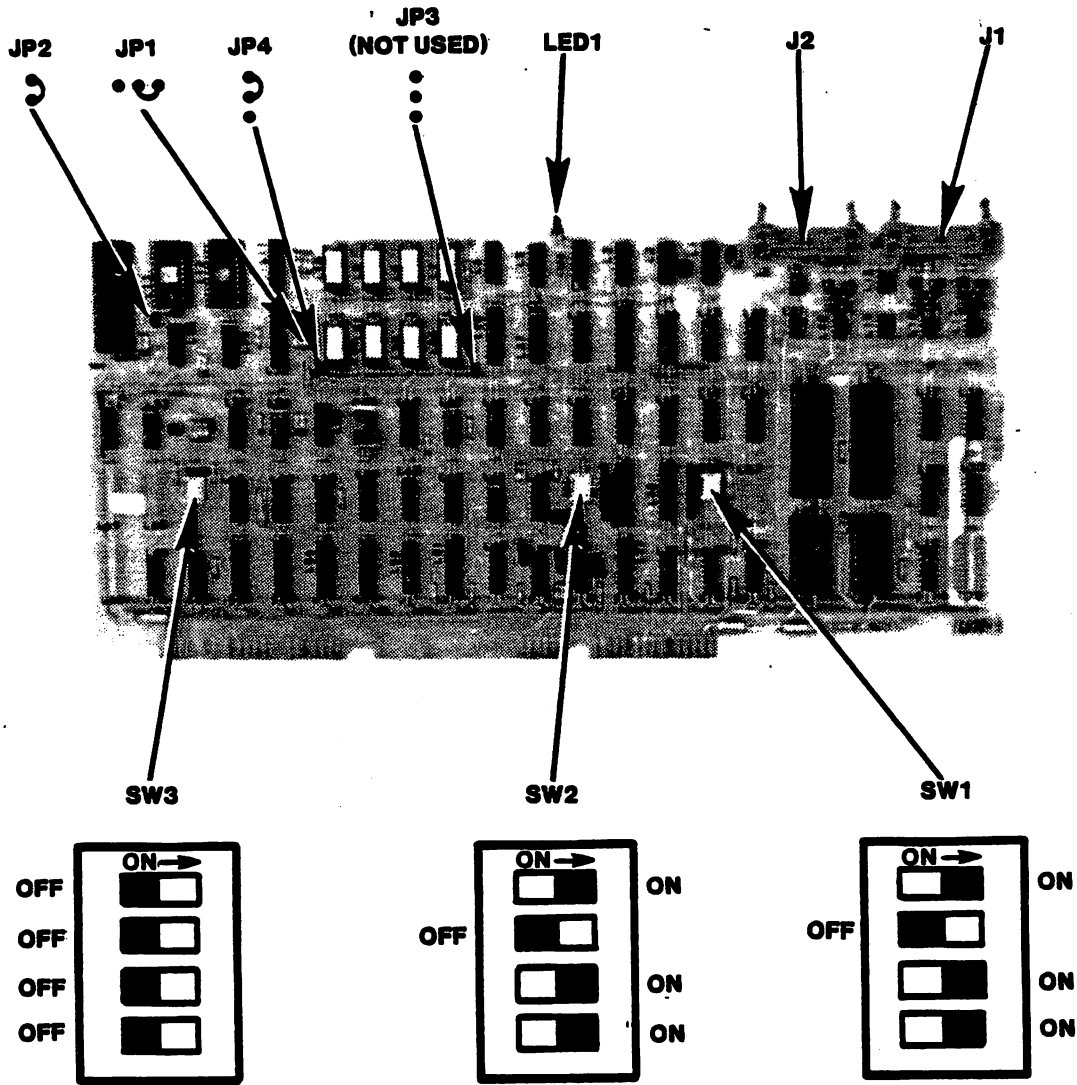


Figure 2. Option W Board Jumper and Switch Locations

NOTE: SW1 and SW2 settings, as specified in step 5, indicate the correct settings for 19.2 K baud rate. Refer to the table below for other correct settings:

SVP OPTION W HARDWARE SWITCH SETTINGS

<u>BAUD RATE:</u>	<u>PORT 1 OR PORT 2</u>	<u>SW1 OR SW2</u>			
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
9600		OFF	OFF	ON	ON
7600 (NOT USED)		ON	ON	OFF	ON
4800		OFF	ON	OFF	ON
3600 (NOT USED)		ON	OFF	OFF	ON
2400		OFF	OFF	OFF	ON
1800 (NOT USED)		ON	ON	ON	OFF
1200		OFF	ON	ON	OFF
600		ON	OFF	ON	OFF
300		OFF	OFF	ON	OFF
200		ON	ON	OFF	OFF
150		OFF	ON	OFF	OFF
134.5		ON	OFF	OFF	OFF
110		OFF	OFF	OFF	OFF

NOTE: Port 0 is automatically set for 19.2 K baud rate as its default setting.



6. Check that the jumpers on the 7846 board are configured as shown in Figure 2.

NOTE JP3 is not used.

7. Insert the new 7846 board into the original 7789 board's slot. Check that the 7846 board is seated properly.
8. Remove the four screws securing the original rear connector cover plate from the cabinet.
9. Install ribbon cable assembly to top of option W board (J1) as illustrated in Figure 3. Run 7846 board's cable assembly to rear mounting hole.

CAUTION

Check to ensure that the cable assembly allows sufficient clearance from fan so as not to impede ventilation.

9. Connect the RS-232 cable connectors to their respective port locations.
10. Mount the new rear plate using the hardware supplied with the 7846 board. See Figure 4.
11. Power ON the system. The 7846 option W board is equipped with a power-up diagnostic. The power-up diagnostic run time is approximately six seconds. LED 1 at the top of the 7846 board (See Figure 2) indicates a GO or NO GO diagnostic condition as follows.
  - a. LED 1 will initially turn ON.
  - b. After approximately six seconds, LED 1 should turn OFF.
  - c. If it does turn OFF after this time elapses, the board has passed this hardware diagnostic.
  - d. If it does not turn OFF as described, a hardware problem with the 7846 board is indicated. At this time, remove the 7846 board and repeat the installation procedure using another 7846 option W board.
12. Install the cover and secure it with the eight previously removed screws.

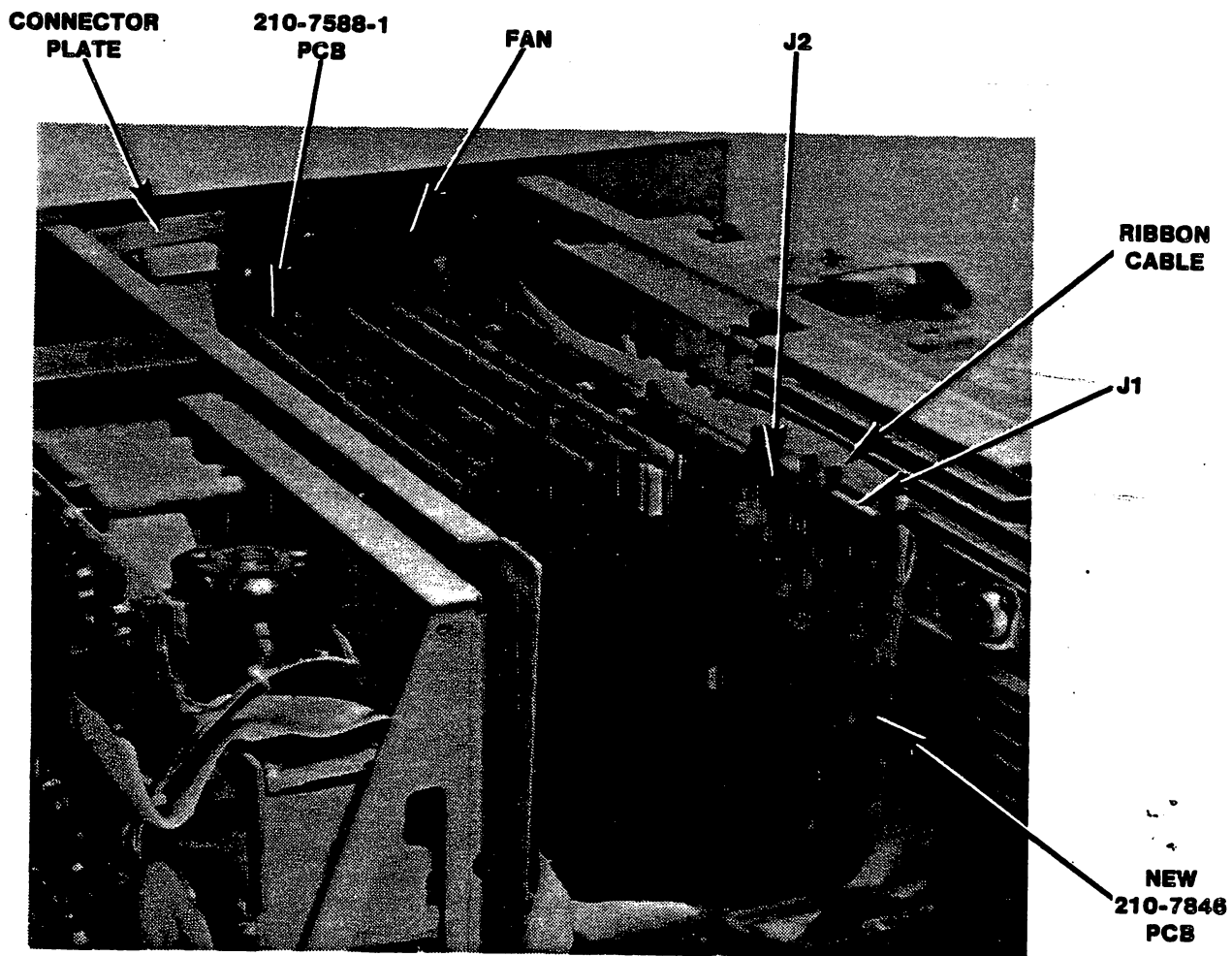
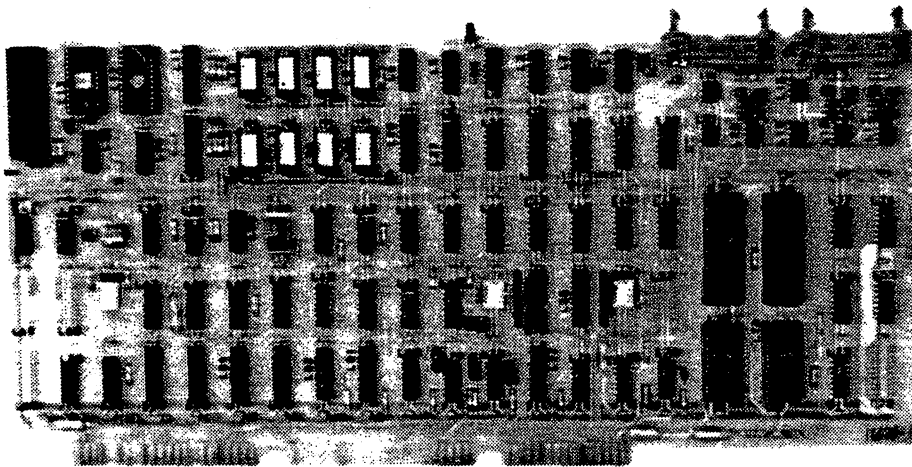
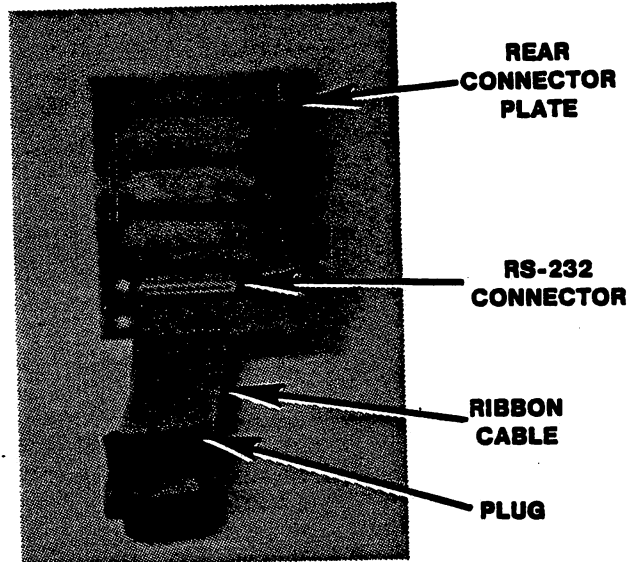


Figure 3. Ribbon Cable Routing



**210-7846 SVP BOARD**

**Figure 4. Option W Components Supplied**

### 3.1 WANG TERMINAL TO OPTION W CONTROLLER INTERFACE

Each terminal can be attached locally to the SVP option W Terminal Controller at distances ranging up to 2,000 feet. Communication between the terminal and the SVP option W Terminal Processor is asynchronous and full-duplex, with selectable line speeds ranging from 50 through 19,200 bits per second (bps). The three ports, used in option W, are 25-pin and are RS 232-C compatible.

A local cable connection between the SVP option W and a terminal is less than 25 feet. For cable distances from 25 feet through 2,000 feet, optional direct connection cable is available. For cable distances beyond 2,000 feet, two asynchronous full-duplex, 11 bit, RS-232-C compatible modems per terminal must be used to provide the communication link over switched lines.

One modem is connected to a port on the terminal processor; the other is connected to a terminal. The WANG Model WA3451 Asynchronous/Synchronous Modem, which is compatible with 2200 SVP terminals, is the recommended modem for switched remote connection of these terminals to SVP systems.

Cable is optionally available for modem connections to WANG equipment in lengths of 12 feet, 25 feet, and 50 feet. Two lengths of modem cable for each terminal connection provide the required link between the terminal processor and its modem, and between the terminal and its modem.

### 3.2 PRINTERS/PLOTTERS TO OPTION W INTERFACE

A variety of printers, offering various speeds and print types, may be used with the 2200 SVP Option W. The printers supported range in speed from fifteen characters per second through 600 lines per minute, and these include matrix, chain, band, and daisy-wheel impact types. The option W also supports a selection of plotters that include drum, CRT, and daisy-wheel type. In addition, printer/plotter multiplexers are also available for use with the Option W. Refer to the appropriate sections in documentation category III.C for detailed information concerning these printers, plotters, and multiplexers.

**NOTE:** Due to the physical structure of the SVP Option W, only one printer or plotter is supported. If desired, an additional printer or plotter may be connected to the 2236DE Terminal.

### 3.3 INITIAL TURN-ON

After LED 1 turns OFF and, therefore, verifies that the hardware test is successfully completed, the terminals connected to ports 1, 2, and 3 should prompt similar to the following:

2236DE (or DW) R04 19200BPOS 8+0 (USA)

This prompt is a self-identification message and consists of several fields separated by spaces. The following is a brief description of this message:

2236DE (DW)	the model number and is preceded by an asterisk.
R04	the revision number of the terminal firmware preceded by R.
19200BPS	the data rate followed by BPS.
8+0	the number of data bits (seven or eight). E is even parity; 0 is odd parity; N is no parity.
(USA)	the version of the keyboard and the CRT character set, enclosed in parenthesis.

Type "RESET" once. The following prompt should display:

'KEY SF'?

Load the 2.4 MVP software. The following diagnostic procedure is intended to test the 7846 board's performance in the system.

#### 3.4 LOADING OPTION W (2.4) COMMAND CODE

The SVP option W responds to certain user commands by entering a "Command Mode". By using this feature, the user can set both the transmission rate and which port is to perform as Terminal 1 on the system. In addition, these can be set through the software alone, without manually resetting any switches. Command mode can be used: to set a system password, to test the RAM memory of the board, to lock the current transmission rate of the port issuing the command, and to list all commands. Since all command mode statements are password protected, only a privileged user has access to these commands.

To enter the option W command mode, press the "LOAD" key three times and observe the following screen prompt:

'ENTER COMMAND:' followed by a new line of '%'

The user should now enter the desired option W command, whose descriptions follow. The option W will process the command and will prompt for another command until the user enters a blank line. By entering a blank line, the user is returned to the previous mode. Note that the user should not key a command until an option W command mode prompt appears.

Any terminal may enter option W COMMAND MODE at ANY time. If the 2200 is displaying to the screen during command mode, the 2200 output will be temporarily suspended to prevent the two outputs from becoming intermixed.

### 3.5 COMMAND DEFINITIONS

For the command descriptions that follow, use these definitions:

The command "psw" is a six character password containing no blanks.

The command "port designator" is a one character designator. Note that 0 is equal to the port at which the command is being typed and, therefore, the user need not know which port he or she is connected to. Equally important, Port 4 is NOT used with option W. The C.E. can troubleshoot ports as follows:

Port 1	use standard SVP troubleshooting procedures
Port 2	use option W COMMAND MODE software diagnostic
Port 3	use option W COMMAND MODE software diagnostic
Port 4	not used

All commands possess a format depicted as follows. All begin with a ONE character command code. Most commands next have a six character password (which is the option W password) similar in use to the 2200 system password. These are followed by any necessary parameters in the order specified below. Note that the user can always type 'H' for 'HELP', while in the option W command mode, to obtain a list of command codes.

The command line is divided into three fields. The first field is a one character field. It identifies the program or the command to be run. The second field is a six character field. It contains the desired password for the option W command. Note that the password will NOT be printed on the screen. Instead, the option W will print the numbers, zero through 5, as the password characters are typed. As a result, the password is still protected for the user. The third field is used for setting the desired the command such as the "port designator", "baud rate", "new password", or some other option W command.

### 3.6 COMMANDS

This section includes command descriptions as well as the step by step procedure for entering the proper commands. While in command mode, there are two commands, Help and Status as described below, that are an important aid to the C.E..

The first important command is 'H' (HELP). This command allows the user to see all the command code letters and definitions. To enter the 'H' (HELP) command code, procede as follows:

### 3.6.1 'H' (HELP) ALL COMMAND CODES

Steps:

1. Type 'H'
2. Return

Example: %H

```
CRT DISPLAY:  A Set VP user
               B Set Baud rate
               C Set psw
               * E Analog Loopback
               * F Digital Loopback
               H Help
               I RAM Test
               L Lock
               ? Status
```

\* indicates the operator should use loopback connector, (P/N 210-1040), when running these tests.

The second important command is '?' (Status). Status '?' shows the status of all ports on the SVP option W board. Specifically, it shows: 'ON' or 'OFF' line condition; 'Software Baud Rate' 'L' (Lock); '(Hardware Baud Rate)'. Procede as follows to enter the '?' (Status) command code.

### 3.6.2 '?' (Status)

Steps:

1. Type '?'
2. Return

Example: %?

```
CRT DISPLAY:  Option W R0 (BOOTSTRAP)
               * PORT 1 ON  19200 L / (19200)
               PORT 2 OFF  19200  / (19200)
               PORT 3 OFF  19200  / (19200)
               PORT 4 OFF  19200  / (19200)
               SOFTWARE    / (HARDWARE)
```

\* indicates the Primary User.

### 3.6.3 'A' SET PRIMARY USER

Steps:

- |                          |          |                      |
|--------------------------|----------|----------------------|
| 1. Type                  | 'A'      |                      |
| 2. Password (psw), type  | 'MXEPSW' | (any six characters) |
| 3. Port designator, type | 'X'      | (ports 1 through 3)  |
| 4. Return                |          |                      |

Example: ZAM012345

CRT DISPLAY: OK

The port designated has become the new primary user in the MVP mode.

### 3.6.4 'B' SET BAUD RATE

Steps:

- |                          |        |                       |
|--------------------------|--------|-----------------------|
| 1. Type                  | 'B'    |                       |
| 2. Password (psw), type  | MXEPSW | (any six characters)  |
| 3. Port designator, type | 'X'    | (ports one through 3) |
| 4. Baud Rate, type       | '1200' | (1200=example)        |

Example: ZBM0123451200

CRT DISPLAY: RO (BOOTSTRAP)

```
* PORT 1 ON 19200 L / (19200)
  PORT 2 OFF 19200 / (19200)
  PORT 3 OFF 19200 / (19200)
  PORT 4 OFF 19200 / (19200)
Are you SURE?(Y/N): Y (answer Y or N)
OK
```

To ensure that the new baud rate is set properly, perform a '?' (STATUS) check. Refer to 2.5.2 (STATUS).

**NOTE:** Setting the baud rate through software overrides any hardware switch setting. Therefore, the baud rate desired is now set at the port designated.

### 3.6.5 'C' SET PASSWORD

Steps:

- |                                |          |                      |
|--------------------------------|----------|----------------------|
| 1. Type                        | 'C'      |                      |
| 2. Password (psw), type        | 'MXEPSW' | (any six characters) |
| 3. New Password (newpsw), type | 'NEWPSW' | (any six characters) |
| 4. Return                      |          |                      |



Example: %C012345EWPSW

CRT DISPLAY: C////////////////////  
OK

'NEWPSW' becomes the new password.

3.6.6 'E' ANALOG LOOPBACK

Steps:

- |                          |          |                      |
|--------------------------|----------|----------------------|
| 1. Type                  | 'E'      |                      |
| 2. Password (psw), type  | 'MXEPSW' | (any six characters) |
| 3. Port designator, type | 'X'      | (ports 1 through 3)  |
| 4. Return                |          |                      |

Example: %EM012345

CRT DISPLAY: ANALOG LOOPBACK SUCCESS  
or  
ANALOG LOOPBACK ERROR

The Analog Loopback Test takes approximately six seconds to run. This test answers in one of two states: SUCCESS or ERROR (failure). The Analog Test checks the local end of the communications link. This isolates the modem from the telephone line, and connects the transmitter output to the receiver input. This command will cause all I/O's at all ports to be temporarily suspended.

3.6.7 'F' DIGITAL LOOPBACK

Steps

- |                          |          |                      |
|--------------------------|----------|----------------------|
| 1. Type                  | 'F'      |                      |
| 2. Password (psw), type  | 'MXEPSW' | (any six characters) |
| 3. Port Designator, type | 'X'      | (ports 1 through 4)  |
| 4. Return                |          |                      |

Example: %F0123451

CRT DISPLAY: DIGITAL LOOPBACK SUCCESS  
or  
DIGITAL LOOPBACK ERROR

Digital loopback is executed at the port designated. The loopback checks the information transferred from one modem to another. This transferred information consists of a 256 byte data pattern. If any malfunction occurs during this test, the operator prompt will display as 'DIGITAL LOOPBACK ERROR'. This test takes approximately eight seconds. During this command, all I/O at all ports will be temporarily suspended.

**NOTE:** The Digital and the Analog Loopback tests can only be utilized to test the designated Option W port by inserting the RS-232 loopback plug.

### 3.6.8 'I' MEMORY TEST

Steps:

1. Type 'I'
2. Password (psw), type 'MXEPSW' (any six characters)
3. Return

Example: %M01234

CRT DISPLAY: NO MEMORY ERROR  
OR  
MEMORY ERROR

The Memory Test tests the RAM in a nondestructive way. One of two prompts answer the Memory Test. 'NO MEMORY ERROR' indicates no catastrophic error; 'MEMORY ERROR' indicates a catastrophic error. This test divides the RAM into three 16K increments. As a result, should one or two of the three increments contain error, these errors can be stored and displayed. Although there will be no destructive damage to the memory, port activities will slow down during the memory test.

### 3.6.9 'L' LOCK

Steps:

1. Type 'L'
2. Password (psw), type 'MXEPSW' (any six characters)
3. Return

Example: %LM01234

CRT DISPLAY: BAUDRATE LOCKED

This command locks the current baud rate of the port issuing it. No port may change the baud rate of a port which is locked. This command is a toggle. Each time it is issued, the state of the baud rate lock will be reversed.

To unlock the baud rate at the designated port, repeat steps, one through three, in the 'LOCK' command.

Example: %LM01234

CRT DISPLAY: BAUDRATE UNLOCKED

NOTE: During many of the preceding commands, the performance of the 7846 option W board will be impaired. That is, all three ports generally slow down to some extent. However, during the analog and the digital loopback diagnostic, ALL port I/O will cease until the loopback is completed. Therefore, when the loopback is performed, all users connected to the 7846 option W board should be notified that the option W board will not be functioning normally.

#### 4.0 OPERATION

##### 4.1 LED INDICATIONS

After approximately six seconds of powering-up, the LED located on the top of the 7846 option W board will give one of two indications.

###### A. LED EXTINGUISHES (BOARD PASS)

The LED extinguishes approximately six seconds after initial turn-on. This indicates that all of the 7846 option W board Power-Up tests have passed.

###### B. LED REMAINS ON (CATASTROPHIC FAILURE)

Whenever the LED remains lit for more than approximately six seconds, a catastrophic failure for the board is indicated. Perform diagnostic test or replace the option W board.

##### 4.2 LOADING SOFTWARE

To operate the SVP option W, a new revision level of the operating system, Revision Level 2.4 MVP software, is required.

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- . Questions regarding the Ziyad DSF-8, dual sheet feeder, (pricing, availability, service, or product specifications) should be addressed to:

Ziyad, Inc  
100 Ford Road  
Denville, NJ 07834

1-800-922-0262 East of the Mississippi  
1-800-624-6324 West of the Mississippi

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## **PRODUCT, PROGRAM AND CORPORATE INFORMATION: PRODUCT UPDATES**

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### 2200 SYSTEMS: DISCONTINUATION OF 2200 SVP, LVP, AND LVPC CENTRAL PROCESSING UNITS

Wang Laboratories announces the worldwide withdrawal of the 2200SVP, 2200LVP, and 2200LVPC Central Processing Units (CPUs), effective September 30, 1986. There are MicroVP or MicroVP-P package replacements for all of the discontinued CPUs. This action is a logical step in Wang's product simplification efforts and will further enhance our ability to provide quality support. This action should produce little inconvenience to our worldwide 2200 Value Added Resellers (VARs) and their customers, since all new worldwide orders for 2200 CPUs are either for MicroVPs or associated P packages. The MicroVP has replaced the non-VLSI 2200 CPU for new system sales.

No new domestic or international orders for 2200SVPs, 2200LVPs, or 2200LVPCs will be accepted after September 30, 1986.

### PRODUCT STRATEGY

SVPs and LVP/LVPCs are being withdrawn for the following reasons:

- . One year ago, with the exception of the SVP-8 series, the LVP-8X and the LVPC-16X, most SVP and LVP/LVPC models were discontinued. However, memory and disk upgrades allowed any new or existing user to configure (at a premium) just about any previous model offered. In FY'86, SVP unit sales were less than 1% of the worldwide CPU unit bookings and LVP/LVPC were 1%.
- . VLSI MVPs or MicroVPs were 94% of the worldwide FY'86 CPU bookings and 77% of all 2200 systems sold were MicroVP-P packages. Hence, the MicroVP has replaced the non-VLSI 2200 CPU for new system sales.
- . A VLSI MicroVP-P5 package now costs less than any non-VLSI SVP or LVP/LVPC comparable configuration for both systems acquisition and monthly maintenance costs.

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## SUPPORT

### Hardware Support

The company intends to provide hardware and software support for the CPUs we are discontinuing for a minimum of three years, with the installed base being notified two years in advance of any discontinuation of support.

Current upgrades to existing installed SVP/LVP/LVPC systems will remain in force. However, Wang Laboratories reserves the right to limit the number of options based on upgrade activity for any item.

### Operating System Support

All discontinued CPUs will be supported by future releases of the 2200 Operating System (OS), except in those cases where a new operating system is dependent upon the presence of the VLSI chip and/or 32KB of control memory standard on the MicroVP-1/2 CPUs.

### Peripheral Support

All new peripherals that do not require a VLSI specific operating system will be supported on discontinued CPUs.

### ITEMS BEING DISCONTINUED

The Discontinued CPUs table lists the items being discontinued effective September 30, 1986 and their suggested alternatives. For your convenience, the MicroVP-P Packages table indicates the configurations of suggested alternative MicroVP-P packages.

### Discontinued CPUs

<u>MODEL NUMBER</u>	<u>DESCRIPTION</u>	<u>SUGGESTED ALTERNATIVE</u>
2200SVP-8X	32KB Memory, 1MB DSDD Diskette	MICROVP-P5*
2200SVP-8A	32KB Memory, Dual 1MB DSDD Diskettes	MICROVP-P5*
2200SVP-8B	32KB Memory, 1MB DSDD Diskette and 2MB Fixed Disk	MICROVP-P5*
2200SVP-8C	32KB Memory, 1MB DSDD Diskette and 4MB Fixed Disk	MICROVP-P5*
2200SVP-8D	32KB Memory, 1MB DSDD Diskette and 8MB Fixed Disk	MICROVP-P5*
2200LVP-8X	32KB Memory, 1MB DSDD Diskette	MICROVP-P5*
2200LVPC-16X	64KB Memory, 1MB DSDD Diskette	MICROVP-P5*

\*MICROVP-P5 is the minimum alternative. For either additional workstations, 2436DW or 2426DW workstations, larger disk storage, more main memory or a tape cartridge, select the appropriate package per the following configuration tables.

MICROVP-P PACKAGES

MICROVP-P0 128KB MICROVP proc. with 7 available I/O slots  
MICROVP-P5\* 128KB MICROVP proc. with 8 available I/O slots  
MICROVP-P6\* 128KB MICROVP proc. with 7 available I/O slots  
MICROVP-P6+2\* 128KB MICROVP proc. with 7 available I/O slots  
MICROVP-P7\* 128KB MICROVP proc. with 7 available I/O slots  
MICROVP-P7+2\* 128KB MICROVP proc. with 7 available I/O slots  
MICROVP-P8\* 512KB MICROVP proc. with 6 available I/O slots  
MICROVP-P8+2\* 512KB MICROVP proc. with 6 available I/O slots

\*Use MICROVP-P5A, -P6A, -P6+2A, -P7A, -P7+2A, -P8A, -P8+2A for 2436DW workstations and MICROVP-P5B, -P6B, -P6+2B, -P7B, -P7+2B, -P8B, -P8+2B for 2426DW workstations. Substitutions of other components are not allowed.

<u>PACKAGE</u>	<u>2436DE</u>	<u>22C32</u>	<u>22C11</u>	<u>2236MXE</u>	<u>2275-10</u>	<u>2275-30</u>	<u>2229</u>
	<u>WS</u>	<u>TRIPLE</u>	<u>DUAL</u>	<u>TERM.</u>	<u>DISK</u>	<u>DISK</u>	<u>TAPE</u>
		<u>CONTRL.</u>	<u>CONTRL.</u>	<u>PROC.</u>	<u>DRIVE</u>	<u>DRIVE</u>	<u>CART.</u>
MICROVP-P0	0	0	1	1	1	0	0
MICROVP-P5	1	1	0	0	1	0	0
MICROVP-P6	2	0	1	1	1	0	0
MICROVP-P6+2	4	0	1	1	1	0	0
MICROVP-P7	2	0	1	1	0	1	0
MICROVP-P7+2	4	0	1	1	0	1	0
MICROVP-P8	2	0	1	1	0	1	1
MICROVP-P8+2	4	0	1	1	0	1	1

ORDERING INFORMATION

The company will accept orders for the products which are being discontinued until September 30, 1986. Orders received prior to September 30 will be accepted, subject to the availability of the product. Orders received in Home Office Order Processing after that date will be returned to the submitting office.

SPECIAL INSTRUCTIONS FOR BRANCH MANAGERS AND DISTRICT APPLICATION MANAGERS

Notification of Existing VARs And Customers

Each branch manager is responsible for developing a plan for notification of accounts handled by Wang DSO and the district applications manager for the 2200 VARs, so the VARs can notify their accounts.

This notification is an important customer and VAR relations tool and should serve to reassure the 2200 user that Wang and/or the VAR will continue to provide responsible service and support for their SVP, LVP, or LVPC.

ADDITIONAL INFORMATION

This article was prepared by 2200 Product Planning and Management. For additional information, contact SMART.

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DESKTOP PRODUCTS: Effective August 1, 1986, Professional Computer Integrated  
INTEGRATED WORD Word Processing's price is increased due to product  
PROCESSING VERSION enhancements from previous versions of Integrated Word  
2.6 PRICE CHANGES Processing and to stay competitively priced with comparable  
offerings such as IBM's DisplayWrite 2. PIC Integrated  
Word Processing is decreased in price. Upgrade pricing is  
not affected.

The latest release of Integrated Word Processing, Version 2.6, provides consistent word processing and complete functional compatibility for Wang Laboratories Professional Computer (PC), the Advanced Professional Computer (APC), and the PIC Professional Imaging Computer option. Release 2.6 is an update for Release 2.5B of PC/APC Integrated Word Processing (PC-AS002-2) and for Release 1.11 (PIC-AS02) of PIC Integrated Word Processing.

#### HIGHLIGHTS

PC/APC/PIC Integrated Word Processing Release 2.6 provides the following new features that are relevant to all supported hardware:

- . Proportional Printing (Spacing)
- . Support for 1.2MB Diskette Drives
- . Support for LIS-12 and LIS-24 Printers
- . Support for VS, OIS, and Alliance System Printers
- . Resolves PC Word Processing 2.5B Conditions:
  - Proportional Spacing (Printing)
  - Supercopy/Supermove
  - Spelling Verifier
  - Sort
  - Merge
  - Glossary Verification
  - Column Addition

#### PRICING INFORMATION

Refer to the Pricing Update article in this issue for the U.S. list pricing of the following products:

<u>MODEL NUMBER</u>	<u>DESCRIPTION</u>
PC-AS002-2	Integrated Word Processing
UJ-3200	Upgrade to Integrated Word Processing
PIC-AS02	PIC Integrated Word Processing

#### ADDITIONAL INFORMATION

Refer to the PIC 2.0 Software/Hardware Enhancements article in the June 30, 1986 issue of FOCUS (715-0078) and to the Integrated Word Processing 2.6 data sheet (700-8671B).