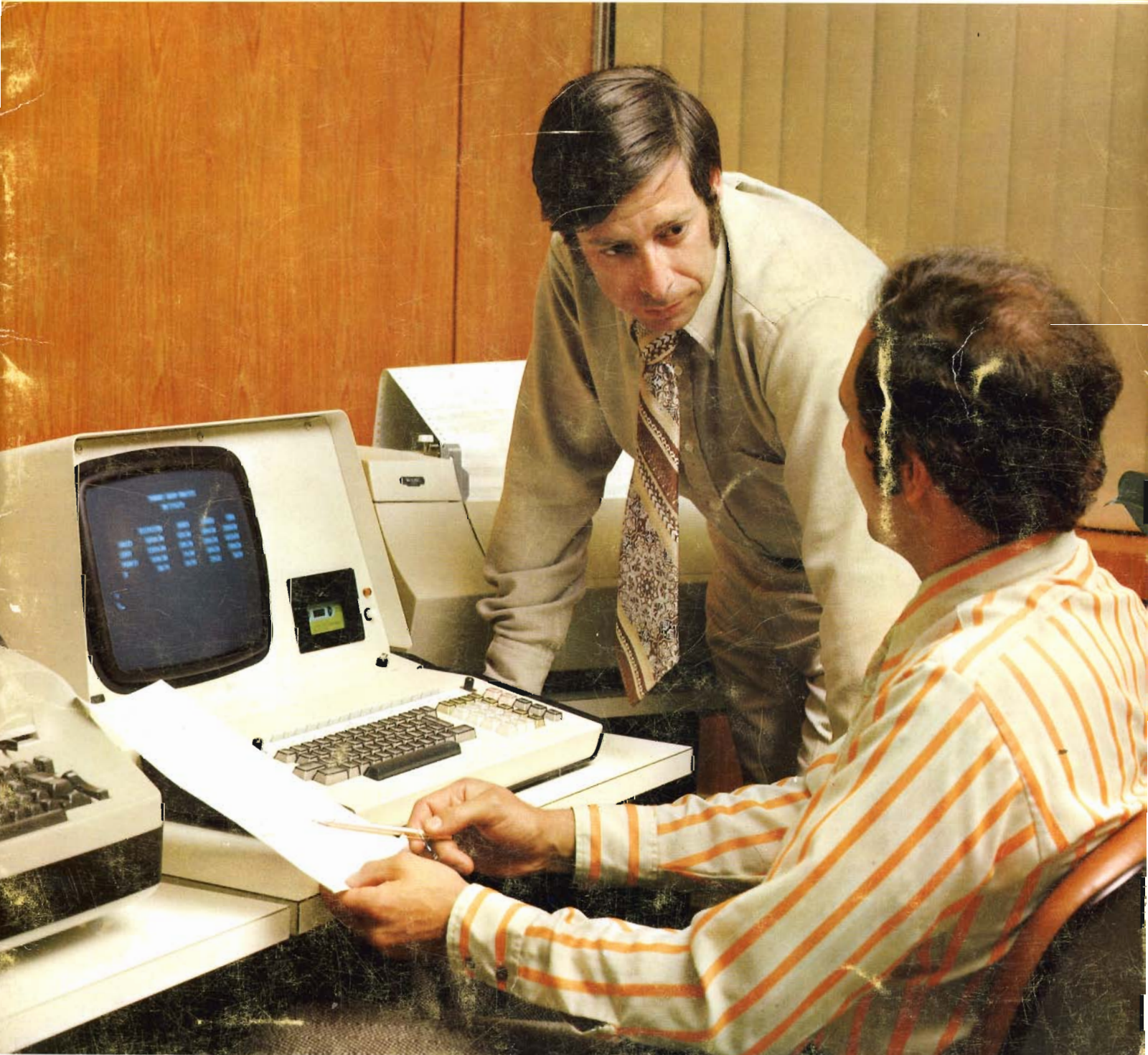
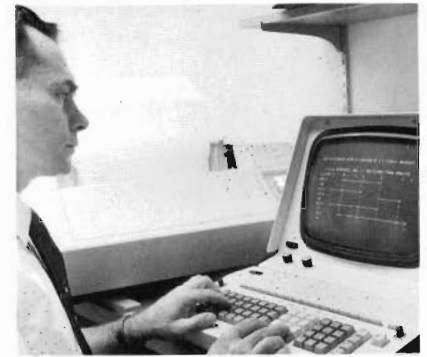


WANG

General
Product
Guide

SYSTEM 2200





The System 2200 Computer is a completely unique approach to data handling problems that seem to defy cost/efficient solutions. Not much larger than some desktop calculators, the Wang System 2200 handles many of the tough, complex problems that are usually related to larger scale computers. The System 2200 is a new kind of problem-solving tool for many kinds of business and technical applications. It gives you the power of a small computer, but the ease of operation of a programmable calculator. And, it has the versatility of full systems capability through a "family" of over 30 peripheral devices.



A new approach to data handling

Here are just a few of the applications the System 2200 is handling for our customers:

To get many kinds of financial and investment data, **Banks, Investment and Insurance Companies** are using the System 2200 to compute returns on investment, yields for municipal and government bonds, title preparation and processing and even mortgage closing document processing. Wang System 2200 programming packages, plus the ease of data entry, make sophisticated information handling like personal trust accounting and portfolio analysis, a relatively simple operation. **Real Estate** companies find the System 2200 a real aid in condominium sales and apartment management. And the three types of printing devices give the user a wide range of output options for their finished reports.

Elementary and Secondary Schools, Colleges and Universities are using the System 2200 as a low-cost teaching aid for statistics, mathematics and programming. The large CRT Display helps show the students exactly where they are in a problem. The tape cassettes are inexpensive and reusable in addition to being easy to use.

Auto Dealers need a fast, accurate way to put together "deals" for their prospects. The System 2200 is the tool that puts together the best deal for them both. All the information they need to calculate the monthly payment is preprogrammed into the system. The salesman simply enters the variables like down payment, trade-in and number of months, and the System 2200 quickly calculates the monthly payment. If the prospect isn't quite satisfied, the salesman can easily change any of the variables, one by one, and give the prospect a deal that they're both happy with. At the touch of a button, the System 2200 automatically prints a retail sales contract ready to sign in less than a minute.

Just as the system computes and prints the contract, it can handle also all the other paperwork that is required with every sale.

And BASIC language makes programming understandable for even the elementary school students, because it's English and simple algebra.

Business management of large and small companies alike find the System 2200 the perfect solution to the problem of high-cost data handling. The System 2200 gives them the problem-solving efficiency of some large computers at the cost of a programmable calculator or accounting machine. Smaller companies are replacing accounting and book-keeping machines, time-sharing services or service bureaus with the System 2200 BAS (Basic Accounting System) packages to handle all of their accounting needs from invoicing to payroll to inventory and general ledger. And they're getting up-to-date management information through their own sales analysis and cash flow forecast reports. The BAS1 packages offer a choice of tape or disk systems and wide range of standardized software designed to fit almost any small business with little or no modification.

Surveyors and Civil Engineers are solving complex problems easily and quickly, because the Wang Surveyor programs for the System 2200 handle traverse, inverse and slope/temperature corrections with keyboard entries. And, under full program control, the System drives very accurate Flatbed Plotters to automatically and quickly produce finished drawings from calculated data. . . . And **Engineers** use the powerful System 2200 to solve the tough analysis and design problems of steel and concrete structures, with software developed exclusively for the system by leading Engineering Consultants. It actually can do the job of a big computer in most cases but is about one-tenth the cost.

Even such sophisticated applications as Nonparametric Statistics make the System 2200 a natural for **Statisticians and Mathematicians**. Wang has more stat/math programs than any other supplier of programmable calculator software.

The System 2200 is also opening up new cost and time-saving advantages for on-line applications. The wide variety of input and output controllers available for the System 2200 make interfacing laboratory or electronic testing equipment and customized instrumentation devices a natural. Our customers have connected devices, ranging from digital voltmeters to gas chromatographs, demonstrating the versatility of the System 2200 as an on-line or off-line data reduction computer that can store, print or plot your results.

On the following pages you'll see why the Wang System 2200 saves time, money and frustration in processing difficult data handling problems. And you'll learn why it is truly a unique concept in problem solving. We think it can help solve yours.

The design

The Wang System 2200 represents a lot of "firsts" in its price range for computers. It is the first system to effectively combine the accessibility and ease of operation associated with programmable calculators and the speed and power of large computers. Another first is the use of computer-compatible BASIC as the programming language. BASIC is almost literal. This makes it fast to learn and easy to use. Programming, debugging and documentation are more convenient, because the BASIC commands are hardwired into the System 2200 and each command is usually just a single keystroke.

Your System 2200 is instantly expandable to meet your growing needs. You can increase storage from 4K bytes in the basic system up to a full 32K (in 4K increments). Or you can expand input, storage and output capabilities by adding any of over 28 of our peripheral devices. A total of 11 peripheral devices can be accommodated, and the memory added is pure working memory, because the hardwired BASIC requires only 696 bytes of the original 4K working memory, leaving you a minimum of 3,400 bytes for your problem solving.

The basic system

The System 2200 is compact, and doesn't require a special room or air conditioning or wiring. All you'll need is a "clean" line.

The large Cathode Ray Tube (CRT) display screen is perhaps one of the most useful and exclusive features of the Wang System 2200. With sixteen 64-character lines (1,024 characters total) you can visually review long programming sequences or even entire programs. This means you can easily see the changes or errors you want to correct, before the program is entered into memory or the results are printed or plotted.

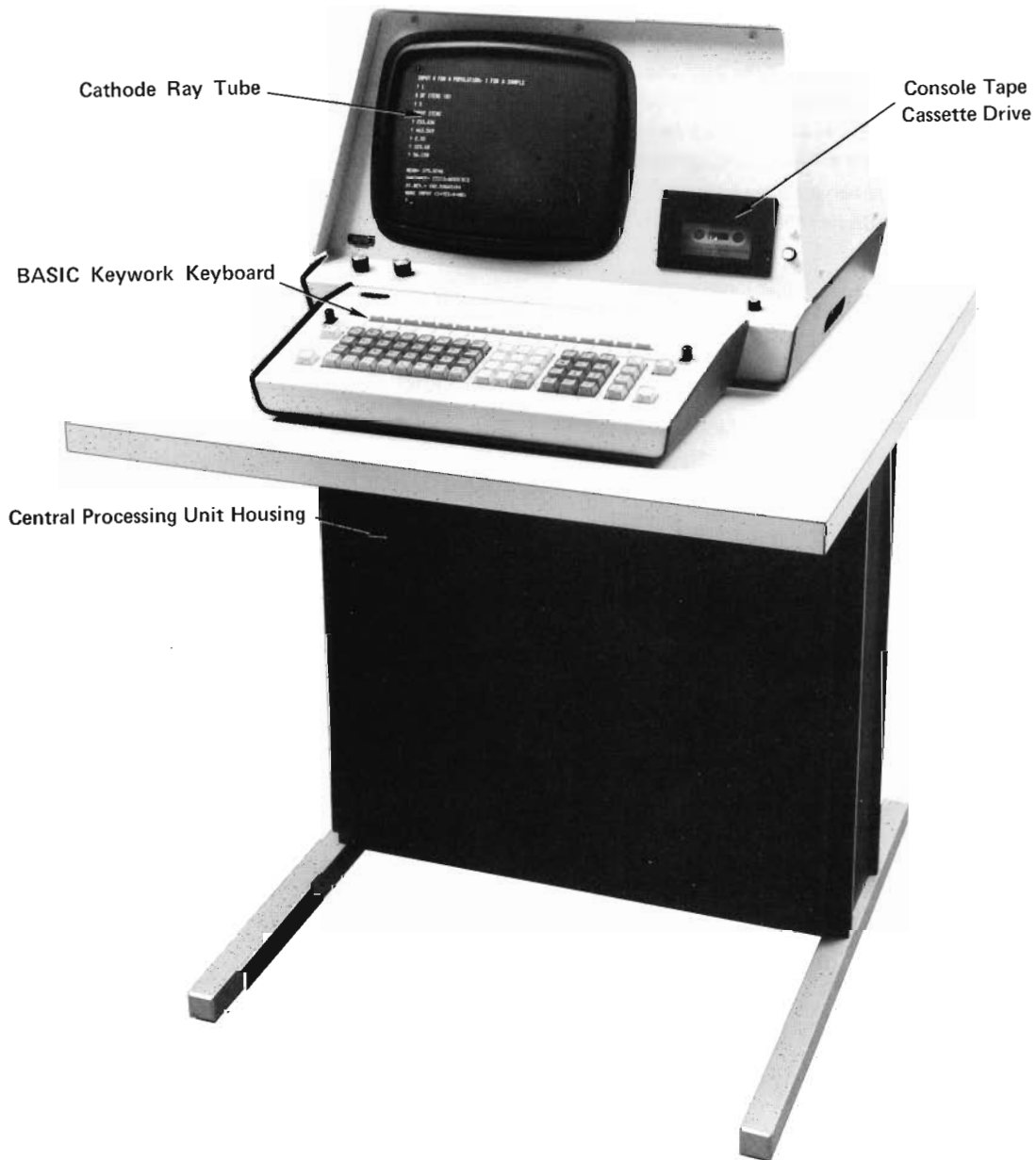
The typewriter-size keyboard is connected to the CPU by cable and can be moved to any position that is comfortable for the operator.

There are two Central Processing Unit (CPU) models of the System 2200 . . . the A and B models. The Model A is for the user who needs just the essential computing functions: direct input and output, and magnetic tape storage. The Model A can be quickly retrofitted in your office, giving it Model B capability. The Model B is for people who have an immediate need for any or all of the System 2200 "family" of peripheral devices. These include: high-speed disk memory, plotters, paper tape readers, card readers, and teletype controllers. The Model B also gives you additional programming power for more sophisticated math functions

such as Boolean algebra or more advanced data handling techniques for bit/byte manipulating. A matrix option is also available. Both Model A and B have optional tele-communications capability.

Although Cassette Tape Drives are an optional feature on both Models A and B, most users want them for ease of recording and storing programs and data. The standard

magnetic tape cassette is easy to handle, easy to store and low in cost. In effect, it gives you most of the data-handling capabilities of the magnetic tape consoles on large computers. Using the Model B, no special machine modifications are necessary to tie into any or all of the peripheral devices presently available. When you want to add another peripheral device for either input, storage or output, it is a simple on-site hook-up.



Peripherals . . . add them as you need them

Expanding the System

You can expand your System 2200 Computer in two ways. The first, of course, is by expanding the working memory in 4K increments up to a total of 32K.

The second way to expand is by adding peripheral devices from our complete line of tape and disk drives, printers, plotters and card or tape readers. There's one designed to meet your individual needs for output speed or style, information storage or retrieval or input method. Everything you'll need to make your System 2200 grow with your needs and continue working with you a long time.

The **Model 2216 CRT Executive Display** makes the Wang System 2200 come to life. It presents up to 16 lines of 64 characters each for your review and instantly displays numeric or alphanumeric input data and results. This means that you can easily review input and see the errors you want to correct before the information is processed or the results outputted. When a programming error occurs, an error message automatically appears beneath the incorrect statement with an arrow pointing to the error.

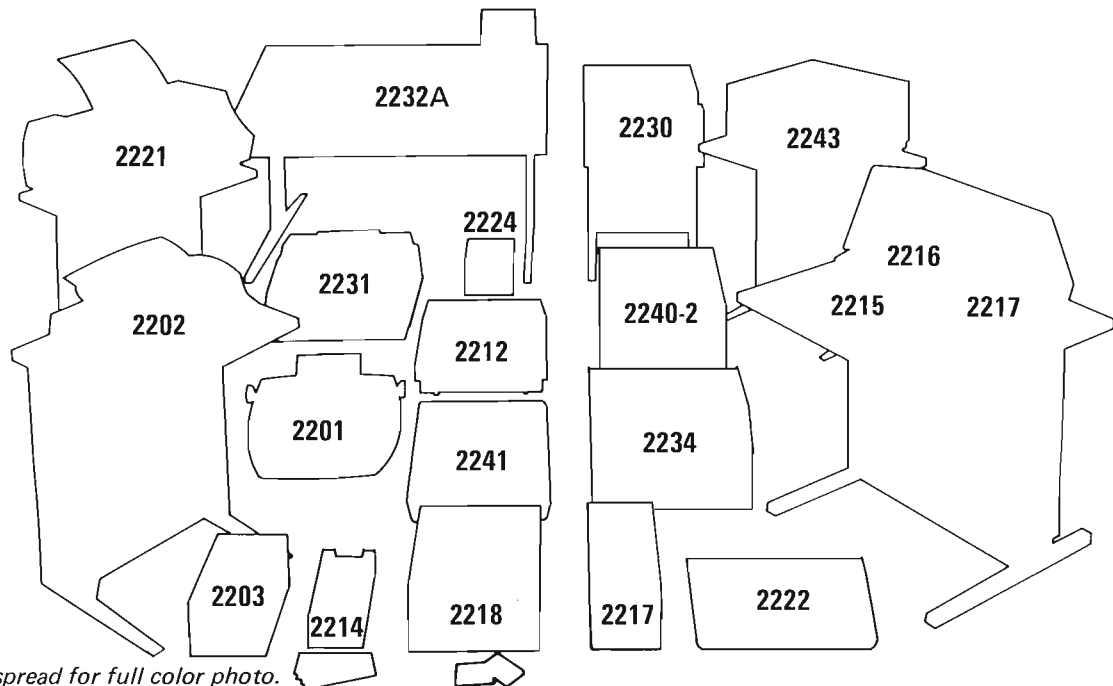
The **Model 2230 Fixed/Removable Disk Drive** is used with applications requiring a large amount of storage and high-speed access and retrieval of data. The disk is available in three sizes from 1.2 million to 5 million bytes with storage areas organized into sequentially numbered 256-byte sectors. In each configuration half of the capacity is on the fixed disk and half on the removable disk for inexpensive off-line storage. You can readily replace the removable disk with another when necessary and can reuse one by simply writing over the contents.

The **Model 2203 Punched Tape Reader** quickly and quietly transfers your data into the Wang System 2200. This input-only device optically scans punched tape at a rate of 300 characters per second, reading data in a forward or reverse direction. Because the unit can handle non-standard tape sizes and codes, data can be punched on another device and read directly into the system, saving you much time and effort.

The **Model 2201 Output Writer** is a modified IBM Selectric[®] typewriter capable of producing fully-formatted alphanumeric printouts under program control. All manual operations, including tab, upper and lower case, backspace, and underline can be programmed for automatic format control. This unit, which automatically produces typewriter quality reports from the system's data, can also be used as a standard typewriter.

The **Model 2202 Plotting Output Writer** combines the features of an alphanumeric typewriter with those of a 4-quadrant digital plotter. This modified IBM Selectric[®] typewriter plots to an accuracy of one/one-hundredth of an inch. Under program control it produces plots as well as their alphanumeric titles and labels. In addition, the Plotting Output Writer can be used as a standard typewriter.

The **Model 2231 Line Printer** is a lower-cost 80-column printer similar to the Model 2221. This smaller model prints approximately 100 characters per second (up to 150 lines per minute). It also features complete alphanumeric printing, highlighting, pin-feed platens, and control via a paper tape.



See centerspread for full color photo.

The **Model 2221 Line Printer** produces a maximum 132-character line, at a rate of approximately 150 characters per second (60-200 lines per minute depending on line size). It prints alphanumeric dot matrix characters (5 x 7) with as many as four carbons. Printed highlighting, which you may optionally select a line at a time, doubles the character width to 10 x 7 dots. A punched paper tape controls automatic advancing of paper, while a pin-feed platen guarantees proper registration of printed material on all copies. In addition, it prints program listings.

The **Model 2261 High-Speed Printer** uses two printing heads operating in unison to print a 132-character line. Each head travels only half the width of the paper, then prints in reverse of the next line. Up to 330 characters per second (125 lines per minute) are printed. Full alphanumeric character sets in both standard and expanded size are available with a different character generated for a scientific zero and the letter "O". Features such as a vertical format control, audio alarm buzzer, form feed controls, use of ASCII code, and an adjustable sprocket feed for proper registration of up to four carbons are all standard. (Not shown, but appearance is similar to a Model 2221 Printer.)

The **Model 2212 Analog Flatbed Plotter** gives you continuous line or point plotting of data, pie charts, bar graphs, and three-dimensional profiles as well as full alphanumeric labeling, all under program control. The maximum plotting area is 10" x 15". Plots made at less than full scale may be positioned on any portion of the plotting surface. Format and content of the alphanumeric labels is calculated and controlled by the Wang System 2200, so that finished plots are titled, scaled, and labeled as required.

The **Model 2214 Mark Sense Card Reader** is a low-cost hand-fed card reader which optically reads either punched cards or cards marked with a soft lead pencil. A keypunch is not needed; you can prepare your cards anywhere. After manual feeding, each card is read at a rate of 20ms (.02 sec.) per character or 800ms (.8 sec.) per card. Data and programs are easily stored on these cards for future loading into the system. In addition, while one user is preparing his program, another can be using the system as a processor.

The **Model 2240 Dual Removable Flexible Disk Drive** provides low-cost storage for the needs of smaller applications. The highly reliable flexible disk platters are the size of a 45 rpm record. Depending on the model chosen, each disk stores a maximum of 131,072 or 262,144 bytes (about one-eighth to one-quarter the size of one fixed/removable disk). The disks will not break and, because of their compact size and resistance to dirt, are easily stored. Access is quick (300 milliseconds per 256 bytes) and uses a fixed contact head rather than a floating head. With software compatibility, you can easily trade up from a 2240 to a 2230 as your needs grow.

The **Model 2232A Digital Flatbed Plotter** gives you continuous line or point plotting under program control anywhere on its 31" x 48" surface. Alphanumeric character generation is provided by software. The unit also plots pie charts and bar graphs as well as subdivision plans with alphanumeric characters of any size and any orientation. You may use any type of paper, including linen, vellum, and polyester material as well as fiber tip, ball-point, or drafting pens for finished, professional plots accurate to .0025 of an inch.

The **Model 2241 Thermal Printer's** use of a special typing head, made up of 35 heating elements, and heat-sensitive paper, eliminates the need for ribbons, ink, and the noise of impact line printers. The unit prints 63 alphanumeric characters, each composed of a 5 x 7 dot matrix, at a rate of 30 characters per second. Although the 80-column unit is small (weighing only 30 pounds), it is designed for high-volume printing applications.

The **Model 2234 Hopper-Feed Punched Card Reader** photoelectrically reads 80-column punched cards at the rate of 300 cards per minute. It easily stacks 550 cards in its input and output hoppers and reads Hollerith code or binary data (making it compatible with standard keypunches). The reader provides a fast and convenient way to input data either punched offline on a keypunch or entered from another computer system.

The **Model 2244 Hopper Feed Mark Sense/Punched Card Reader** has the same general characteristics and appearance as the Model 2234 and has the added capability of reading mark sense as well as punched cards (not shown).

The **Model 2243 Triple Removable Flexible Disk Drive** is the same as the Model 2240 but has three disks, each with a 262,144 byte capacity.

The **Model 2217 Single Tape Cassette Drive** is a powerful, low-cost storage device for the Wang System 2200. You do not have to preformat tapes, and files can be named. Programs and data files, stored in 256-byte sectors, can be searched by name and accessed by skipping or backspacing. Updating of data already recorded, including adding new material, is easily accomplished. Each 150' tape holds 78,000, 8-bit bytes of information for transferring at 256 bytes/sec. Although more than one tape unit may be added to one System 2200 CPU, a separate controller board is required to drive each tape unit.

The **Model 2218 Dual Tape Cassette Drive** consists of two tape drives housed in a single unit. Only one controller board, however, is needed in the CPU to drive both tape drives. You may use the tape drives independently, for each has its own unique device address. Each cassette holds 78,000 bytes of data. Since all Model 2218 tape formats are identical with those of the Model 2217, your tapes are interchangeable.

The **Model 2215 BASIC Keyword Keyboard***

The **Model 2222 Alpha-Numeric Typewriter Keyboard***

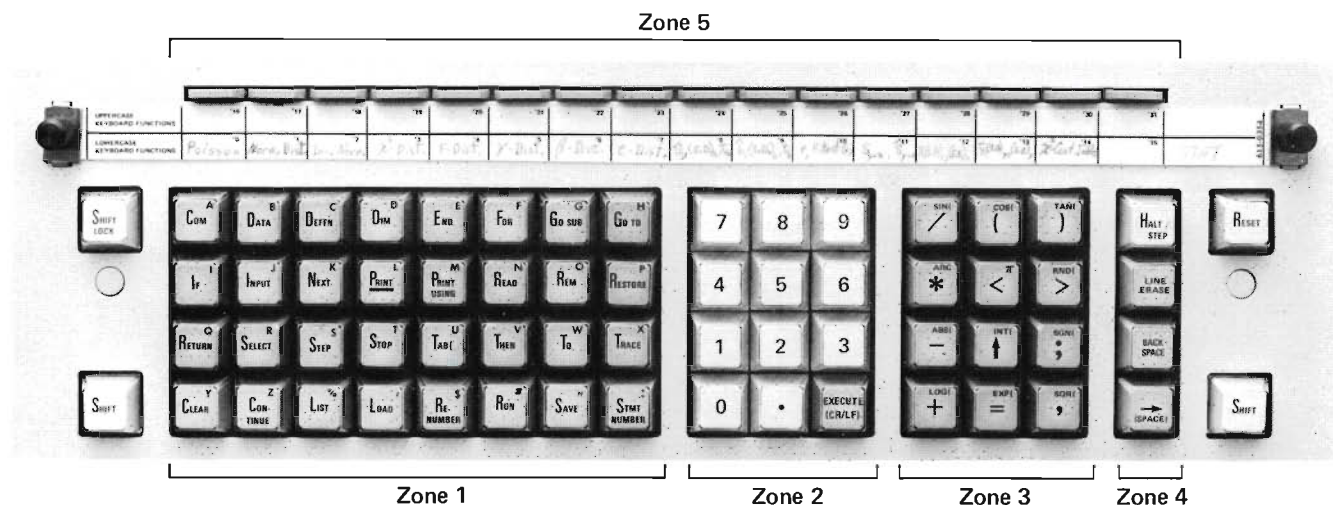
* Refer to keyboard explanations following centerspread.



Wang System 2200



Direct data input at your fingertips



The Single Stroke Keyboard

This is the Model 2215 Keyword Keyboard. Its unique layout lets you enter many of the most commonly-used BASIC instructions and functions with single keystroke efficiency.

We have divided the keys into five zones to show you their basic functions. Zone 1 includes BASIC instruction keys and alphabetic characters.

Zone 2 is a typical 10-key number pad with a decimal point and an EXECUTE key added. It is used for simple calculating one number entry.

Zone 3 contains the standard arithmetic operations and mathematic functions and punctuation symbols.

The keys in Zone 4 are editing and system control keys.

Zone 5 consists of sixteen special function keys. These keys can be used to access 32 hardwired subroutines or program entry points or can be redefined by the operator for any subroutines or operations he needs.

Non Programmable Commands

CLEAR — initializes the entire memory area and removes all program text and variables from the system.

CONTINUE — continues program execution after a STOP verb has been executed, or the HALT/STEP command has been initiated.

END STATEMENT — this is an optional statement as far as the program is concerned; however, with the use of the END STATEMENT, the CRT will display the amount of the (FREESPACE XXXXX) unused memory.

HALT/STEP — halts program execution after the current line has been executed, also halts program listing at the completion of the current line and can be used to step through the execution of a program.

LIST — instructs the system to display or print the entire program text in statement number sequence. However, specific program lines can also be instructed to display or print.

RENUMBER — rennumbers all or part of a program.

RESET — immediately stops program execution or listing, clears CRT, resets all I/O devices and returns controls to the keyboard. Program text is not lost and all program variables are maintained with their current value.

RUN — initiates the execution of a user program.

SAVE — permits an entire program or a specified portion of a program to be conveniently saved on a tape cassette or some other designated I/O device.

General BASIC Statements

BACKSPACE — backspaces the specified tape cassette any number of logical records or complete files or backspaces to the beginning of the current data file.

COM (COMMON) — allows a programmer to store information in memory for use in a subsequent program or to use information from a previous program. The COM statement can also be used to set the maximum length of alphanumeric variables.

DATA — provides the values to be used by the variables in a "READ" statement.

DATALOAD — reads a record from the designated storage device (tape) and assigns the data value read to the variables and/or arrays in the list.

DEFFN — defines a user's unique mathematical functions.

DEFFN' — defines a user's special functions not limited to math.

DIM — reserves space for single-or double-dimension array variables.

FOR and NEXT — "FOR" is used at the beginning of a loop. The "NEXT" signals end of a loop.

GOSUB — specifies transfer to the first program line of a subroutine.

GOSUB' — specifies transfer to the first program line of a user's special function or subroutines with arguments.

GOTO — used to transfer to another area of the program; directs the system to the line number where processing is to continue.

IF and THEN — "IF" is used to test a condition. As a result of this test, "THEN" directs the execution of a program to a specified statement line.

IF END THEN — tests for the end of the current data file on the specified tape and transfers to the indicated line number.

INPUT — allows user to supply data during running of a program already stored in memory.

KEYIN — the system checks to see if this is a character ready to come in from the input device buffer and if one is ready, it reads the character into the system.

KEYBOARD FUNCTION executes the corresponding DEFFN' subroutine.

ON — a computed or conditional GOTO or GOSUB statement.

PRINT — causes the value of the literal variable, expression or literal strings to be printed on the output device currently selected.

READ — the READ statement is used to assign to a variable the value contained in DATA statements.

REM — inserts comment or explanatory remarks. The System 2200 does not execute "REM" statements.

RESTORE — allows repetitive use of "DATA" statement values by "READ" statements.

RETURN — returns processing to the statement following the last executed GOSUB or GOSUB' statement.

REWIND — causes the designated tape cassette to be rewind.

SELECT — the SELECT statement is used to select I/O devices for specified tasks; to select degrees, radians, or grads input for trigonometric functions, and to insert pauses into the execution of a program.

SKIP — allows the user to skip any number of program files, data files, or logical data records; the user can also skip to the end of the current data file.

STATEMENT NUMBER — increments the current line number by 10.

STOP — causes program execution to terminate.

TRACE — provides for the tracing of all or a portion of a BASIC program.

Data Manipulation

A number of statements which perform bit and byte manipulation and data conversion are available.

ADD — performs binary addition of two alphanumeric values.

AND — performs logical "AND" operation on alphanumeric values.

BIN — converts an integer value to become the first character of an alpha variable. "BIN" is the inverse of "VAL".

BOOL — performs any of sixteen possible logical operations on alphanumeric values.

CONVERT — converts an alpha value to a numeric value and vice versa.

INIT — initializes alphanumeric variables or array elements to any character specified.

NUM — determines the length of a numeric field in an alphanumeric variable.

OR — performs logical "or" operation on alphanumeric values.

PACK — packs numeric values into alpha variables according to specified format.



POS — locates the position of the first character in an alphanumeric value that is <, <=, >, >=, =, or <> some specified character.

ROTATE — rotates bits according to specified format.

UNPACK — unpacks packed numeric data.

VAL — converts the binary value of the first character of an alpha value to a floating point number. "VAL" is the inverse of "BIN".

XOR — performs logical "exclusive or" operations on the alphanumeric values.

Special Function Keys (User-Defined)

Sixteen special function keys are available to the user, which allow up to 32 user-defined subroutines or character strings for program text entry.

Numerical Functions

These mathematical functions are “pre-programmed” into the system. All you do is touch the key for the function you want; the system does the rest. They save programming time and memory because they are hard-wired into the CPU.

ABS – find the absolute value of the expression.

ARCCOS – find the arccosine of the expression.

ARCSIN – find the arcsine of the expression.

ARCTAN – find the arctangent of the expression.

COS – find the cosine of the expression.

EXP – find e to the power of the expression.

HEX (HEXADECIMAL FUNCTION) – is a form of literal string that allows an 8-bit code in a BASIC program.

INT – find the greatest integer which is less than or equal to the value of the expression.

LEN (LENGTH FUNCTION) – evaluates the number of characters in a string variable.

LOG – find the natural logarithm of the expression.

NUM – evaluates the number of sequential ASCII characters in the specified alphanumeric variable that represent a valid numeric value.

POS – prints the position of the first character in the specified alphanumeric value.

RND – produce a random number between 0 and 1.

SGN – assign the value 1 to any positive number, 0 to zero, and -1 to any negative number.

SIN – find the sine of the expression.

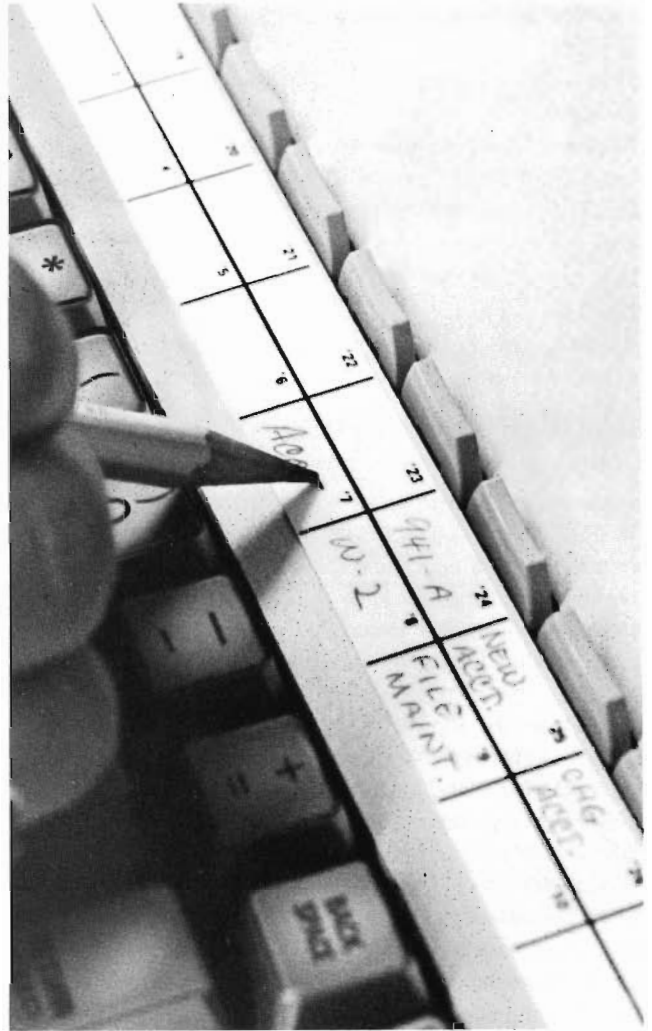
SQR – find the square root of the expression.

STR (STRING FUNCTION) – permits the user to extract, examine, compare, or replace a specified portion of an alphanumeric string.

TAN – find the tangent of the expression.

VAL – converts the binary value of the first character of the specified alphanumeric value to an internal floating point number.

(PI, or π) – assign the value of PI 3.14159265359.



Programming . . . get results fast

A Few Words About Our Language

We chose BASIC as our programming language for some very simple reasons:

1. It's easy to learn – BASIC is being taught in most schools today. It's simply a combination of English and Algebra.
2. It's easy to use – you write your programs as you go using BASIC words like PRINT or NEXT or SAVE and numbers.
3. It's inexpensive – you can start programming your system the day it arrives. You don't need a highly-trained, highly-paid Data Processing staff, so you can spend your money on problem solving, not support.

BASIC Language has a very simple structure.

Every program starts with a **line number** which identifies the line and the sequence it is executed. Line numbers are entered on the keyboard by "typing" the number or touching the STATEMENT NUMBER key.

BASIC words are entered by touching the appropriate key (Model 2215 Keyboard) or typing the word.



Either way, the word takes only one byte of memory.

BASIC Statement Lines are made up of a line number and a series of words or numbers. There are two types of BASIC Statement lines:

1. An execution statement.
40 Q = 8*Y
2. An information or non-execution statement.
50 DATA 2, -7,5

To combine more than one statement on a line, simply separate them with a colon, i.e.,

60 X-2: Y-3: PRINT X,Y

Two Ways To Work Out Your Differences

The System 2200 actually gives you two ways to get your solutions fast. The first, IMMEDIATE MODE, lets you bypass conventional programming steps and use the system as a powerful calculator.

You simply key in your figures as you would on a calculator and get instant results.

Or key in a statement or statements like this FOR I=1 TO 10: PRINT I, LOG (I): NEXT I and get solutions to complex tables or problems instantly.

PROGRAM MODE is the way to use your System 2200 as a computer. Each line is entered with a line number, automatically checked for correctness by the system, then saved, listed or executed.

Getting the Bugs Out

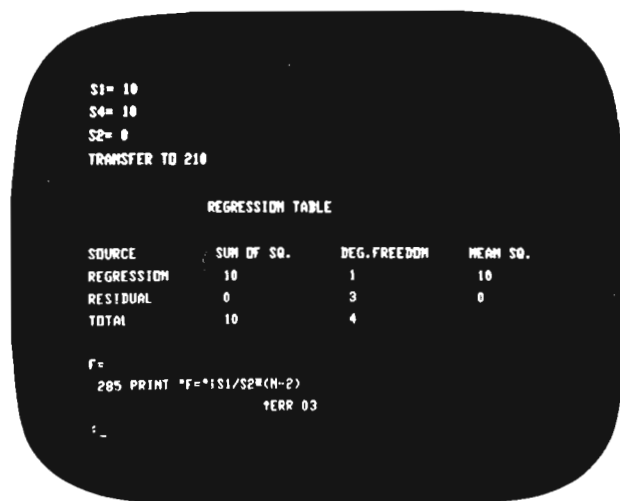
Debugging a program on any system can be a real problem. But it isn't on the System 2200. We've added a few features that take the hassle out of editing any program.

Debugging and Diagnosing Errors

If your program isn't correct you'll know it isn't in an instant. And you'll also know why. Built into our CRT Display is an arrow that points to the exact location of any error on the screen. And along with the arrow the system lists the type of error it is with a number from 01-94.

The System 2200 will instantly recognize a syntax or arithmetic execution error and stop so that the operator can change the program and re-run it.

An error in programming such as incorrect logic or information may not be detected by the system. So we provide a TRACE and a HALT/STEP mode for further debugging. If you get an error in your results you can quickly step through your program and get a printout or display each time a program variable receives a new value or a program transfer is made.



The HALT/STEP key executes and displays one program line each time it is depressed, giving you time to analyze each line for accuracy.

Program Editing

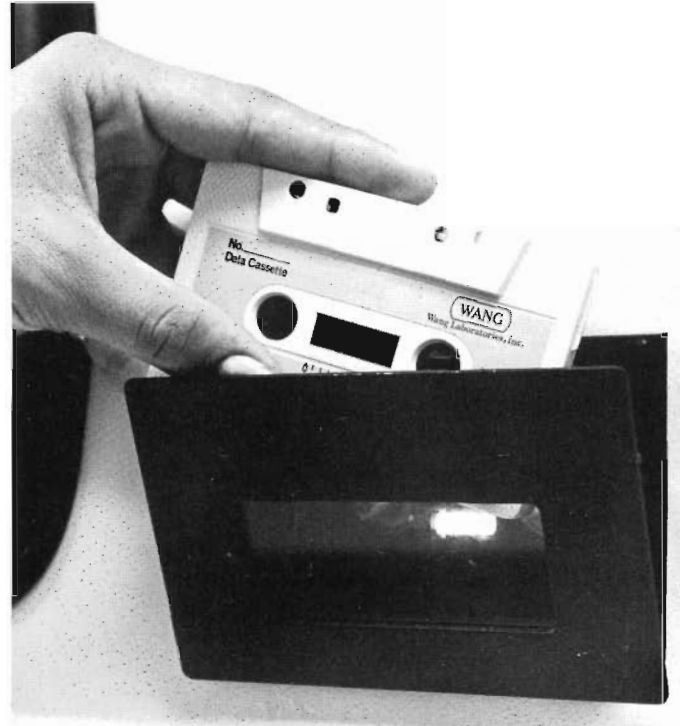
You can renumber, insert or delete program lines as quickly and easily and as often as you need. Touch RENUMBER and you can renumber an entire program or any specified segment of a program in a new numbering order.

Correct a line four ways. 1) backspace and reenter the data, 2) delete the entire line by reentering the line number and touching the CR/LF command, 3) replace the line by reentering the line number and a corrected statement, or 4) by using the Character Edit option, you can correct the invalid portion of the line — you **don't** have to enter the entire line again.

To insert a new line in a program, simply enter a new line number between two existing line numbers.

Data Loading and Saving

To load specific data like variables or arrays, a simple command, DATALOAD, reads the data from the cassette tape and loads it into memory.



The DATASAVE command is used to record specified data on tape or disk, and by name if desired.

Saving Loading and Chaining

All of your programs or any specified portion of a program, can be saved on cassette tape (or other storage device) for further use later on. When you're ready to reuse a program a LOAD command from the keyboard is all you need.

Large programs can be run in small amounts of memory by segmenting the program and then chaining them together under program control.

A SAVE P command protects your program from being altered or copied onto another tape.

Saved programs can then be identified by an alphanumeric name and then loaded by searching for the program name on tape (or disk), i.e., LOAD XXXX.

Alphanumerics

As an additional aid in programming or handling data files you can use alphanumeric variables. Any combination of letters, numbers and special characters (\$, #, *, etc.), in any format such as BCD, can be "packed" or "unpacked" into string variables or arrays, to maximize available storage space.

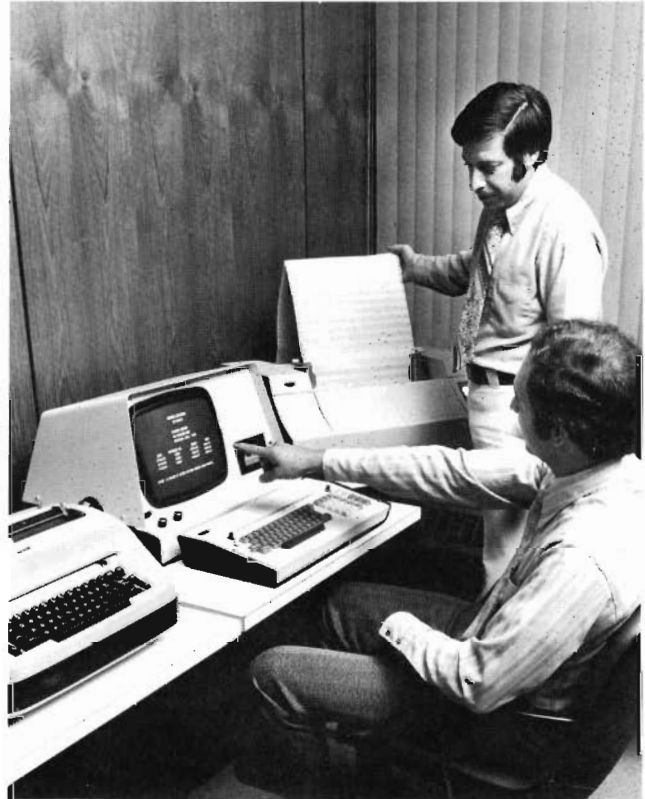
And to Get You Going Fast

One of the easiest ways to get started working with programming your System 2200 is to begin with pre-written programs. We have a full library of available software for all types of applications. Here is a partial list.

MATHEMATICS
STATISTICS
ENGINEERING
BUSINESS & FINANCE
PLOT ROUTINE
UTILITY
GAMES
GENERAL SCIENCE
BASIC ACCOUNTING
INVOICING
CUSTOMER SALES ANALYSIS
SALESMAN SALES ANALYSIS
PRODUCT SALES ANALYSIS
ACCOUNTS RECEIVABLE
PAYROLL
KEY FILE ACCESS METHOD (KFAM)
GENERAL UTILITIES
DATA SUBROUTINES
TEST PROGRAM
TAPE SCRATCHER
COMPACTER PROGRAM

Over 150 programs are available and many more to come. In addition to these programs, we would like to tell you about another way you can immediately benefit from existing software. It's called SWAP (Society of Wang Applications and Programs). It was created in 1968 to make available many scientific and engineering programs free of charge to our customers. Since then, many new areas such as Accounting, Education, Medicine, Real Estate and Surveying have been added. SWAP also offers its members periodic literature and a publication called the PROGRAMMER, an annual symposium and Special Interest Group information and subgroups. For more information write:

SWAP c/o Wang Laboratories, Inc.
836 North Street
Tewksbury, Massachusetts 01876



We Teach You a Little

Education and training are major steps when you get your first computer. Our Corporate Training Staff has helped thousands of our customers learn to take full advantage of their systems capabilities over the past few years. Through comprehensive instruction in computer concepts, application design, programming and hardware operation, we can help you get going fast.

SPECIFICATIONS

CRT (Cathode Ray Tube) — Model 2216

Unit Size:	Height	14 inches	(35.6cm)
	Depth	16 inches	(40.6cm)
	Width	21½ inches	(54.6cm)
Display Size:	Height	8 inches	(20.3cm)
	Width	10½ inches	(26.7cm)
Capacity:		16 lines	
		64 characters/line	
Character			
Size:	Height	.20 inches	(.51cm)
	Width	.12 inches	(.30cm)
Weight:		36 lbs.	(16.3kg)
Power			
Requirements:		115 or 230 vac ± 10%	
		50 or 60 Hz	

TAPE DRIVE — Model 2217

Stop/Start Time	.09/.05 second
Capacity:	522 bytes/ft. (1712 bytes/m)
Recording Speed:	7.5 IPS (19.05cm/sec.)
Search Speed:	7.5 IPS (19.05cm/sec.)
Transfer Rate:	326 char/sec. (approx.)
Inter-record Gap:	.6 inches (1.52cm)
(Capacity and Transfer Rate include Gaps and Redundant recording.)	

CPU (Central Processing Unit) — System 2200, Model A or B

Built-in Functions

Mathematical & Trigonometric Functions *

EXP	e to the power of x
LOG	Natural Log
SQR	Square Root
π	Pi
SIN	Sine
COS	Cosine
TAN	Tangent
ARCSIN	Inverse Sine
ARCCOS	Inverse Cosine
ARCTAN	Inverse Tangent
RND	Random Number Generator

Logical & Data Manipulation Functions

ABS	Absolute Value of a Number
INT	Integer Value of a Number
SGN	1, 0, or +1 if a number is negative, 0, or positive.
STR	Selection of one or more characters in an alphanumeric string.
HEX	Hexidecimal Values
LEN	Length of Alphanumeric Variable

*Trigonometric arguments in radians, degrees or gradians.

CPU (Central Processing Unit) — System 2200, Model A or B (Continued)

Variable Formats

Scalar Numeric Variable.
 Numeric 1- and 2-dimension Array Variables.
 Alphanumeric String Variable.
 Alphanumeric 1- and 2-dimensional String Arrays.

Average Execution Times (Milliseconds)

Add/Subtract	.8
Multiply/Divide	3.87/7.4
Square Root/E ^x	46.4/25.3
Log _e x/X ^y	23.2/45.4
Integer/Absolute Value	.24/.02
Sign/Sine	.25/38.3
Cosine/Tangent	38.9/78.5
Arctangent	72.5
Read/Write Cycle	1.6μ seconds

(Average Execution times were determined using random number arguments with 13 digits of precision. Average Execution times will be faster in most calculations with arguments having fewer significant digits.)

Capacity

Memory Size	4,096 bytes (expandable to 32K)
Peripheral Capacity	6 (expandable to 11 max.)
Dynamic Range	10 ⁻⁹⁹ to 10 ⁺⁹⁹
Subroutine Stacking	No Limit
Power	
Requirements:	115 or 230 vac ± 10% 50 or 60 Hz

CPU Size:

Height	9¾ inches	(24.8cm)
Depth	16 inches	(40.6cm)
Width	17 inches	(43.2cm)
Weight	24 lbs.	(10.9kg)

Power Supply Size:

Height	7¾ inches	(19.7cm)
Depth	8¾ inches	(22.2cm)
Width	19 inches	(48.3cm)
Weight	34 lbs.	(15.4kg)

KEYBOARD

Model 2215	Height	3 inches	(7.62cm)
	Depth	10 inches	(25.4cm)
	Width	17½ inches	(44.5cm)
	Weight	7 lbs.	(3.2kg)

Model 2222	Height	3 inches	(7.62cm)
	Depth	10 inches	(25.4cm)
	Width	19½ inches	(49.5cm)
	Weight	7½ lbs.	(3.4kg)

Wang Laboratories reserves the right to change specifications without prior notice.

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