

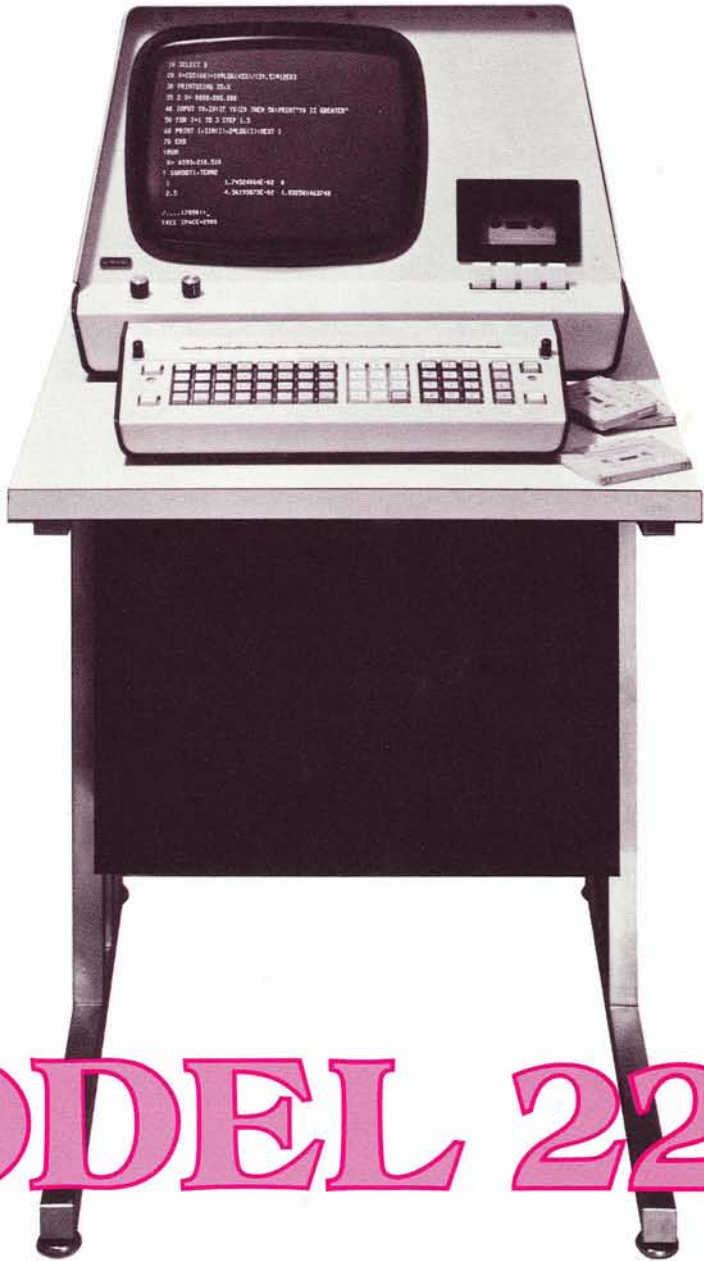
*anything  
a computer can do*



*this remarkable new  
calculator can do*

**MORE EASILY  
AND  
FAR MORE  
CONVENIENTLY**

WANG



# MODEL 2200

advanced  
programmable  
calculator

**Magnificently  
combining  
the power  
and  
convenience  
of **BASIC** language  
with  
the simplicity  
of calculator programming  
and operation.**

# Another "FIRST" in calculator design... by WANG.

$\bar{x}, \sigma^2, \sigma$ (UNGROUPED)	$\bar{x}, \sigma^2, \sigma$ (GROUPED)	NORMAL DISTRIBUTION	INVERSE NORMAL DISTRIBUTION	$\chi^2$ STATISTIC	$\chi^2$ DISTRIBUTION	ERROR FUNCTION	BINOMIAL DISTRIBUTION	N!	LINEAR REGRESSION	GAMMA FUNCTION	NEGATIVE BINOMIAL DISTRIBUTION	POISSON DISTRIBUTION
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*(Typical Special Functions)*

The 2200 BASIC Calculator is the first programmable calculator that offers "BASIC" as the keyboard programming language. Until now, programming language of this level, has been available only at the terminals of large, extremely expensive computers or at the terminals of highly-sophisticated and consequently very costly mini-computers.

With the introduction of our new Model 2200 Calculator, this high-level and easy-to-use language becomes available in a Wang-created programmable calculator. For users, this development makes possible not only more convenient and economical programming, but in addition, the programming of many applications which have previously been considered too complex and difficult.

The high-speed Cathode Ray Tube Display with its capacity of presenting 16 lines of 64 characters each, enables the user to more easily write his BASIC language programs while at the same time rapidly viewing his data input and the results of the calculation.

The optional Cassette Tape Drive utilizing easily-stored, low-cost tape cassettes, provides the means for recording programs and data or for the high-speed loading of desired programs and data into the system.

As for the Keyboard, which will be described on pages 6 and 7, not only are all the letters of the alphabet individually available, but complete commands can be entered by means of a single keystroke. What's more, 32 Special Functions are provided. These can be customized by the user for whatever application is desired.

And to round out the essentials of the system, the calculator provides an expandable 4,096-step memory which is used to store both keystrokes and floating-point numbers. The memory can be expanded in 4K increments as desired, up to a maximum of 32K steps ... all contained within the calculator. The primary unit has the capacity to store 425 floating-point numbers ... thirteen significant digits, sign, and a two-digit exponent offering a range from -99 to +99.



# Speed and accuracy. Simplicity and flexibility. Editing and correcting. Loading and chaining. Processing of data files.

## All are yours in the WANG BASIC 2200.

A complete set of trigonometric, exponential, and mathematical functions ... up to thirteen significant digits of accuracy ... and a dynamic range of  $10^{-99}$  to  $10^{+99}$  ... is available and at truly impressive speeds.

Powerful error *Diagnostic* and *Debugging* features include an Error Pointer, Trace Mode, Halt/Step operation and Continue. When an error is detected, the line in which the error occurs is displayed on the screen with an arrow pointing to the exact error spot. In addition, the Error Code explaining the error is displayed. A programmable *Trace Mode* allows the program to be observed as it is executed. The *Halt/Step* causes the program to execute one line at a time each time the key is depressed, allowing a line-by-line analysis of the program. The *Continue* function allows the program to go on. Therefore a program can be stopped at any time, variables examined, and the program continued.

In *Editing*, an entire program or segment of a program can be automatically renumbered. A partially entered line can be corrected by back-spacing. A program line can be replaced by simply entering a new line with the same statement number. A portion of a program can be *overlayed* by a program read from a cassette tape. And when *End Program* is keyed into the system, the amount of *unused memory* still available, is indicated on the display.

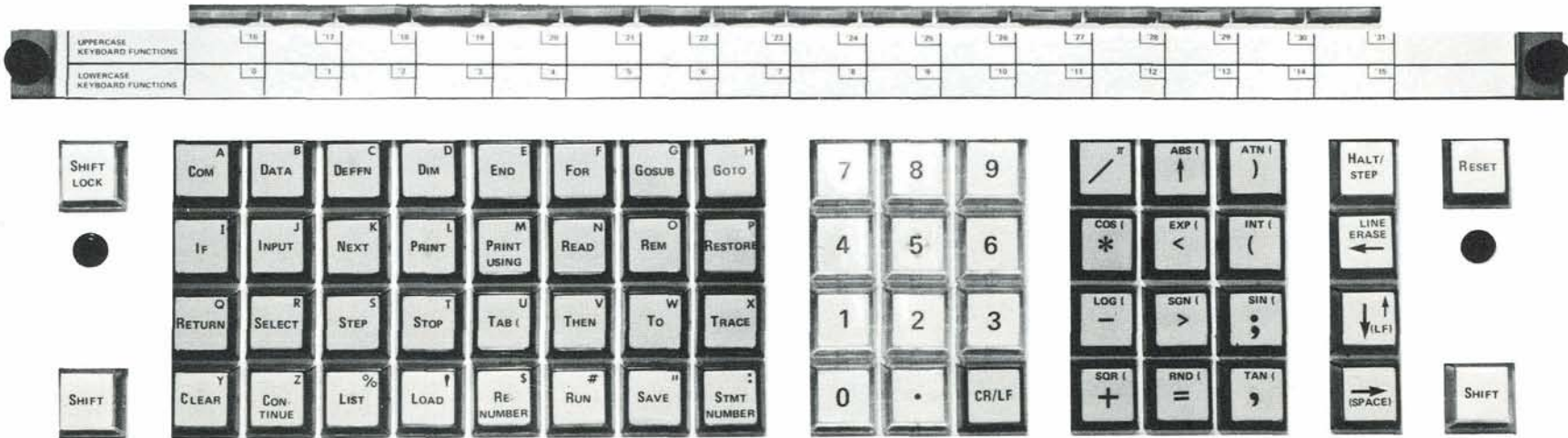
Alphanumeric *String Variables* or *String Arrays* of up to 64 characters can be defined by the user. A unique and extremely powerful command for *formatting* printed or displayed output, is the *Print Using* function key. This allows comma and decimal point insertion, floating \$ and signs.

In the 2200, many advantages accrue to the user. For example, simply by entering an unnumbered BASIC statement, an *Immediate Mode* is established, causing the 2200 to immediately execute powerful one-line calculator problems. This does not in any way alter the existing program. The Mode can also be used to quickly examine and dump variables after a program has been executed or halted.

The *Chained Execution of Sequential Program Segments* stored on tape, can be accomplished by using the *Load* command within a program. Used in this fashion, an executing program can cause a new program to be loaded to replace all or a portion, of the current program. *Saved Programs* can be identified by an alphanumeric name. When a number of programs is stored on tape, a desired program can be searched and loaded by simply specifying the name following the *Load* command. When chaining programs, specified portions of the data can be passed to sequential programs by use of the COM statement.

FROM THIS BRIEF DESCRIPTION -- A MERE SAMPLING FROM THE MANY CAPABILITIES AVAILABLE IN THE NEW ADVANCED WANG CALCULATOR -- WE THINK YOU'LL AGREE THE 2200 IS INDEED A CONTRIBUTION TO THE ART AND SCIENCE OF PROGRAMMING.

# With the 2200 comes a keyboard providing one of the most useful assemblages of single-keystroke commands ever designed.



## Here is a concise description:

- BACKSPACE** . . . causes a number of records or files to be back-spaced on cassette tape.
- COM** . . . . . allows a program to store information for use in a subsequent program, or to use information from a previous program.
- DATA** . . . . . provides the values to be used by the variables in a "READ" statement.
- DATA LOAD** . . . causes data values to be read from tape and assigned to variables and arrays, or data files to be searched and positioned on tape.
- DATA SAVE** . . . causes the current values of variables or arrays to be written or rewritten onto tape, or for data files to be set up and named.
- DEFFN** . . . . . defines a user's unique functions.

- SELECT** . . . . . used to select devices for I/O operations, to set up a variable length delay for CRT output, and to select radians or degrees for trig functions.
- STEP** . . . . . used to establish an increment in a loop at user's choice.
- STOP** . . . . . causes program execution to terminate.
- TAB(** . . . . . used to advance to a designated column on the CRT or on a printout.
- TO** . . . . . used with a "FOR" statement.
- TRACE** . . . . . provides for the tracing of the execution of a BASIC program.
- CLEAR** . . . . . clears all programs and variables in memory.

- DIM** . . . . . reserves space for single- or double-dimension array variables.
- END** . . . . . indicates end of a BASIC program. Optional. It need not be the last executable statement in a program. Also causes available space to be displayed.
- FOR and NEXT** . . . the FOR is used at the beginning of a loop. The NEXT signals end of loop.
- GOSUB** . . . . . specifies transfer to the first program line of a subroutine.
- GOTO** . . . . . used to transfer to another area of the program -- directing the system to the line number where processing is to continue.
- IF and THEN** . . . causes the system to skip the normal sequence of program lines and go to line number following the "THEN" command, providing certain conditions are met.
- INPUT** . . . . . allows user to supply data during running of a program already stored in memory.
- PRINT** . . . . . printing may be done in zone form which is signaled by a comma, or packed form which is signaled by a semicolon.
- PRINT USING** . . . prints data in conjunction with a referenced format "IMAGE" statement.
- READ** . . . . . used to assign to variables the values contained in a "DATA" statement.
- REM** . . . . . provides a way to insert comments or explanatory remarks. When the 2200 encounters a "REM" statement, it ignores the remainder of the line -- thus permitting the programmer to use the statement for his own purposes.
- RESTORE** . . . . . allows repetitive use of "DATA" statement values by "READ" statements.
- RETURN** . . . . . used in a subroutine to return processing to the statement following the last executed "GOSUB".
- CLEAR and N** . . . removes all non-common variables.
- CLEAR and V** . . . removes all variables (both common and non-common) from the system.
- CLEAR and P** . . . removes program text without disturbing variables.
- CONTINUE** . . . . . continues program execution after a "STOP" verb has been executed, or the "HALT/STEP" key has been touched.
- LIST** . . . . . a command to display or print out the program in statement number sequence.
- LOAD** . . . . . used to load or retrieve and append programs from the current or a searched named program file on a specified tape.
- RE NUMBER** . . . . . automatically renumbers the lines in the entire program, starting at a designated number with a selectable increment between line numbers. All program branches are adjusted.
- RUN** . . . . . initiates execution of the user's program.
- SAVE** . . . . . will cause BASIC programs (or portions) to be written onto a specified tape, and named.
- SKIP** . . . . . causes a number, or records of files to be skipped on cassette tape or positioned to the end of a file.
- STMT NO** . . . . . automatically sets the statement number of the next line about to be entered, equal to the highest line number of the user program in the system of +10.
- RESET** . . . . . immediately stops program listing or execution, clears the CRT screen, and returns control to the user without in any way losing program text or variable, or their current values.
- REWIND** . . . . . causes a selected cassette tape to be rewound at high speed.
- HALT/STEP** . . . . . causes program to halt or execute one line at a time each time the key is touched.
- LINE ERASE** . . . . . manual command to delete a line.
- CR/LF** . . . . . command to execute.

```

10 INPUT "PRINCIPAL, INTEREST, TERM(YEARS, MONTHS)", P, I, N, M
20 I=I/1200: N=N*12+M: M=INT(P*I/(1-(1+I)-N)*100+.5)/100
30 PRINT
40 PRINT USING 50, M, N, M-P
50 %MONTHLY PAYMENT=$###.## TOTAL INTEREST=$#####.##
60 END
:RUN
PRINCIPAL, INTEREST, TERM(YEARS, MONTHS)?20000, 5.5, 20, 3

MONTHLY PAYMENT=$136.65 TOTAL INTEREST=$13,205.95

END PROGRAM

```

This is the Wang 2200 Display -- a high-speed cathode ray tube capable of displaying 16 lines of 64 characters each. On it appear program instructions and output for constant observation. When END PROGRAM is keyed into the system, the display screen instantly indicates the amount of unused memory available to the user. The *Display Unit* is attached only by cables to the *Central Processing Unit* and to the *Keyboard Unit*. Therefore the Display can be placed wherever the user desires for convenience and easiest viewing.



# More desirable features than you'll find on equipment at more than double the price.

- A powerful version of the BASIC language is used for programming the 2200. Programs can be written and entered rapidly with this simple and universally popular algebraic language.
- BASIC commands entered by a single keystroke.
- A high-speed CRT displays 16 lines of 64 characters per line, displaying a large section of program or program output within a second.
- Special Keyboard Function Keys allowing up to 32 program functions to be executed with single keystrokes. This provides a unique and flexible means of customizing program operation.
- Mathematical operations (+, -, X, ÷) are performed with a full 13 significant digits of accuracy.
- Most other functions are performed with 12 significant digits of accuracy.
- A dynamic range of  $10^{-99}$  to  $10^{+99}$
- Processing and calculation speeds among the very fastest available.
- Optional Cassette Tape Input/Output facilitating high-speed, high-capacity searching, loading and saving of programs; searching, reading, recording, and positioning of data files; and chained program execution.
- Optionally available, 2201 Wang-modified IBM Selectric® typewriter providing user with complete printout of programming, keyed-in data, and resultant calculations.
- Use of the 2200 as a powerful on-line calculator without disturbing an entered program.
- Unequaled capability for program debugging. Program line error pointer. Trace Mode. Halt/Step single-line execution does data examination and editing.
- Correction and Editing capabilities. Program and program segment renumbering for block insertion. Backspace line correction. Single line replacement or deletion. Block line deletion. Display of available remaining space. Program loading overlays from cassette tape.
- Complete capability for alphanumeric data processing. Variable length alphanumeric string variables and string arrays. String function for partial string processing. Insertion of comma, decimal point, floating \$ and sign for formatting printed output.
- Program chaining and overlays accomplished automatically with load commands to cassette tapes, and a common Data Statement passing specified variables to subsequent programs.
- Excellent reliability since the entire BASIC language processor is programmed in Read Only memory.
- Memory capacity far exceeding most such equipment -- the standard 2200 unit containing 4,096 steps of memory and expandable to 32,768 steps.

## The BASIC language

Because the BASIC language is *hardwired* into the 2200 calculator, the entire 4,096 (4K) step memory in the standard 2200 calculator is available as actual working area. This compares favorably in computing power to much larger computers in which the BASIC language must be loaded into memory. The 4K-memory is expandable in 4K increments to a total of 32K steps, all internal to the 2200 chassis, providing sufficient working area for programming most applications.

## High-quality printout facility

To provide for a permanent record of the user's programming and resultant calculations, either the WANG MODEL 2201 OUTPUT WRITER or the WANG MODEL 2221 HIGH-SPEED PRINTER may be added to the 2200 System as optional equipment. MODEL 2201, a modified Selectric Typewriter providing both upper and lower case characters, is capable of typing all numbers and letters with complete format control for easy tabulation of titled columns of data. It can also fill in any type of standard form precisely and automatically. MODEL 2221 is a High-Speed Printer providing alpha and numeric supportive data to documents and reports of all kinds in high volume and at very high speed. If your tasks require vast quantities of printout, the 2221 is recommended.



## Even more Peripherals are available

Additional peripherals available for the expansion of the 2200 System include the WANG MODEL 2202 PLOTTING OUTPUT WRITER, the MODEL 2212 FLAT BED PLOTTER, the 2214 MARKED SENSE CARD READER, and more will soon be added.

## Choice of Keyboards

The unique MODEL 2215 BASIC KEYBOARD enters complete Basic language words (for example, GOSUB, NEXT, THEN, etc.) into the system with a single keystroke, thereby minimizing errors and time consumed in entering and executing programs. Optionally, users may specify the WANG MODEL 2222 ALPHANUMERIC KEYBOARD on which the alpha keys are exactly like those on standard typewriter and teletype keyboards. Numeric keys are of course also provided. The 2222 Keyboard is easy to use and is time-saving where a great deal of material such as names, addresses or descriptive matter are required as input.

## BASIC language instruction generally requires only a single step of storage in the 2200.

Much more efficient use of available memory is made on the 2200 contrasted with other BASIC systems which require 1 step of storage for each alphanumeric character.

As described on preceding pages of this brochure, the BASIC Keyboard is comprised of a complete BASIC language instruction set, plus 16 special function keys which can each be assigned to represent various subroutines in the BASIC program.

## Cassette tape drives

The display unit may be ordered with the Cathode Ray Tube (CRT) only, or with both the CRT and TAPE CASSETTE DRIVE, MODEL 2217. Additional 2217 Drive modules may be added to the 2200 System at any time. Wang Tape Cassette Drives employing low-cost magnetic tape, are used for storing numeric and alpha data and programming. Specific programs or data files may be directionally searched. Additionally, the 2217 Tape Cassette Drive is capable of high-speed rewind, skipping or backspacing records or entire files, and updating files in place. The 2217 Tape Cassette Drive because of the traditional data processing file organization, is one of the most comprehensive and flexible magnetic tape cassette systems available.

# Specifications

## CRT

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. (14.4 kg)

Power Requirements: 115 or 230 vac ± 10%  
50 or 60 Hz

## TAPE DRIVE

Stop/Start Time .09/.05 second

Capacity: 375 steps/ft.  
(1231 bytes/m)

Recording Speed: 7.5 IPS (19.04 cm/sec.)

Search Speed 7.5 IPS (19.04 cm/sec.)

Transfer Rate 375 char/sec. (approx.)

Inter-record Gap .8 inches (2.03 cm)

## KEYBOARD

Size:	Height	3 inches	(7.62cm)
	Depth	10 inches	(25.4cm)
	Width	17½ inches	(44.5cm)

Weight 7 lbs. (2.8 kg)

Power Requirements: 115 or 230 vac ± 10%  
50 or 60 Hz

\*Each step is equivalent to one keystroke or one 8-bit byte of memory. Each floating point number occupies eight memory steps.

## CPU

### Built in Functions

#### Mathematical & Trigonometric Functions

Log	Natural log
SQR	Square Root
$\pi$	Pi
Sin	Sine
Cos	Cosine
Tan	Tangent
Arc Sin	Inverse Sine
Arc Cos	Inverse Cosine
Arc Tan	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 alpha-numeric string.
HEX	Hexidecimal Values.
LEN	Length of Alpha-numeric Variable.
CVT	Convert Alpha to Numeric or Numeric to Alpha.

#### Variable Formats

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

#### Average Execution Times ( Milliseconds)

Add/Subtract	.8
Multiply/Divide	2.67/7.0
Square Root/E <sup>x</sup>	40.0/23.0
Log <sub>e</sub> x/X <sup>y</sup>	23.0/48.0
Integer/Absolute Value	.2/.02
Sign/Sine	.3/33.3
Cosine/Tangent	34.1/65.1
Arctangent	60.0
Read/Write Cycle	1.6 $\mu$ sec.

#### Capacity

Memory Size	4,096 program steps* (expandable to 32K)
Peripheral Capacity	9 (max)
Dynamic Range	10 <sup>-99</sup> to 10 <sup>+99</sup>
Subroutine Stacking	No Limit
Weight	60 lbs. (24 kg)
Power Requirements	115 or 230 vac ± 10% 50 or 60 Hz

OWN MINI  
4-32K

MINI - CAME FROM WANG 330



**WANG** LABORATORIES, INC.

836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

Printed in U.S.A.  
700-0787A  
1-73-75M

**WANG**

LABORATORIES, INC.

PRICE LIST

836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

50 STATES, DISTRICT OF COLUMBIA, & PUERTO RICO

F.O.B. Tewksbury, Mass. All taxes additional. Prices subject to change without notice.

MODEL NO.	DESCRIPTION	PRICE
<b>Central Processing Units (CPUs)</b>		
2200A-1	Advanced Programmable Calculator Central Processing Unit (CPU) including 4,096 steps of memory	\$ 3,500.00
2200B-1	Advanced Programmable Calculator Central Processing Unit (CPU) including 4,096 steps of memory and expandable peripheral capacity	\$ 3,800.00
	Additional 4,096-step memory blocks for 2200A or B (CPU is limited to a total of 32,768 steps)	\$ 1,500.00
	<i>Note: When ordering additional memory blocks, change suffix number of CPU to correspond with number of desired memory blocks; i.e., Model 2200A or B-4 is a basic CPU with 4 memory blocks</i>	
<b>Options</b>		
OP-1	Option 1 — Matrix ROM	\$ 500.00
OP-2	Option 2 — General I/O ROM	\$ 300.00
<b>Peripherals</b>		
2201	Output Writer	\$ 2,100.00
2202*	Plotting Output Writer	\$ 3,800.00
2203*	Punched Paper Tape Reader (High-Speed Photo-Electric)	\$ 1,500.00
2207*	Teletype Interface Controller	\$ 300.00
2212*	Flatbed Plotter	\$ 2,800.00
2214*	Marked Sense Card Reader	\$ 800.00
2215	2200 Standard Keyboard Module	\$ 700.00
2216	CRT Console Display Module	\$ 1,500.00
2217	Single Magnetic Tape Cassette Reader/Recorder	\$ 1,200.00
2216/2217	Combined CRT Display/Single Magnetic Tape Cassette Module	\$ 2,500.00
2219	I/O Extender	\$ 595.00
2221	High-Speed Printer (132-column)	\$ 5,000.00
2222	Alpha-Numeric Keyboard Module	\$ 700.00
2227	Standard Telecommunications Option	\$ 900.00
2230-1*	Disk Memory 1,228,800 steps (bytes)	\$ 9,500.00
2230-2*	Disk Memory 2,457,600 steps (bytes)	\$11,500.00
2230-3*	Disk Memory 4,915,200 steps (bytes)	\$13,500.00
2231	High-Speed Printer (80-column)	\$ 3,200.00
2232	Digital Flatbed Plotter (31" x 42")	\$ 7,500.00
2234**	Stack-Feed Card Reader	\$ 3,200.00
2290	CPU/Peripheral Stand	\$ 200.00

2200-A Upgrade to 2200-B @ \$300.00 plus \$200.00 Service Charge.

\*Requires a 2200B Advanced Programmable Calculator to support these peripherals.

\*\*Requires both a 2200B and Option 2.

ADVANCED  
PROGRAMMABLE CALCULATORS

2200

# PRICE LIST

## 2200 SERIES – SUPPLIES

PART NO.	DESCRIPTION	UNIT PRICE
174-1250	75-foot Cassette	\$ 8.00
174-1251	150-foot Cassette	\$ 10.00
174-1252	12-pack of 75-foot Cassettes with Cassette Album <sup>☆</sup>	\$ 60.00
174-1253	12-pack of 150-foot Cassettes with Cassette Album <sup>☆</sup>	\$ 75.00
700-1221	2214 Program Cards (100 cards)	\$ 3.00
615-0204	2202 Plotter Graph Paper (1-inch increments) (13 5/8 x 14 in. continuous forms – 1000/box)	\$ 25.00
177-0041	Removable Disk for 2230-1, 2, 3	\$200.00
725-0154	2221 Printer Ribbon	\$ 15.00
725-0450	2212 Plotter Paper - English Lightweight (100 sheets)	\$ 5.00
725-0451	2212 Plotter Paper - English Heavyweight (100 sheets)	\$ 5.00
725-0452	2212 Plotter Paper - Metric Lightweight (100 sheets)	\$ 5.00
725-0453	2212 Plotter Paper - Metric Heavyweight (100 sheets)	\$ 5.00
725-0454	2212 Plotter Pens (Red) (Package of 3)	\$ 5.00
725-0455	2212 Plotter Pens (Blue) (Package of 3)	\$ 5.00
725-0456	2212 Plotter Pens (Green) (Package of 3)	\$ 5.00
725-0457	2212 Plotter Pens (Black) (Package of 3)	\$ 5.00
725-0384	2201, 2202 Printer Ribbons (Selectric) (Package of 3)	\$ 16.75
690-0109	2214 Series Dust Cover	\$ 2.00
660-0130	2217 Cleaning Pads (100 pads)	\$ 5.00

<sup>☆</sup>10 dozen or more – a 10% discount applies from 12-pack price

PART NO.	2200 SOFTWARE DESCRIPTION	Total Package Price	Book Alone
177-2000 <sup>†</sup>	General Library – Business & Finance, Utilities, Games	\$250.00	\$ 25.00
177-2001 <sup>†</sup>	General Library – Mathematics	\$250.00	\$ 25.00
177-2002 <sup>†</sup>	General Library – Statistics/Engineering	\$250.00	\$ 25.00

<sup>†</sup>Included at no charge, with shipment of equipment.

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Printed in U.S.A.  
700-0777E  
8-73-20M

## THE WANG MODEL 721 HIGH SPEED PRINTER

THE MODEL 721 IS A HIGH SPEED CHARACTER PRINTER AVAILABLE FOR ALL 700 SERIES CALCULATORS. THE PRINT CHARACTER IS MADE UP OF A DOT MATRIX. THIS IMPORTANT OUTPUT-ONLY DEVICE HAS BEEN DESIGNED TO BE SOFTWARE COMPATIBLE WITH ALL EXISTING 700/701 SOFTWARE. THE ONE EXCEPTION IS THAT CODES FOR THE ALPHA "L" MUST BE CHANGED SINCE THESE WILL PRINT AS A NUMERIC "1" ON THE 721. THERE IS NO KEYBOARD WITH THIS OUTPUT DEVICE AND HENCE IN MOST CASES IT WILL BE USED IN CONJUNCTION WITH A 711 OR A 722 INPUT KEYBOARD. PRINTOUT IS QUIET.

## SPECIFICATIONS MOD. 721 HIGH SPEED PRINTER

PAPER SIZE:	STANDARD 14.5 INCH PIN FEED, CONTINUOUSLY ADJUSTABLE TO 8.5 INCH
SPEED:	150 CHARACTERS PER SECOND APPROXIMATELY 70 - 200 LINES PER MINUTE DEPENDING ON LINE LENGTH
CHARACTERS:	DOT MATRIX 5 X 7
LINE WIDTH:	132 CHARACTERS
SIZE:	WIDTH: 27.5 INCH (70 CM) DEPTH: 19.5 INCH (50 CM) HEIGHT: 11 INCH (28 CM) DESK TOP UNIT
CHARACTER SET:	FULL ALPHANUMERIC - UPPER CASE ONLY NORMAL AND EXPANDED
PRICE:	\$5000 U. S. LIST
DELIVERY:	90 DAYS A. R. O
COPIES:	UP TO 5 CARBON COPIES

ELAPSED TIME FOR THIS PRINTOUT: 16 SECONDS!!!

**WANG**

LABORATORIES, INC.

836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-7311, TWX 710 343-6769, TELEX 94-7421

Printed in U.S.A.  
700-0586  
2-72-5M



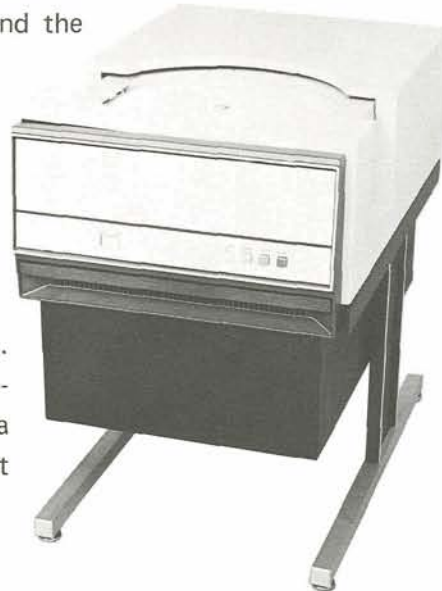
The Model -30 Fixed/Removable Disk Drive provides high-speed external program and data storage capacity for Wang calculating systems. The Disk Drive is available in three configurations, designated as follows:

MODEL NO.	PROGRAM STEPS (BYTES)/STORAGE REGISTERS
30-1	1,228,800 / 153,600
30-2	2,457,600 / 307,200
30-3	4,915,200 / 614,400

In each configuration half of the capacity is on the fixed disk and half on the removable. The removable disk can readily be replaced with another when necessary. Also disks can be reused by writing over the contents of the disk. Information is transferred between the calculator and the disk in 256-byte blocks.

The storage "area" is organized into 256-byte sectors each sector being specifically addressable by its sequentially-assigned sector number. Each of the sectors is therefore randomly accessible, with a mean sector access time of 65.9 milliseconds.

The -30 Fixed/Removable Disk Drive is recognized to be a single device by the Wang calculating system. Since the calculator can address multiple external devices, more than one -30 can be incorporated into a single system, possibly in conjunction with other input and output peripheral devices.



# 30 FIXED-REMOVABLE DISK DRIVE



# DATA SHEET

## CAPACITY

Data is stored (written) in and recalled (read) from the disk in 256-byte sectors. The sector capacities of the three disk configurations are as follow:

MODEL NO.	NO. OF 256-BYTE SECTORS
30-1	4,800
30-2	9,600
30-3	19,200

## SECTOR COMPARE

Instructions are available to compare the contents of the calculator memory with the contents of a sector on the disk. If they are not identical an error condition will exist. This effect provides for read-after-write validity checking capability.

## ONE-BYTE BUFFER

A special one-byte buffer memory in the disk controller can be loaded and retrieved by the calculator to assist in alphanumeric sorting programs.

## SECTOR FORMAT

Each sector is formatted by the controller into a 2-byte sector address, 256 bytes of data, and a 2-byte cyclic redundancy check. The 2-byte sector addresses and 2-byte cyclic redundancy check are transparent to the software and are used by the controller to maintain data integrity.

## ERROR CONDITIONS

An error condition is set in the calculator when the following occur:

1. Invalid disk command
2. Invalid sector address
3. Invalid data read indicated\*
4. Proper sector could not be found
5. Comparison between calculator memory and sector failed

\*The -30 automatically attempts to read a sector four times. The error condition is flagged after the fourth failure to properly read the sector.

## SPECIFICATIONS

### PERFORMANCE

Rotation Speed	1500 rpm
Mean Access Time	65.9 milliseconds

## SPECIFICATIONS (Cont.)

### STORAGE CAPACITY

	30-1	30-2	30-3
Bytes per Disk	614,400	1,228,800	2,457,600
Total Bytes	1,228,800	2,457,600	4,915,200
Sectors per Disk	2,400	4,800	9,600
Total Sectors	4,800	9,600	19,200

### PHYSICAL

HEIGHT:	32½ inches (82.6cm)
WIDTH:	17½ inches (44.5cm)
DEPTH:	29 inches (73.7cm)
WEIGHT:	126 lbs. (57.3kg)

### POWER

REQUIREMENTS: 115 or 230 VAC ± 10%  
50 or 60 Hz

### CABLING:

12-ft. (3.66M) cable with connector to calculator I/O jack.

### OPERATING

ENVIRONMENT: 50° F to 95° F (10° C to 35° C)  
20% to 80% relative humidity

Standard Warranty Applies.

## ORDERING SPECIFICATIONS

A fixed/removable disk drive unit capable of storing and recalling data for the Wang calculating system. The unit must be self-contained and completely interfaced to the calculator. Each of the two disks in the unit must have the capacity to store 614,400 bytes (or 1,228,800 or 2,457,600) of information. Instructions must be available to transfer 256 bytes at a time between the disk and the Wang calculating system. One or more disk drives must be operable in the calculating system, in conjunction with various other input and output peripheral devices.

### NOTE:

*The -30 is compatible with the 700 and 2200 Series. When ordering, please prefix the proper series number (i.e., for 700, order 730, for 2200, order 2230).*

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

**WANG**

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