

PRICE INDEX ON 160 COMPUTER  
AND ASSOCIATED PERIPHERAL EQUIPMENT

Effective date: ~~1 June 1960~~

*PRICES OBSOLETE*

	<u>Purchase Price</u>	<u>Lease Price</u>
160 Computer	\$ 60,000	\$ 1,500/month
Electric Typewriter	10,500	262/month
1609 Card Read and Punch Unit	47,000	1,175/month
Basic Magnetic Tape Unit (30 KC)	37,000	925/month
Additional Magnetic Tape Units (30 KC)	20,500 (each)	512/month (each)
Basic Magnetic Tape Unit (15 KC)	32,000	800/month
Additional Magnetic Tape Units (15 KC)	15,500 (each)	390/month (each)
1606 High Speed Printer	110,000	3,300/month

All prices are f.o.b. Minneapolis, Minnesota, and do not include Federal, State and Local Taxes which may be applicable.

Subject to change without notice.

CONTROL DATA CORPORATION  
501 Park Avenue  
Minneapolis 15, Minnesota

Magnetic Core Storage

4096 12-bit words (49,152 bits). Storage cycle time, 6.4 microseconds. Basic add time, 12.8 microseconds. Information read available 2.2 microseconds after start of next cycle. Average execution time, 15 microseconds per instruction. 5 megacycle logic.

Operating Mode

Operation controlled by internally stored program. Single address logic, one instruction per word. Binary arithmetic -- modulus 2 minus one (one's complement). 12-bit word made up of function code (6 bits) and execution address (6 bits). Parallel mode of operation.

Programming

Repertoire of 62 instructions. Flexible addressing modes: no address, direct address, indirect address, and relative address. Information in registers shown on projection display in Arabic numerals.

Standard Input-Output Equipment

350 character per second Ferranti paper tape reader and 60 character per second Teletype paper tape punch.

Optional Input-Output Equipment

Electric typewriter, up to 8 magnetic tape handlers (either 15 KC or 30 KC), card read punch unit, and line printer.

## 160 PERIPHERAL EQUIPMENT

### Electric Typewriter

This is an IBM electric typewriter modified by Soroban Corporation. It has a standard keyboard. The typewriter is mounted on a cabinet with the controls and power supply inside the cabinet -- connected to the 160 by the input-output cable.

### Operating Speed

Accepts input data at normal typing speeds. Prints output data from the 160 at a rate of 10 to 12 characters per second.

### Control Panel

Associated with the typewriter control panel. It houses two switches and two lights. The switches denote Operation Mode and Input Disconnect.

## 160 PERIPHERAL EQUIPMENT

### 1609 Card Read and Punch Unit

This is an IBM 521 punching unit. It provides the 160 with punched card input and output. There are three card stations: first reading station, punching station, second reading station. Calculated results are punched at the punching station. At the second reading station, a card can be read for gang punching, re-calculation for proof, and double punch, blank column checking. Cards are fed continuously without interruption for calculation. As the results are being punched in one card, factors are being read from the following card. May be operated as an independent gang punch.

#### Operating Speed

Operates at a speed of 100 cards per minute.

#### Control Panel

Two double section, 22-hub control panels and standard complements of self-contacting wires are furnished.

#### Standard Features

Digit Selectors: 2  
Column splits: 12  
Double punch, Blank Column Detection:  
10 positions  
Pilot Selectors (2-position): 5  
Pluggable Stop  
Product Overflow  
Punch Selectors (5-position): 8  
Punch Suppression  
Unfinished Program  
Zero Check  
Zero X Exit: 4

## 160 PERIPHERAL EQUIPMENT

### Basic Magnetic Tape Unit

Contains controls for a total of four tape handlers. Uses Ampex FR-300 tape handler, with a character rate of 30 KC.

Change on one's type of recording is used compatible with that used by IBM 727 tape units. Reflective spots indicate beginning and end of tape. Thus, a reel of tape generated by the tape unit can be used on an IBM 727 tape unit and vice versa.

Forward, reverse, and rewind tape speed is 150 inches per second. Recording density is 200 characters per inch, with 6 information bits and one parity bit per character. Tape width is 1/2 inch. Data is recorded in variable-length blocks, with practical limits determined by the size of memory. Length of inter-block spacing is approximately one inch.

Data transmissions to and from the tape system are in the form of 6-bit words. Tape can be read in either the forward or backward direction. For writing, the control section receives a 6-bit word and generates a parity bit for each word. Reading follows the reverse procedure: 7-bit characters are read off the tape and the lower 6 bits are transmitted to the computer.

Parity checks are made on reading and writing by a read-head mounted .4 inches following the write head. Parity errors are registered on a flip-flop for subsequent sensing by the computer. A parity error does not immediately halt operations, unless a program stop is specified.

The reading and recording heads are electrically isolated on this tape unit. This feature allows the tape to be read back during recording for a positive check on both the recording circuits and the magnetic tape quality.

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Same unit is available using FR-400 tape handler, with a character rate of 15 KC.

160 PERIPHERAL EQUIPMENT

Additional Magnetic Tape  
Units

Use the same Ampex FR-300 tape handler and have the same features as the basic tape unit. Do not contain controls.

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Same unit available with FR-400 tape handler, operating with a 15 KC character rate.