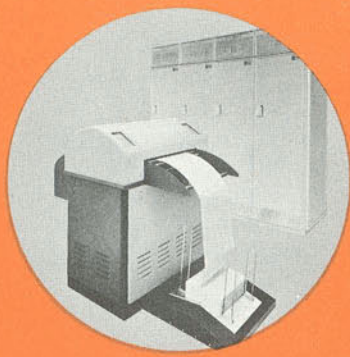


**NOW AVAILABLE!**  
**THE KEY TO INCREASED AUTOMATION...**  
**FOR LARGE AND SMALL REQUIREMENTS...**

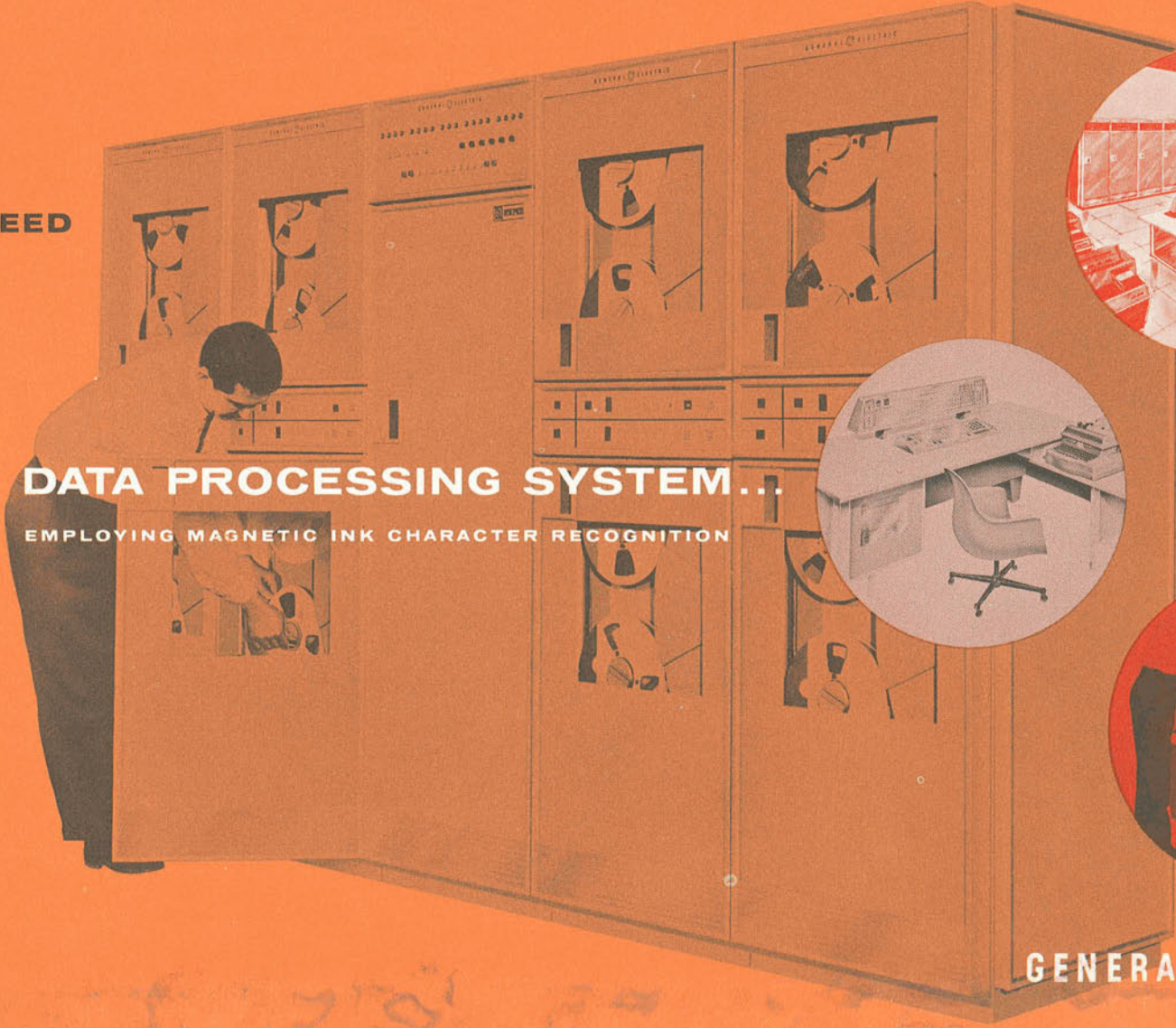


**THE HIGH SPEED**  
**FLEXIBLE**  
**PROVED**

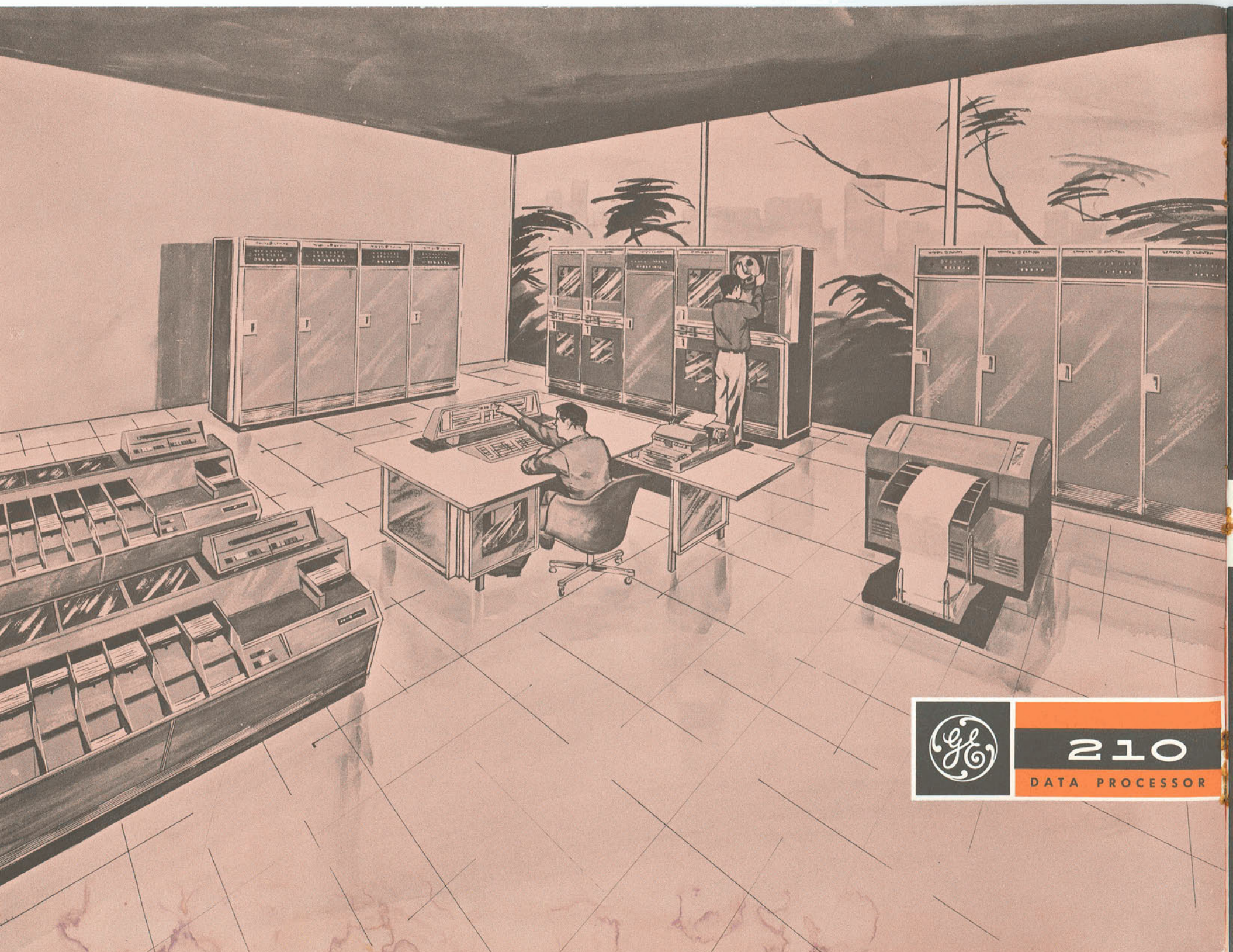
**GE 210**

**DATA PROCESSING SYSTEM...**

**EMPLOYING MAGNETIC INK CHARACTER RECOGNITION**



**GENERAL  ELECTRIC**



**210**  
DATA PROCESSOR

## LARGE SYSTEM CAPABILITY—HIGH COMPUTING EFFICIENCY PER DOLLAR!

Incorporating the best of the many unusual, highly-desirable features of existing General Electric data processing systems, the newly-available GE 210 DATA PROCESSING SYSTEM unlocks the door to high-speed automated business procedures by providing BOTH LARGE AND SMALL ORGANIZATIONS with the means to:

- > Absorb the ever-increasing volume of paper-work
- > Help achieve more efficient management
- > Cope with the increasing complexity of business mathematics and statistics

An organization desiring to automate its data processing procedures may select ONE SYSTEM, the GE 210, with the assurance that the system is custom-designed for both present needs and future growth. By employing the flexible "building block technique," the capacity of the initial GE 210 system can easily be multiplied merely by increasing the memory size, employing higher-speed tape or adding other peripheral equipment.

The GE 210 DATA PROCESSING SYSTEM is a fully integrated general purpose digital computer engineered expressly for automating business data processing routines. Employing —

- > High speed automatic document sequencing
- > Magnetic ink character recognition with direct entry to the computer system

- > Complete transistorization
- > Printed wire circuit boards, and
- > Other advanced concepts of electronic data processing, the GE 210 system enables a business organization to control several of its greatest cost-spiraling areas:
  - > The handling of the increasing volume of documents
  - > The necessary bookkeeping operations involved in their processing, and
  - > The decreasing availability of trained clerical personnel.

The purpose of this modularly-constructed system is to assume the burden of the majority of standard, yet time-consuming and costly, clerical tasks — leaving the relatively small number of unusual operations to off-line human intervention where economics so dictate.

A full complement of input and output peripheral equipment, an unusually broad instruction repertoire, and a complete buffering system permit such a typical series of simultaneous operations as:

COMPUTE — READ FROM DOCUMENT HANDLER  
— READ PAPER TAPE — WRITE MAGNETIC TAPE.

These features make the expandable GE 210 an extremely flexible and easily programmable system for business data processing.

## THE GE 210 DATA PROCESSING SYSTEM PROVIDES:

- > **HIGH SPEED AND ACCURACY** in processing increasing quantities of business documents
- > **TIME AND COST SAVINGS:** magnetically imprinted original source documents of varying sizes and thicknesses may be used as inputs to the system to —
  - eliminate need to convert documents to another medium acceptable to data processor
  - simplify verification, reconciliation and audit procedures, and
  - reduce bookkeeping errors and costs
- > **FLEXIBILITY**
  - modular construction allows future expansion from modest system to full scale system as data processing requirements increase
  - full complement of input and output media
- > **RELIABILITY** resulting from built-in self-checking circuits to detect human and machine errors
- > **ELIMINATION OF MAJORITY OF MANUAL FUNCTIONS**, such as printing, typing, and punching of information on returned documents — through the use of the Magnetic Re-entry Printer
- > **PROMPT, ACCURATE, ECONOMICAL SERVICE** for customers of the organization utilizing the GE 210

**THIS  
PROVED  
GE 210  
SYSTEM IS  
AVAILABLE  
NOW!**

## MAJOR UNITS of the GE 210 data processing system include:

### DOCUMENT HANDLER *(two on-line simultaneously)*

- accepts magnetically encoded documents of varying size, quality, and degree of mutilation, one at a time, and
- reads magnetic ink characters on each document, and
- sorts documents,

*all under control of stored program within central processor (on-line) or under control of document handler (off-line)*

### CENTRAL PROCESSOR

- accepts information from document handler, magnetic tape, paper tape, punched cards and typewriter, and
- controls operation of one or two document handlers for custom processing, and
- provides output information to document handler, magnetic tape, high speed printers, paper tape and typewriter

### CONTROL CONSOLE

- provides indicating and control station for operation of the system

### MAGNETIC TAPE UNITS

- read and write at speeds of 30,000 or 50,000 numeric characters per second, and
- store bulk information for long-term use, and
- multiplex buffering

### HIGH SPEED MAGNETIC RE-ENTRY PRINTER

- prints re-entry characters in magnetic ink and/or Gothic characters on output documents, reports or lists

### HIGH SPEED PRINTERS *(computer-edited, self-editing)*

- print out necessary lists, journal entries, trial balances, reports and statements from information furnished from central processor
- may be used on-line or off-line

### CARD READER

- reads 80-column punched cards for entry into computer

### CONSOLE PAPER TAPE READER

- reads punched paper tape for entry into computer

### HIGH SPEED PAPER TAPE PUNCH

- punches paper tape on-line from memory

### CONSOLE TYPEWRITER

- acts as control printer
- provides input and output communication

### POWER SUPPLY

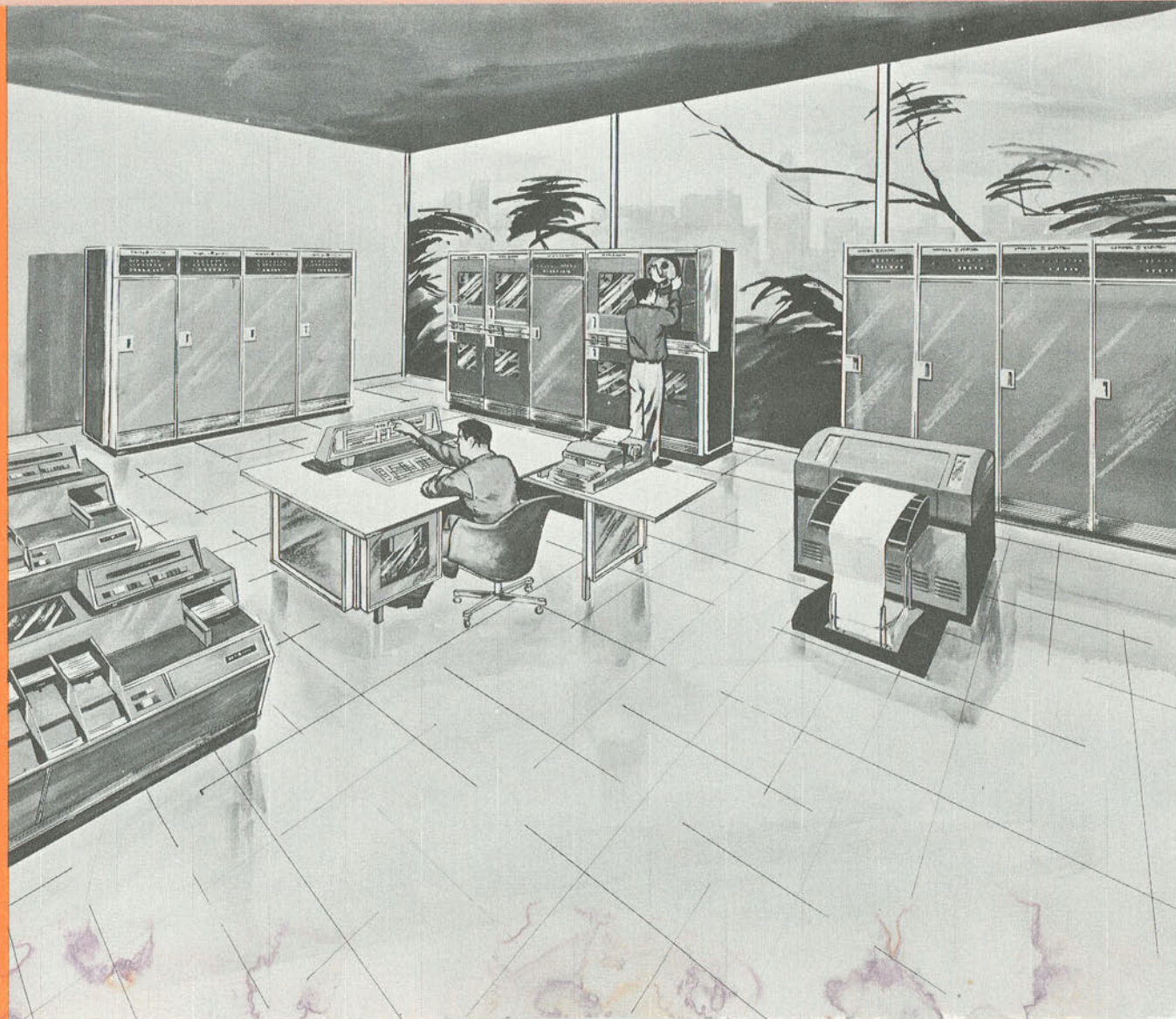
- supplies necessary regulated voltages

### EQUIPMENT SPEEDS

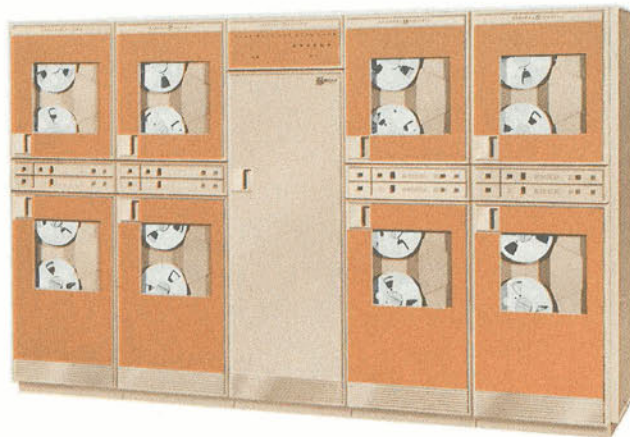
Card Input	400 or 1500 cards per minute
Document Input	750 or 1200 documents per minute
Magnetic Tape	30,000 or 50,000 numeric characters per second
Computer	A + B → C = 192 microseconds (three memory addresses)
Printer	Alphanumeric printing: 1000 lines per minute Characters per inch: 10 Characters per line: 120
Console Paper Tape Reader	200 or 500 characters per second
Re-entry Printer	1000 lines per minute — standard Alphanumeric printing 300 lines per minute — magnetic E13B character printing
High Speed Paper Tape Punch	60 characters per second

FEATURES of the GE 210 data processing system:

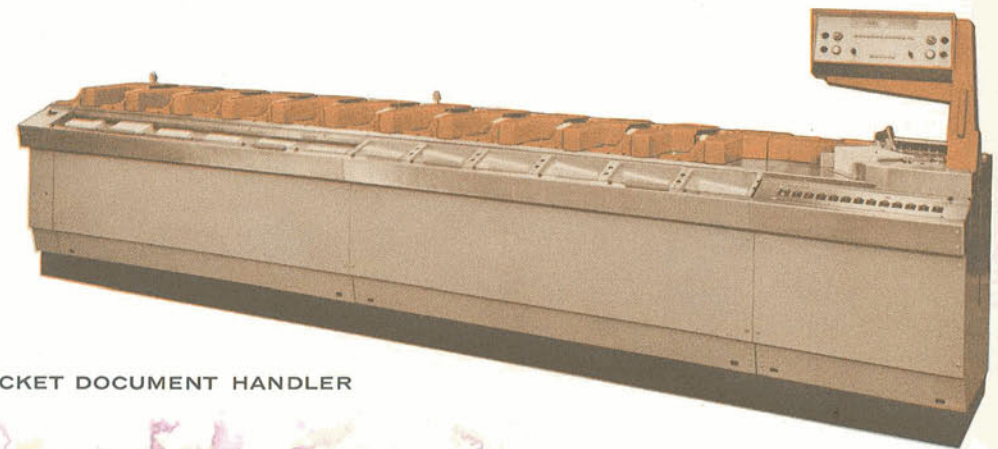
COMPONENTS



**MAJOR UNITS** of the GE 210 data processing system include:



MAGNETIC TAPE UNITS



TWELVE POCKET DOCUMENT HANDLER



**210**  
DATA PROCESSOR

FEATURES of the GE 210 data processing system:



CONTROL CONSOLE, INCLUDING PAPER TAPE  
PHOTOREADER (LEFT) AND CONSOLE TYPEWRITER (RIGHT)



CENTRAL PROCESSOR



TWO-POCKET DOCUMENT HANDLER



210

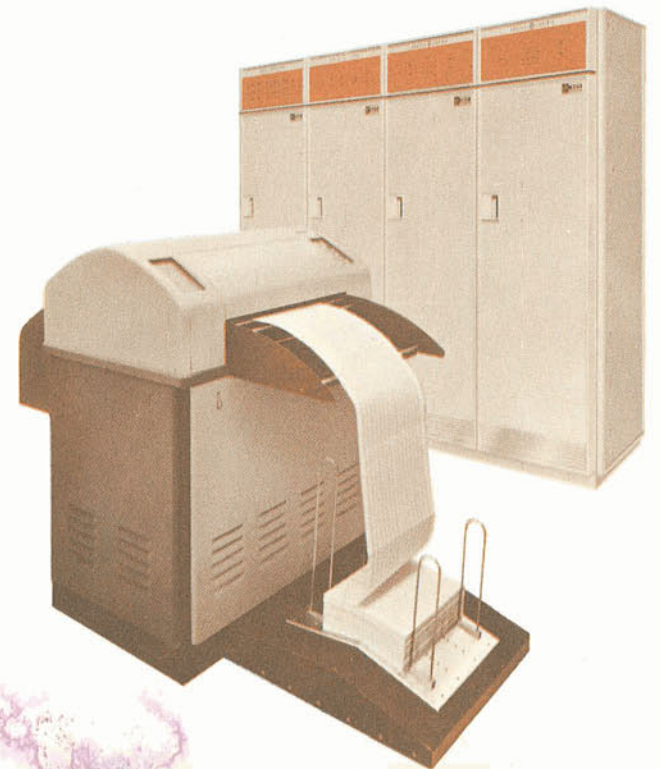
DATA PROCESSOR

**MAJOR UNITS** of the GE 210 data processing system include:



MEMORY UNIT

TYPICAL HIGH SPEED PRINTER



POWER SUPPLY





## FEATURES of the GE 210 data processing system:

### WHY ON-LINE ENTRY?

On-line Entry of information from magnetically encoded documents into the central computer is the only method which provides immediate and completely automatic segregation of invalid items.

Without On-line Entry, erroneous items will be accepted into the system. If the computer is not employed to validate *completely* each item, all information must be fed into the system and later each erroneous entry must be purged — *by hand* — from hundreds of acceptable items prior to the posting operation.

If not used on-line, the Central Processor must wait for the hand operation to be completed before processing continues. Thus the manual purging procedure results in wasted man-hours and computer-time at the very point in the day's operations when time is the most crucial.

On-line Entry eliminates this culling process. Since the Document Handler is computer-controlled, items which are invalid *for any reason* are sorted out and batched according to reason for rejection. During On-line Entry, a list is generated which records the disposition of each document entered. Reconciliation of out-of-balance batches and repair of items is made easy because the Entry List also contains the exact location of each rejected item and its reason for rejection.

On-line Entry greatly simplifies control and audit procedures, because the information in the computer and the location of physical documents exactly correspond. In contrast, if off-line conversion is used, items in the batch have no relationship to the order of information in the computer.

Handles and reads information directly from various types of source documents — no costly, time-consuming translation

High-speed automatic document sequencing

On-line and off-line handling of magnetically imprinted documents

Extremely wide selection of input/output methods and equipment, including original documents, magnetic tapes, paper tape, punched cards, typewriter, high-speed printer — specifically designed for flexible business data processing.

Building block equipment flexibility — 4000 or 8000 word core memory, 30 or 50 KC magnetic tape-system, up to 13 magnetic tape transports

Latest manufacturing and circuit techniques — use of printed circuit boards, magnetic core memory and complete transistorization, resulting in smaller equipment size, lower power consumption, less heat dissipation, better accessibility, lower installation and maintenance costs, greater component life expectancy, and increased equipment reliability

Input and output buffers provided for all components, thus permitting the simultaneous operation of four separate functions:

1. Computation, together with
2. Read magnetic tape OR read two magnetic document handlers OR read paper tape OR read cards, together with
3. Write magnetic tape OR on-line printing, together with
4. On-line typewriter operation OR paper tape punch OR paper tape read

Magnetic ink character reading—permits the handling and reading of information directly from source documents

Magnetic ink character printing — permits printing of documents which can be automatically read by the magnetic ink character reader

Complete arithmetic, audit checking and self-checking facilities

System flexible and expandable — as volumes of documents increase, system can be expanded

Powerful instruction repertoire simplifies programming

Proved automatic programming, general purpose and utility routines available

# WHY MAGNETIC INK PRINTING?

CARD NO. 1789 123 456 7 8

SOLD TO CHRISTOPHER GRAVES

X REC'D BY Christopher Graves

GENE MORGAN 840  
PHOENIX ARIZ

SOLD BY DATE 8 2 59

QUANTITY	PRICE	AMOUNT
Gas	15	31.9
		4.78
TOTAL		478

245689

**STANFORD**

**OIL COMPANY**

ANL 828

LICENSE NUMBER OF VEHICLE

memo of delivery

PRICE INCLUDES MOTOR VEHICLE FUEL TAX  
OF APPLICABLE WHICH HAS BEEN OR WILL  
BE PAID WHEN DUE.

CANYON STATE UTILITIES  
P. O. Box 351  
Phoenix, Arizona

SERVICE BILL

CODE EXPLANATION  
1. MINIMUM  
2. ARREARS  
3. ESTIMATED

Account Number	Due Date	Account Number	Code	Due Date
012345678	APR 22 1959	012345678	3	APR 22 1959
	Total Amount	Previous Reading	Present Reading	KWHR
	15.00	600	950	350
				Amount
				15.00

Please Return This Stub With Payment

2 1 2 4 1 2

From To

Please Pay Last Amount Shown

Nº 0001

15-55 BIT

19

Pay to the Order of DATA PROCESSING SYSTEMS 281 37/100

MAGNETIC INK CHARACTER READING Dollars

Computer Department

General Electric Company

Phoenix, Arizona

VOID

05 1 0055 2226 22640 4 9 00000 28 13 7

BUDGET CONTROL

CREDIT CORPORATION

THIS STUB PROVIDED FOR YOUR RECORD

DATE PAID

AMT. PAID

CHECK NO.

Pay Promptly AVOID LATE CHARGES

NO. FIRST PMTS. MO. DUE

23 02 58

LATE CHRG. INSTALL.

ACCOUNT NUMBER

0123456789

INSTALL.

AMOUNT DUE

012.34

To utilize most effectively the automatic techniques inherent in computing systems, a language, common to both man and machine, is needed for the processing of business documents.

Many ideas and methods for achieving this common language have been tried. Among them were:

- Punching the necessary information into the document, as in a punched card
- Coding the information on a document using a bar code
- Coding the document with invisible fluorescent ink spots
- Placing the document in an envelope and coding the envelope
- Attaching an adhesive tab to the document and coding the tab

After lengthy investigations, magnetic ink imprinting has been adopted by General Electric. The reasons for making this decision were many:

- The characters can be printed on the source document itself.
- Time and money are saved by not having to translate the basic information to a different form, acceptable to a data processing system.
- The possibility of errors during translation due to the human element is eliminated.
- Because both the machine and men read the same language, verification, reconciliation, and other accounting procedures are simplified.
- Magnetic ink characters are not obliterated, as far as the data processing system is concerned, by overprinting, by dirt, or even by tape placed over them to repair a torn document.
- Magnetic ink can be applied to many existing documents having varying physical properties.

Thus, with the introduction of magnetic ink printing and magnetic ink character recognition equipment, complete automation has become available for modern business data processing.

## General Electric, leader in . . .

- > installed and operating customer magnetic ink character reading systems
- > magnetic ink type design
- > magnetic ink and paper research
- > operating magnetic ink character readers
- > quality control of magnetic ink printing
- > unique magnetic ink error detection techniques

1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890 1234567890

## SERVICES of the General Electric Computer Department

### PROGRAMMING CONSULTING SERVICES

1. A comprehensive package of proved utility, general purpose and automatic programming routines is available for the GE 210 System user.
2. Upon firm order for a GE 210 System, your personnel will be trained in its operation by General Electric personnel skilled in the application of the System to your business operations. This training will be provided at either your site or at a General Electric location.
3. An experienced Application Engineer will be made available to give full-time professional assistance to your data processing personnel following the training period.
4. Consultation service will be provided by General Electric Application Engineering throughout the use of the GE 210 System.

### INSTALLATION SERVICES

1. Continuing liaison services to assist you, your architects

and building contractors in planning modifications, if required, to adapt your site to accommodate your GE 210 General Electric Data Processing System.

2. Unpack and assemble all equipment at the prepared site.
3. Wire-up the system, starting with the primary source within the building and including all wiring associated with the equipment.
4. Make all the necessary on-site adjustments for operating the system.

### MAINTENANCE SERVICES

After your GE 210 System has been installed, experienced General Electric Product Service representatives will maintain the System for optimum utilization by your operators. This service includes both maintenance and spare parts and will be furnished at all times that your System is in use.

You can visualize the tremendous possibilities involved in utilizing the GE 210 DATA PROCESSING SYSTEM to automatically process your business documents printed with magnetic ink characters.

The GE 210 DATA PROCESSING SYSTEM, with its extremely flexible capabilities, is now available to work for you in alleviating the acute problem of business paper processing.

*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

**COMPUTER DEPARTMENT • DEER VALLEY PARK  
PHOENIX, ARIZONA**

**Inquire Today!**

For more information or assistance regarding computers and data processing, contact the General Electric Computer Department, Deer Valley Park, Phoenix, Arizona.

**FOR FIGURES IN A HURRY—FIGURE ON A GE COMPUTER**



IN THE CONSTRUCTION OF THE EQUIPMENT DESCRIBED,  
GENERAL ELECTRIC COMPANY RESERVES THE RIGHT TO  
MODIFY THE DESIGN FOR REASONS OF IMPROVED PER-  
FORMANCE AND OPERATIONAL FLEXIBILITY.



**DATA PROCESSING**  
**AUTOMATED BY GENERAL ELECTRIC**