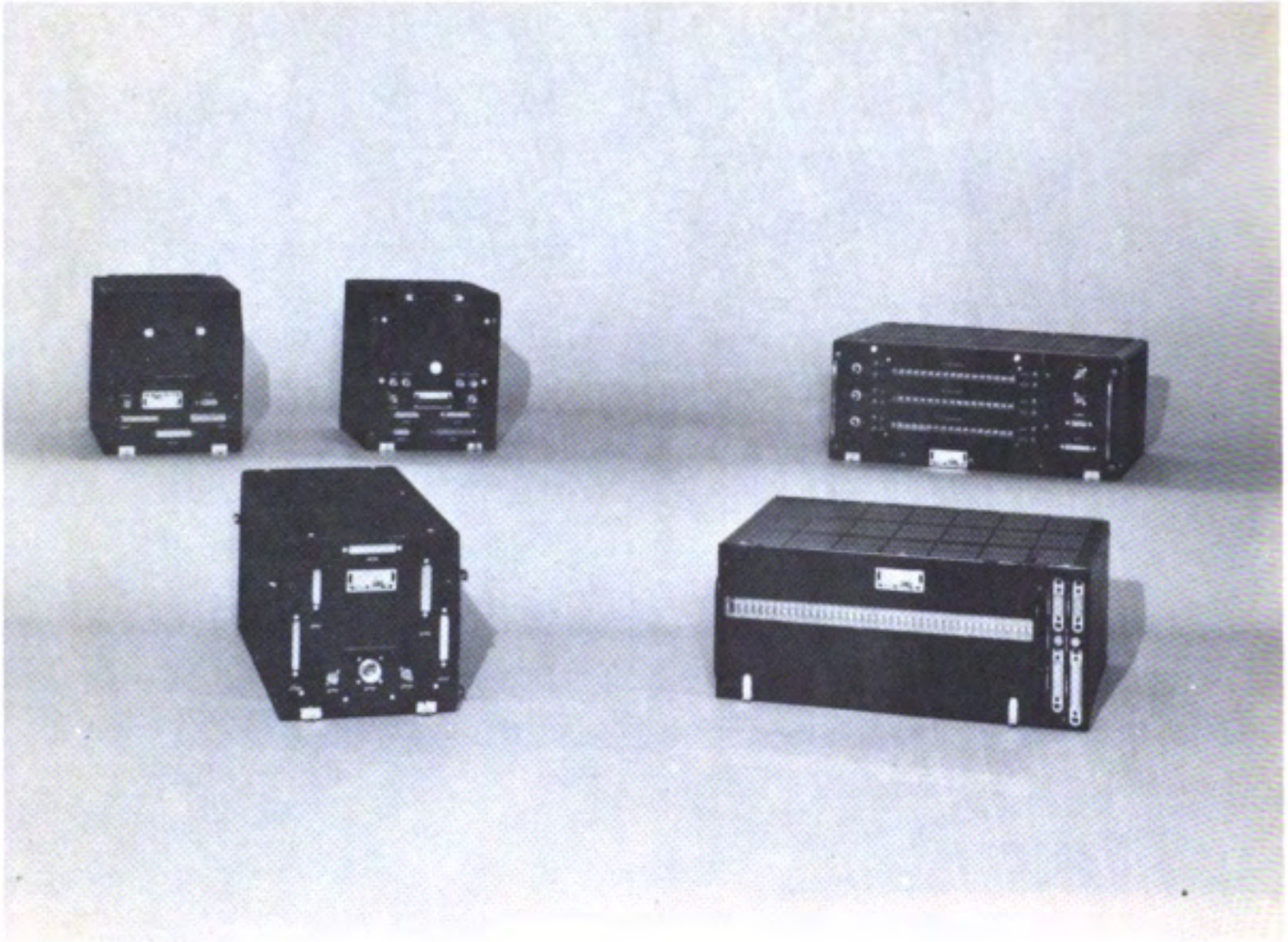


HUGHES ADV AIRBORNE III

Hughes Advanced Airborne Computer Model III

Hughes Aircraft Company



Picture by Hughes Aircraft Company

APPLICATIONS

Control of aircraft and aircraft equipment. In the specific application for which the computer was built, it performs navigation, flight control, and weapons control, receiving target and flight data as inputs and generating flight and weapons control signals as outputs. The system was developed for the U. S. Air Force for automatic control use in high speed aircraft.

NUMERICAL SYSTEM

Internal number system	Binary
Binary digits per word	17
Binary digits per instruction	17
Binary digits per instruction not decoded	2
Instructions per word	1
Arithmetic system	Fixed point
Instruction type	Modified two address

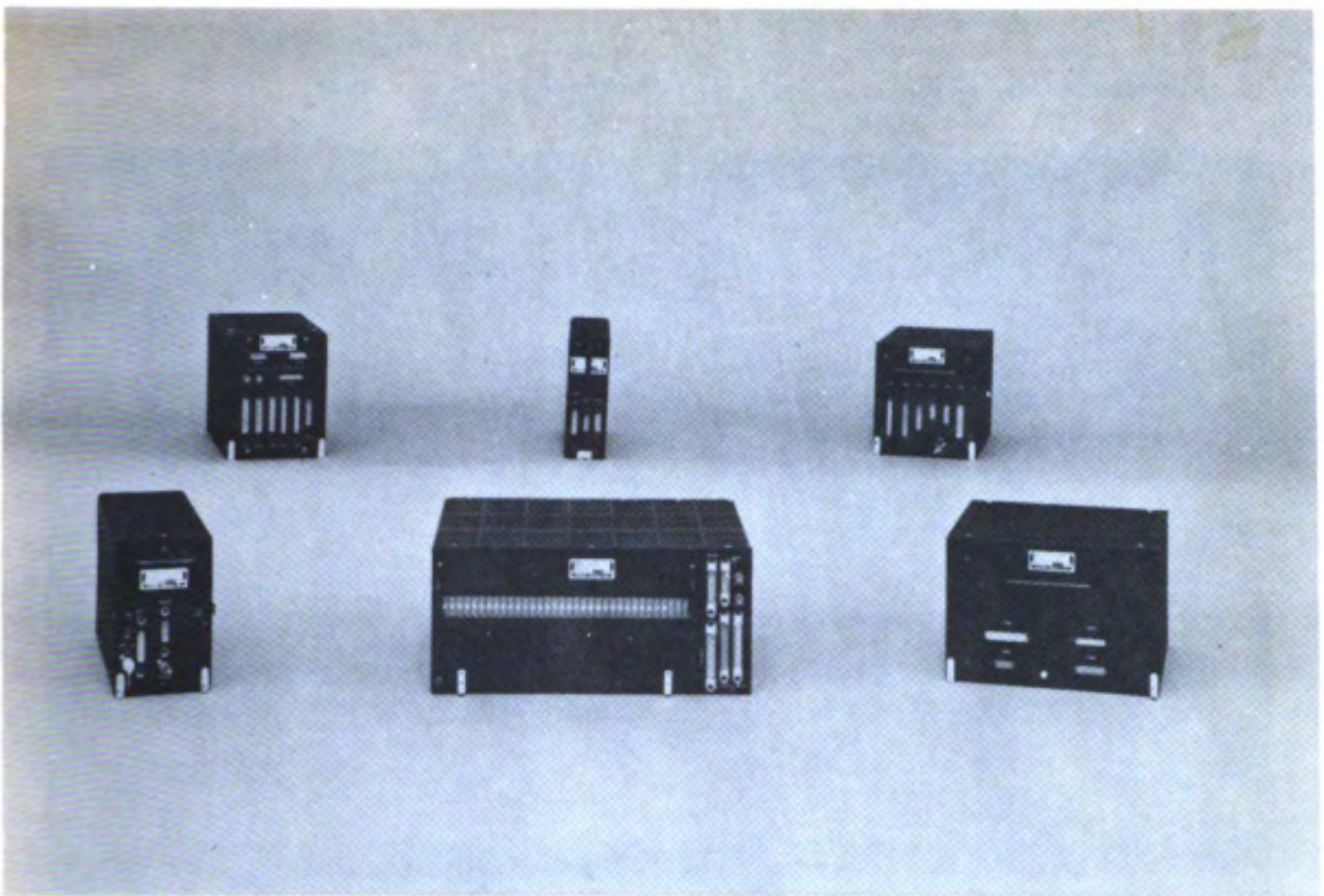
Number range $1-2^{-16} > x > -1 + 2^{-16}$

ARITHMETIC UNIT

	Microsec
Add time (exclud. stor. access)	200
Mult time (exclud. stor. access)	1,700
Div time (exclud. stor. access)	1,700
Construction	Vacuum tubes
Rapid access word registers	3
Basic pulse repetition rate	162 Kc/sec
Arithmetic mode	Serial
Timing	Synchronous with magnetic drum
Operation	Sequential

STORAGE

Media	Words	Microsec Access
Magnetic Drum	1,984	3,750 Average
Magnetic Drum	8	400 Average



Picture by Hughes Aircraft Company

Total capacity is 37,648 binary digits.
All programs are coded for minimal latency.

INPUT

Media	Speed
Analog D.C. Voltage	200 microsec 0-100V D.C.

Other analog inputs are available. This is used as a control computer with analog inputs and outputs; however, paper tape is used as an additional input medium.

OUTPUT

Media	Speed
Analog D.C. Voltage	0-100V D.C.

Other analog outputs are available. Magnetic tape ultimately feeding a Flexowriter is used as an auxiliary output.

CIRCUIT ELEMENTS ENTIRE SYSTEM

Tubes	481
Crystal diodes	3,364

POWER, SPACE AND WEIGHT

Power, computer	1.5 KW
Space, computer	5 cu ft

The arithmetic and control unit of the computer occupies approximately 0.6 cubic feet and weighs 20 lbs.

RELIABILITY AND OPERATING EXPERIENCE

Ratio of good time to unscheduled down time is approximately 9.

The computer is part of a complete control system. The characteristics of the computer is determined by the characteristics required by the system in which it is to be used.

The flip-flops and diode matrices are mounted on individual plug-in wafers and standardized as much as possible so that the bulk of the computer is a multiplicity of a few basic components. Etched circuits and subminiature tubes are used throughout.

INSTALLATIONS

Hughes Aircraft Company
Culver City, California