

PENNSTAC

Pennsylvania State (University) Computer

MANUFACTURER

Pennsylvania State University



Picture by Pennsylvania State University

APPLICATIONS

Education and research

NUMERICAL SYSTEM

Internal number system	Bin coded dec
Decimal digits per word	11
Decimal digits per instruction	11
Instructions per word	1
Arithmetic system	Fixed point (Selective)
Instruction type	Two address
Number range	$-10^{10} \leq n \leq 10^{10}$

Decimal point may be fixed at any of 11 positions. Decimal point must be retained where it is initially set for consistent results. The 2^*421 coded decimal system of notation is used. The two address system is the "one plus one" type. (One instruction address and one operand address.) Instructions facilitate double precision arithmetic.

ARITHMETIC UNIT

	Includ Stor	Excl Stor
	Access	Access
	Microsec	Microsec
Add Time	360	90
Mult Time	6,000	
Div Time	9,000	
Construction		
Vacuum tubes	1,200	
Crystal diodes	5,000	
Basic pulse repetition rate	135 Kc/sec	
Arithmetic mode	Serial	
Timing	Synchronous	
Operation	Sequential (one-plus-one system)	
Input-output equipment operates asynchronously.		

STORAGE

Media	Words	Digits	Microsec Access
Magnetic Drum	2,500	27,500	2,300 (Average)

Drum speed is 12,600 RPM. Access time given above is assuming no attempt at optimum coding. Two address system permits coder to reduce the average access time.

INPUT

Media	Speed
Paper Tape	30 words/min
Keyboard	Manual

Each word is addressed.

OUTPUT

Media
Paper Tape
Flexowriter

CIRCUIT ELEMENTS ENTIRE SYSTEM

Tubes	1,500
Tube types	3
Crystal diodes	5,000
Separate cabinets	4

Three main types of tubes are the 12BH7, 2C51, 6AL5.

CHECKING FEATURES

Fixed

Exceed capacity on add, multiply, divide, subtract, and other arithmetic operations.

Check for wrong combinations of the binary coded decimal system.

Check for instructions being used as quantities and vice versa.

Check for the end of some operation in a fixed check time.

POWER, SPACE AND WEIGHT

Power, computer	10 KW	11.5 KVA	0.87 PF
Power, air cond.	6 KW	7.1 KVA	0.85 PF
Capacity, air cond.	7.5 Tons		

The computer room has 5 tons of air conditioning.

PRODUCTION RECORD

Produced	1
Operating	1

COST, PRICE AND RENTAL RATE

Approximate cost of basic system \$100,000

FUTURE PLANS

Future plans call for the following modifications:
Addition of a photo-electric reader (Ferranti).
Addition of index registers.
Addition of magnetic tape for auxiliary memory.

INSTALLATIONS

Computer Laboratory
Pennsylvania State University
University Park, Pennsylvania

ADDITIONAL FEATURES AND REMARKS

Floating decimal and double precision arithmetic operations are available.

Students participate in construction and study on the machine.