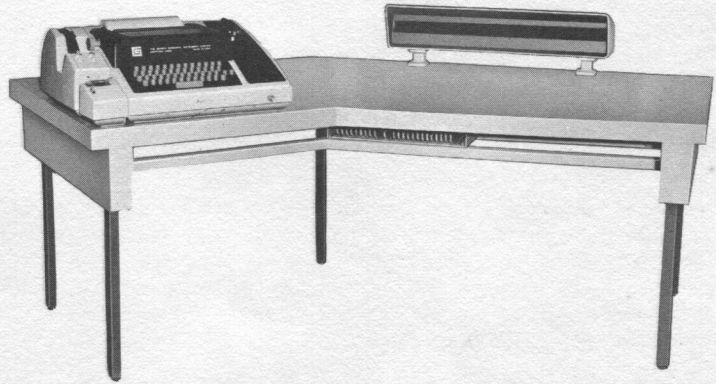
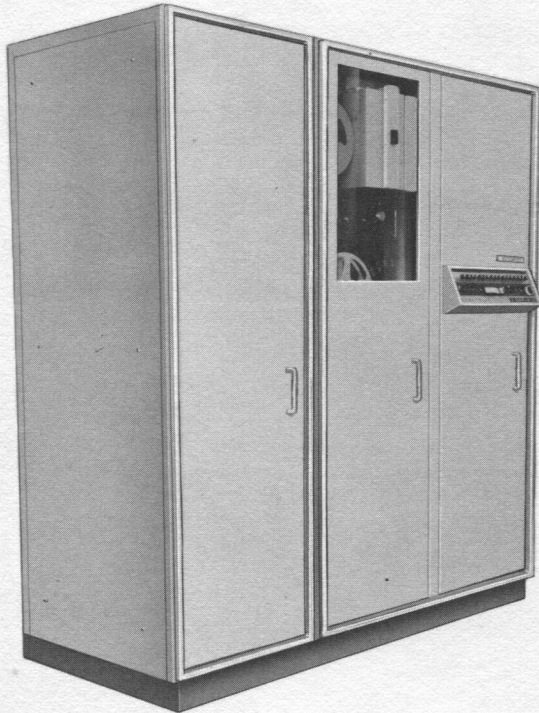




THE GERBER SCIENTIFIC INSTRUMENT COMPANY
P.O. BOX 305 HARTFORD, CONN. 06101
TEL. (203) 644-1551 TWX 710-427-2218



SERIES 2000B CONTROL

DESCRIPTION

The Gerber Series 2000B Control offers distinct capabilities not possible with other control equipment. Because it is a stored program control, basic operating capabilities can be completely changed to meet severe performance demands without costly changes in hardware configuration. This flexible programming advantage, as well as an extremely versatile input/output capability, allows the user complete freedom of input source and format and the ability to perform computations utilizing high speed multiply and divide, for input tape preparation or other general purpose uses. This expanded computation capability makes it possible to perform linear, circular, and parabolic interpolation.

Although drawing speed is a factor of table specifications, the Series 2000B, with unique "look ahead" capability, is able to attain higher average speed than hard-wired controls which process one command at a time. Up to ten commands are stored in and analyzed by the control. Then optimum speeds are calculated by the computer. This "look ahead" programming results in significantly higher overall speed and a much lower throughput time for most applications.

Series 2000B 16-bit word length offers the programmer an efficient, straightforward instruction addressing scheme: 1024 words can be addressed by a single word instruction. (The 16-bit word is directly compatible with USASCII 8-bit character code.) In addition, users are supplied with a comprehensive program software package including FORTRAN IV, symbolic assembler, compiler, utility, and service routines.

Series 2000B input/output (I/O) unit features a punched tape

reader and I/O teletypewriter with paper tape reader and punch. Programs can be entered for storage and plotting via the high speed paper tape reader, the I/O reader, or manually through the I/O unit keyboard. Program parameters such as decimal scaling, offset, symmetry switching, absolute or incremental mode selection, tool control, and symbol drawing/printing are entered through the typewriter (or prepared input tape), rather than conventional switches. Operator control of the Series 2000B is achieved through the I/O typewriter—also allowing for printout of display data, insertion of commands, and program monitoring or modification.

APPLICATIONS

With the advent of high speed digital computers and their growing applications to problems in engineering design, process and production control, manufacturing and scientific research, a completely new set of performance parameters has been created for graphic display systems. Control systems are being used not only to control drawing tables, but to accept computer language, perform conversions, and generate table instructions based on widely differing and rapidly changing program parameters. In addition, the high cost of computer operation time has created demands for self-contained computer and control capability within graphic display facilities. The Series 2000B meets these demands in such applications as graphic display of the more complex parabolic and hyperbolic geometric patterns, high speed contouring, curve fitting, and new techniques in numerical control; while performing general purpose computer tasks as an integral function. In the printed circuitry industry, the design and production of printed circuit artwork masters generated from engineering schematics is now a reality.

SERIES 2000B OPTIONAL CAPABILITIES

Punched Card Input—The Series 2000B Control can be equipped with punched card reader capability in addition to punched paper tape. The punched card reader option includes a 200-card-per-minute reader and associated controls with provisions to select either Hollerith or binary coded information from 80-column cards. (Punched card units are also optionally available for both input and output operation with the Series 2000B.)

Displays—Series 2000B displays optionally available in addition to standard I/O unit readout include actual position display for each axis and 3-digit sequence display.

Expanded Memory—Memory expansion by 4096-word modules up to a total capacity of 32,768 words is available to increase computer capability.

High Speed Paper Tape Punch—Capable of punching one inch, 8 channel paper tape at rates up to 120 characters per second. Available in addition to standard I/O teletypewriter output punch.

MAGNETIC TAPE UNITS

M-12 Buffered Magnetic Tape Reader—Consists of a tape transport; core memory for storage of 1000 character record, and logic for control, code translation, and interface. Transport speed of 30 ips; 7 track unit available to accept IBM BCD alphanumeric code at 200, 556, 800 bpi density. A 9 track unit is available to accept EBCDIC at 800 bpi density.

Input/Output—Tape transport, interface, and software for reading and writing IBM-compatible 7 track magnetic tapes at 36 ips. Units available at 200, 556 bpi; 200, 800 bpi; and 556, 800 bpi.

DIGITIZERS—For determining and outputting the coordinates of points on existing graphically represented data, several digitizers are available:

Two Axis Digitizer—Complete software for measuring and outputting two axis data, including Vector Advance (automatic incrementing) capability. Hardware including slew pushbuttons, speed control, fine positioning handwheels, and 8 inch industrial quality TV monitor at the operator's desk.

Three Axis Digitizer—Complete software for two-pass digitizing to produce a 3 axis tape from 2 orthographic views. Hardware including decimal display of 3rd axis data; display of 2 alpha, 3 numeric line identification, independent X/Y slew controls, readout foot switch.

Automatic Digitizer—Complete software for automatically following lines or edges and outputting data in accordance with preset criteria including angle, slope, and area; automatic cutter offset routine; manual and mixed modes of operation. Hardware includes complete manual controls and line follower head.

SERIES 2000B STANDARD FEATURES

Standard operating features of the Series 2000B Control include completely flexible multi-axis input, internal symbol generation in circular as well as linear mode, scaling from zero to 1000 times unity to 5-place accuracy, zero offset to any position on or off the drawing table, and programmed automatic dash line generation. Standard input formats are variable block word address or tab sequential, absolute and incremental commands up to 999.99999.

Standard I/O unit provides readout of command position and sequence number. Automatic sequence number search capa-

bility is standard. Auxiliary displays are included for feed rate (3 digits), spindle (2 digits), and tool (2 digits), via I/O typewriter. A closed loop encoder feedback system provides communication of actual position to the control. Power failure protection is a standard feature of the system memory.

SERIES 2000B STANDARD SPECIFICATIONS

Computer

Binary, 8192 word core memory, parallel, single address with indexing and indirect addressing, high speed multiplication and division.

Computation Speeds

Memory cycle:	.96 microseconds
Add:	1.92 microseconds
Subtract:	1.92 microseconds
Multiply:	5.28 microseconds maximum
Divide:	10.56 microseconds maximum

Input/Output Unit

Punched paper tape input via 300 cps high speed reader. (USASCII and EIA RS-244 code.) Teletypewriter input-output providing capability for reading paper tape at 10cps, punching paper tape at 10 cps, printing at 10 cps, keyboard input, and off-line paper tape preparation and listing (USASCII).

Input Program Format

Word address variable block EIA RS-274A or tab sequential. (Other formats can be accommodated on request)

Input Command Size

Up to 999.99999 (3-5)

Interpolation

Linear, Circular, Parabolic

Symbol Capability

Compressed and non-compressed symbol store routines and standard character set (drawn or typed) resident in standard program.

Multiple Axis Recognition

2 of 5 linear axes.

I/O Control, Programmable

Axis Selection	Tape Rewind
Symmetry Switching	Format Statement
Scaling	Load Symbol
Zero Offset	Axis Select
Dash Line Sizes	Velocity Limit
Offset	Park Carriage
Mirror Image	Input Display
Sequence Search	Continuous/Single Tape Operation
Input Code	Current Parameter Display
Symbol Scale	Dash Line
Scale Factor	Display Present Position
Block Delete	

Manual Controls

Manual data entry and display of all registers, operational controls, maintenance panel for detection of system malfunction. Also:

Power On/Off	Tool Control	Emergency Stop
Start	Clear	Sense Switches
Stop	Halt	

Programming Aids

FORTAN IV (per USAS standards), Symbolic assembler, Compiler, Utility routines, and Service routines.



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