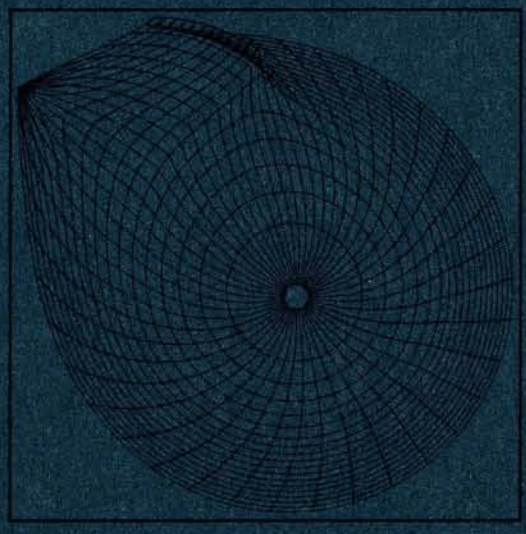
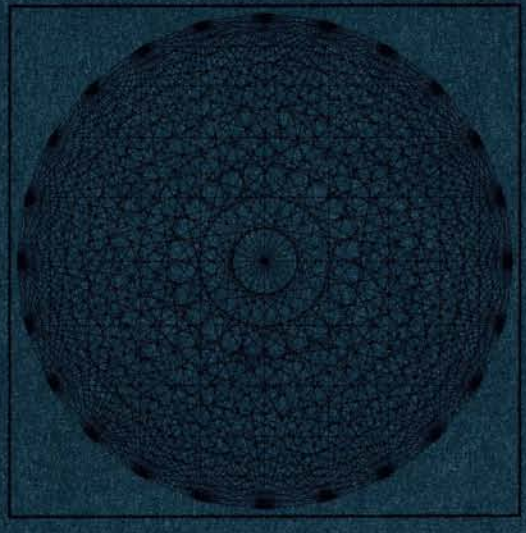


GRAPHIC DISPLAY SYSTEMS



THE GERBER SCIENTIFIC INSTRUMENT COMPANY

CONTROL SYSTEMS

The Gerber Scientific Instrument Company has pioneered the development of integrated graphic display systems, from numerical control verification units to complex on-line computer systems. Today, Gerber offers a complete line of control system hardware and software — each with a distinct degree of capability — to be custom tailored to meet user requirements.

The first step in selecting the right Gerber Graphic Display System is in the choice of control capability. Basic application analysis will determine whether linear, circular, parabolic, or higher order interpolations are needed; and whether incremental or absolute command position data will be used. Gerber controls offer each of these capabilities, individually or in combination, to meet a variety of needs in converting digital data into graphic display. Gerber controls can also perform the converse function of converting graphic data into digital form with Gerber digitizing accessories.

The Series 600 provides a straightforward, economical control unit. The Series 800 adds a degree of versatility in input data handling and computation capability. The Series 1000 offer such standard features as core memory storage and buffer, offset, scaling, and absolute encoder feedback enabling all computations to be made in terms of absolute table positions. The Series 2000 makes a distinct departure from traditional control approaches, utilizing stored, rather than wired-in, programming and digital computer input/output approaches which offer the user complete freedom of input, computation and program control.

Each of these controls detailed in the following pages offers a unique solution to problems ranging in complexity from routine automatic drafting, to original computer-aided design and graphic display. Each, when mated with the table best suited to an application, offers the user labor saving, cost saving, time saving, and accuracies which are impossible with any other method.

To facilitate selection of the right control unit to be married to a selected table or *multiple* tables, the pages opposite this section turn independently, enabling you to directly relate tables to the control system you are evaluating to custom tailor a complete graphic display system to suit your needs.

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SERIES 600 OPTIONAL CAPABILITIES

High Speed Photoelectric Tape Reader and Handler — To increase input speed, this reader and 8" reel handler provides input reading speed of 300 characters per second. A 10½" reel handler is optional.

Punched Card Input — The Series 600 is available with capability of accepting data from punched cards in standard IBM Hollerith code and EIA variable block word address format. Standard IBM units can be adapted.

Manual Input Keyboard — A parallel entry keyboard for data input is available in addition to any other input. This enables movement of the drawing tool any known distance from the least bit increment to the full input capability of the control. A symbol keyboard is available for manual annotation of drawings using the 72 symbol print head and/or the drawn symbol generator accessory.

Magnetic Tape Input— Accepts tape compatible with IBM 727, 729, and 7330 tape units. Coding is in accordance with IBM BCD alphanumeric 7 channel code; NAS 968 code also available. Tape format is word address variable block per EIA standard RS 274A.

THE INCREMENTAL READER does not need an additional input buffer; the commands from the magnetic tape are entered block by block directly into the input section exactly as those from punched paper tape at a rate of up to 600 cps. Density is 200 bpi. No record length restrictions are imposed.

THE BUFFERED READER consists of a tape transport, a core memory for temporary storage of one record up to 1022 characters long, and solid state logic for control, code translation, and interface. Available in dual density (200-556 bpi) and triple density (200-556-800 bpi). Speed: 30 ips, with lateral and longitudinal parity checks. Switch selected record search or file search with two-digit display is included.

On-Line Computer Operation — Any Gerber system is capable of operating on line with a digital computer to meet user requirements.

Additional Input Range — To simplify programming and to enable the user to traverse the entire length of the selected drawing surface in one single command, input range is supplemented by adding one or two digits to the left or right of the decimal in the standard 9.999 format, up to 999.9999.

Command Position Display — In line decimal displays are available for monitoring actual tool holder position with respect to starting point. Displays ±99.999 for each axis. (Also available with increased range option to ±999.999 for each axis.)

Sequence Number Display and Search— To identify a drawing, piece of work, a section of input data, or tape block, a three-digit lampbank on the operator control panel continuously displays the sequence number. A manual search feature allows the operator to search for a sequence number by monitoring the displays while input tape is being read without carriage motion.

Symbol Generator — As an aid to annotating, titling, dimensioning, or drawing repetitious patterns, a separate punched paper tape reader internal to the control can be supplied equipped with a tape loop containing pre-programmed symbols. A single symbol address command from the input selects and draws any one of the available symbols or patterns pre-programmed on the tape loop. Unity, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 16 times scaling of these symbols is included.

Dash Line Generator — To generate dash lines as well as solid lines under input or manual control. Standard line lengths are ¼" and ⅛", space lengths are ⅛" and 1/16"; switch selected, with ±20% tolerance.

Additional Axis Recognition— Standard two of three axes recognition capability may be expanded to select two of five axes.

Additional Operating Options — (All switch selected) Block Delete Recognition option enables all blocks on the input tape preceded by a "delete" code to be skipped. Optional Stop can be provided to stop the system when an optional "stop" code is recognized. Additional lampbank displays and/or audible warnings for feed rate, spindle speed, and tool number are available.

SERIES 600 STANDARD SPECIFICATIONS

Type

Solid state all digital logic, linear interpolating, incremental command input system with automatic acceleration and deceleration, and one word input buffer.

Input

Standard: Punched paper tape, 60 cps, EIA RS-2424 code
Optional: Magnetic tape, punched cards, high speed punched paper tape and manual keyboard.

Input Program Formats

Standard: Word address variable block EIA RS-274A 8 channel punched paper tape
Optional: Tab sequential, Fixed block, etc.

Input Command Size

Up to 9.999" (1-3)

Input Data Requirements

X and Y incremental coordinate data and tool up/down data. Feed rate is not required.

Controls

Power on/off
Axis selector
Speed override
X and Y symmetry
Continuous/single step
Start
Stop
Logic clear
Program stop indicator
Tool control
Manual up/down,
Automatic
Omit leading/
trailing zeroes
Scale size

Multiple Axis Recognition

Standard: Two of three
Optional: Two of five

Symmetry Switching

Axis inversion switches for X and Y axes

Scale Factor

½, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 16 times unity.

Reliability

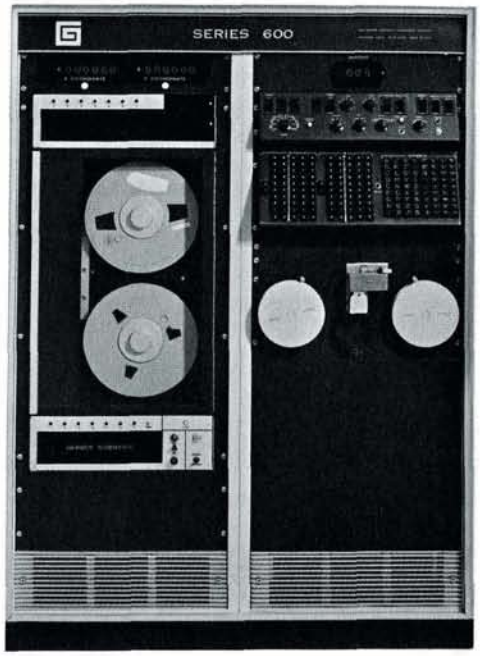
Computer logic plug-in modules and components. Rugged mechanical design.

Dimensions & Weight

60" high, 21" wide, 26" deep, 400 pounds

Power Requirements

110 VAC ±10% single phase, 60 cycles, with third wire ground, 15 amperes, exclusive of the table.



SERIES 600 CONTROL

DESCRIPTION

The Gerber Series 600 graphic display system control provides a simple, economical method for converting digital information into graphic presentation. Graphic display of data is achieved at speeds and accuracies impossible manually — at the lowest possible cost — when this control is used as the basic system element.

All forms of digital data can be input to the Series 600 — on-line directly from computers, or via paper tape, punched cards, manual keyboard, or magnetic tape. A variety of manual controls allow the operator to regulate and monitor system performance.

Functionally, the Series 600 control is a linear interpolating system which generates positioning commands to the drawing table. Standard input for the Series 600 is punched paper tape programmed in variable block word address format. Standard one word input buffer enables overlap of reading/drawing functions to achieve more rapid transfer of data from the input media. Acceleration and deceleration rates are computed internally, enabling the unit to ignore programmed feed rates and drive the table with optimized traverse commands up to 600 inches per minute, depending upon the drawing table capability. This internal computation capability enables the standard Series 600 to accept incremental input commands up to 9.999". Input position commands up to 999.9999" can be optionally accommodated. To modify the size of a graphic presentation, scaling of the input data is supplied, switch selected, for ½, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 16 times unity.

Operator control panel provides selection of any two of three axes from the input media to allow orthographic projection and verification of three-axis tapes; selection of each input position command in single step fashion to monitor input block by block, or continuous reading mode; and variation of maximum speed between 10% and 100% of table capability. Standard operator controls also include slewing, to position the drawing tool holder on or off the work surface, and manual or automatic positioning of tool up or down. Operator symmetry switching control provides mirror image drawings to be made from the same input data. Programming is simplified by operator controlled omission of either leading or trailing zeros.

APPLICATION

The ability to accept digital information in standard input formats economically and without special post-processing or data conversion gives the Series 600 an ease of use and working flexibility in either on-line or off-line installations. Internal feed rate computation with linear interpolation, adequate manual control, and console monitoring features combine to provide a complete but economical system that can be integrated with any of the three drawing table models to satisfy the widest range of speed, accuracy, and working area requirements.

These primary capabilities make the Series 600 particularly applicable in such straightforward problem solving areas as machine tool cutter path verification, data plotting, mapping, and general drafting.

This is a basic control element. With the appropriate table, the Series 600 can be used for making comparator charts, patterns and templates, loft drawings, and printed circuit artwork masters. For more exotic applications, when such needs as circular and parabolic interpolation can be achieved on existing computer installations, the Series 600 can also prove the most economical solution.