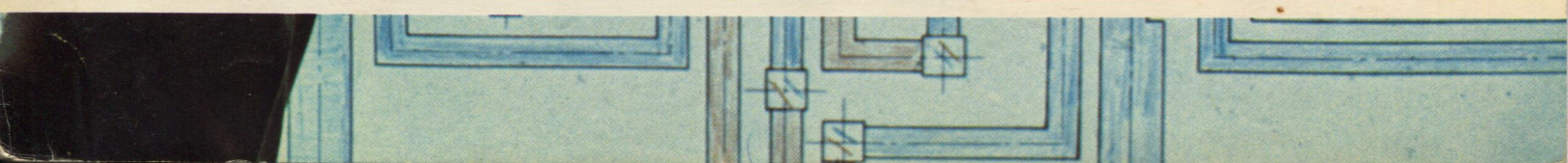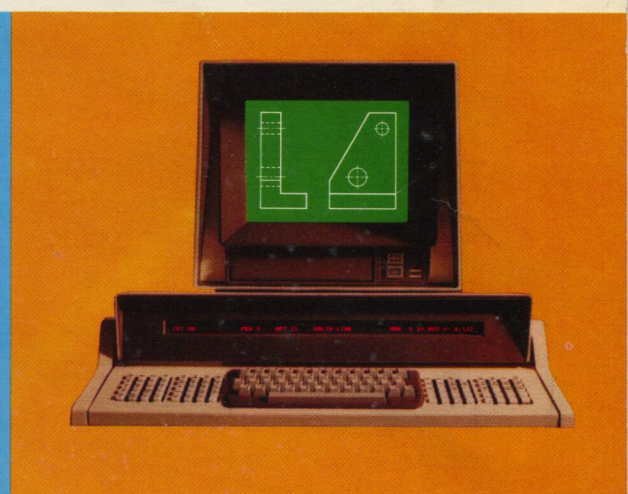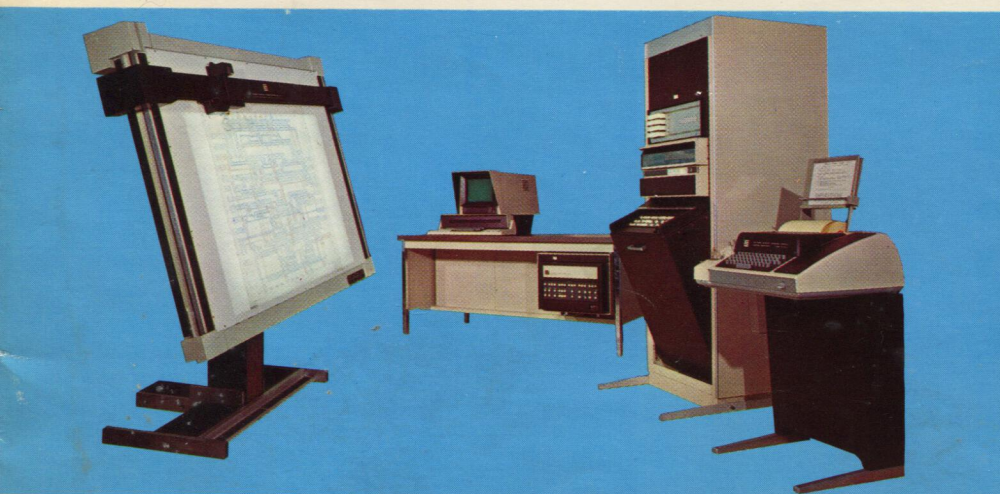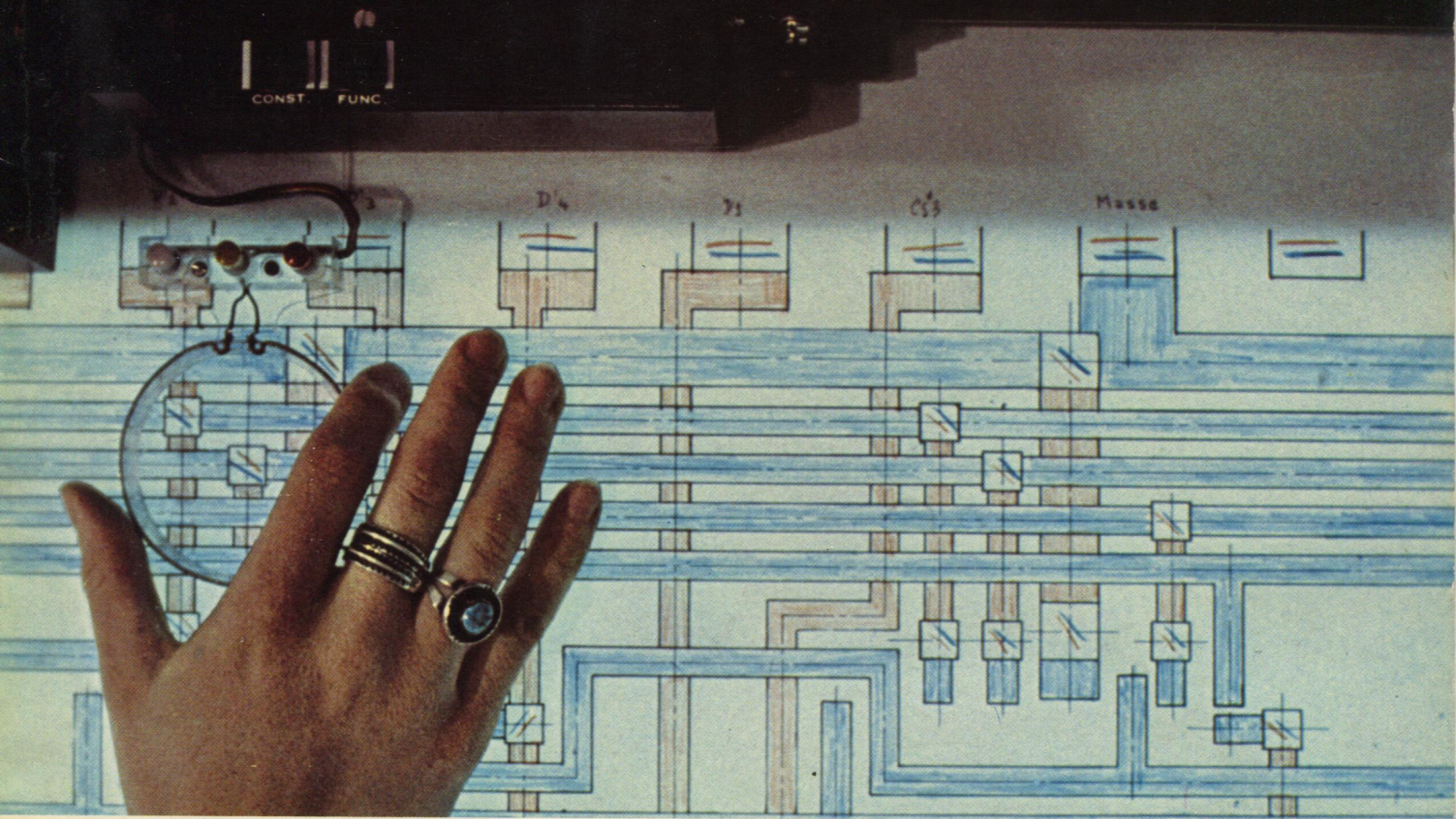# GERBER INTERACTIVE DESIGN SYSTEM

Like most Gerber equipment, the IDS is modular both in concept and design. This modularity is enhanced by the flexible data structure of the basic interactive software and the versatility of stored program terminals. These qualities permit tailoring of an IDS to current needs and expansion of the system as future requirements dictate. Together with the long-recognized Gerber standards of quality and reliability, these factors guarantee the IDS user many years of outstanding performance.

Interactive Software

Gerber offers software for 2- and 3-dimensional interactive design and drafting applications. Intended primarily for schematic, PC board, and IC design, 2-dimensional software is equally applicable to cartographic and architectural applications. The 3-dimensional software, on the other hand, is a powerful tool when dealing with mechanical design problems and N/C manufacturing.

Each package incorporates all programs necessary to operate the system, interactive graphic tools required to communicate with the data base, and peripheral drivers. And both provide for:

- maximum efficiency of data retrieval and manipulation for fast interaction and plot updates.
- easy expansion via user-tailored application programs.
- independent and simultaneous operation of multiple terminals.
- maximum range of data resolution.

Whatever the application, Gerber's IDS offers the ideal solution to project documentation. When electronics applications are involved, the system automatically provides wiring diagrams, schematics, component lists, connection lists, and control tapes for component insertion and N/C drilling machines as well as finished artwork masters. An architectural user would, just as easily, be supplied with building materials lists, floor plans, and utility layouts, while the engineer in an N/C manufacturing environment would draw upon the data base for manufacturing drawings, assembly drawings, parts lists, and N/C machine tool control tapes.
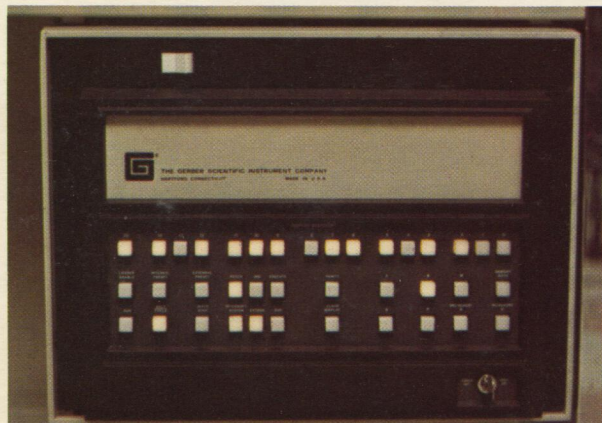
IDS Features

Stored Program Terminals.

IDS incorporates a mini-computer in each terminal as well as in the CPU. These stored program Terminal Controls increase system efficiency, versatility, and economy. **Efficiency:** the Terminal Control performs tasks ordinarily done in the CPU, freeing CPU time for more users. **Versatility:** new applications and functions are available upon calling a new program from the CPU. Since terminal capabilities are software-oriented, IDS provides a greater degree of customization than is available with any other system. **Economy:** hardware is standardized, requiring only a program change to perform different functions.

Double Word Floating Point Data Base

The double word precision floating point data base means that your present or future applications will not exceed the resolution of the system. A resolution of 1 part in 8.3 million over a range of 10^{-38} to 10^{+38} allows storing micro-inch detail of a drawing that is measured in hundreds of feet within one data base. Floating point routines are implemented in CPU hardware for speed.

Superior Composition and Edit Capabilities.

The IDS function button technique is quick and easy, eliminating the burden of menu picking at a digitizer and the cataloguing or memory requirement involved in "character recognition" techniques. One button actuates the function. Functions are programmable and may be changed as desired. In addition to the 80 standard functions, logic is provided for up to 48 additional functions and/or frequently used symbols.

Gerber's IDS is the only system of its kind with an alphanumeric display physically independent of the CRT. The alphanumeric display removes system status and operating data from the screen, allowing greater plotting area and speed. This 80-character unit "coaches" the operator by displaying messages relative to the current job status:

- function command currently selected.
- name and location of currently selected symbol.
- command sequence number.
- pen or aperture selection.
- line mode selection.
- current cursor position (absolute or incremental X-Y coordinates).
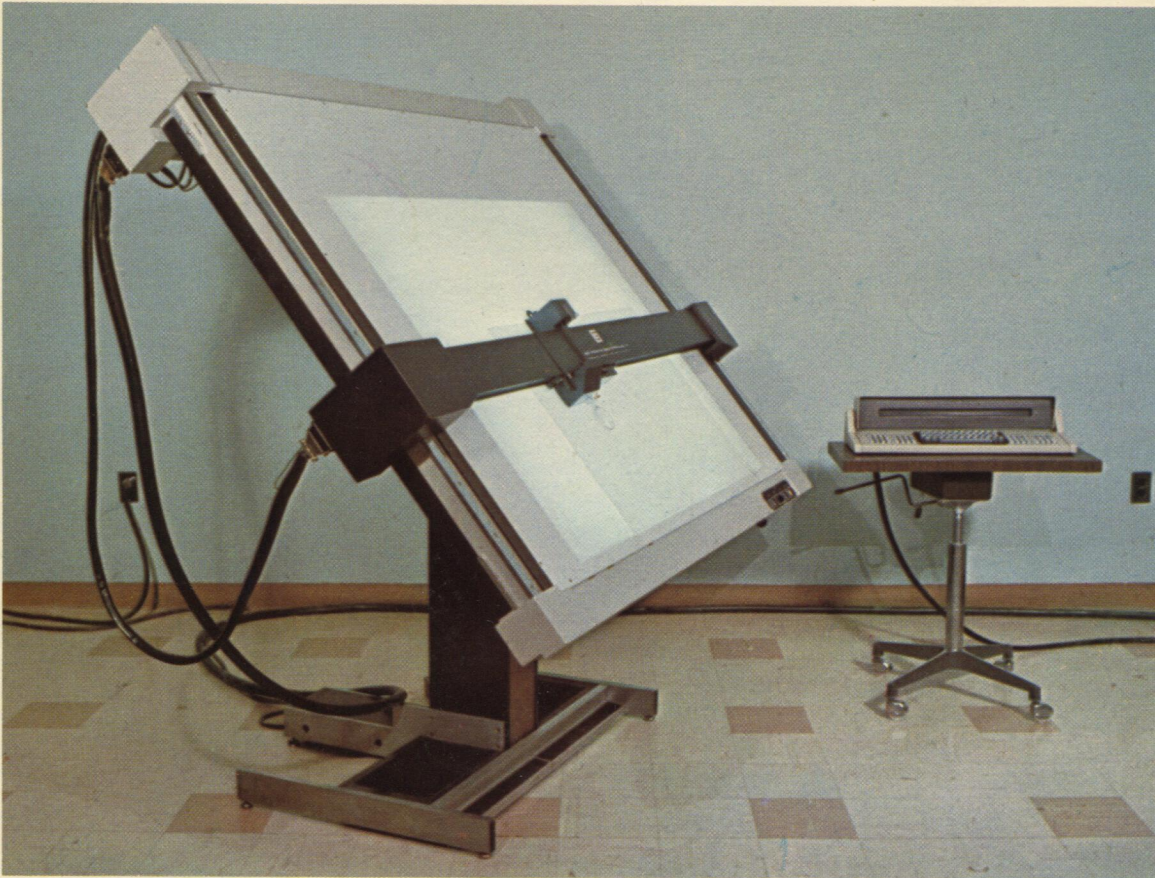
Most Advanced Plotter/ Digitizer Available.

The Gerber Model 24 interactive plotter/digitizer incorporates an absolute positioning system driven by servo motors for exceptionally quiet operation. It is the only such unit to offer as standard:

- table backlighting.
- vacuum holddown.
- four-pen head for ball point, wet ink, and fibre tip pens.
- "free-floating" digitizer cursor.
- switch-selectable maximum positioning speeds.

The Model 24 features renowned Gerber plot quality as well as advanced drive techniques for speed and convenient cursor positioning.

Widest Selection of Terminal Devices.

IDS encompasses three basic interactive terminals. In addition, any Gerber plotter, artwork generator or digitizer may be used as a terminal. The Interactive Design System also outputs tapes to drive any off-line Gerber plotter.
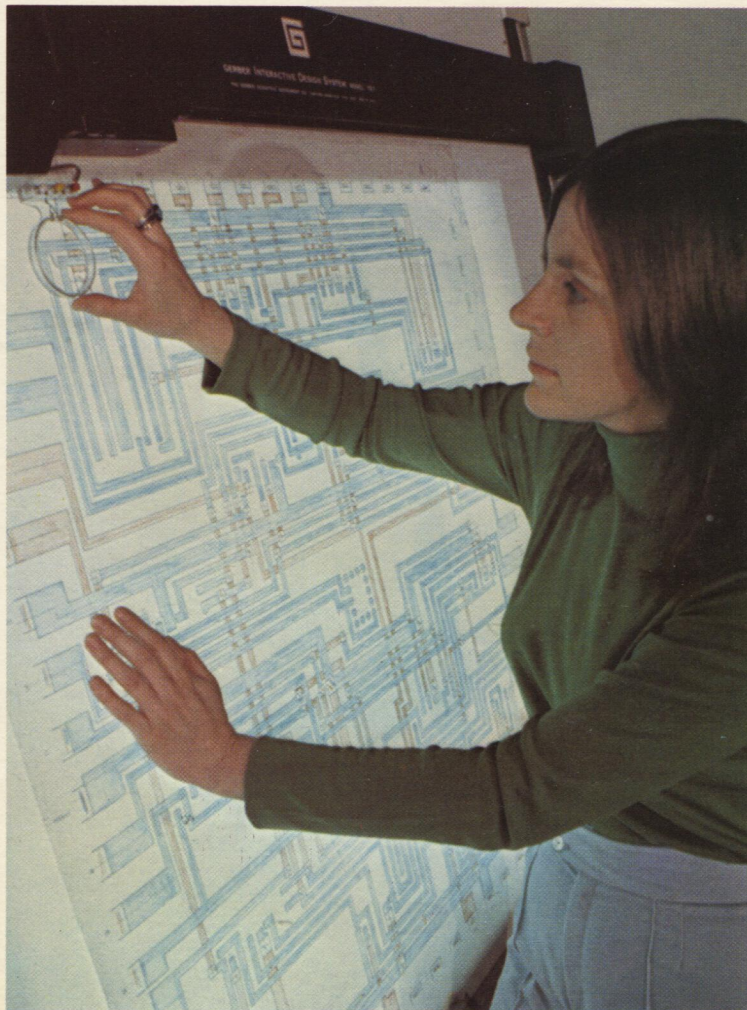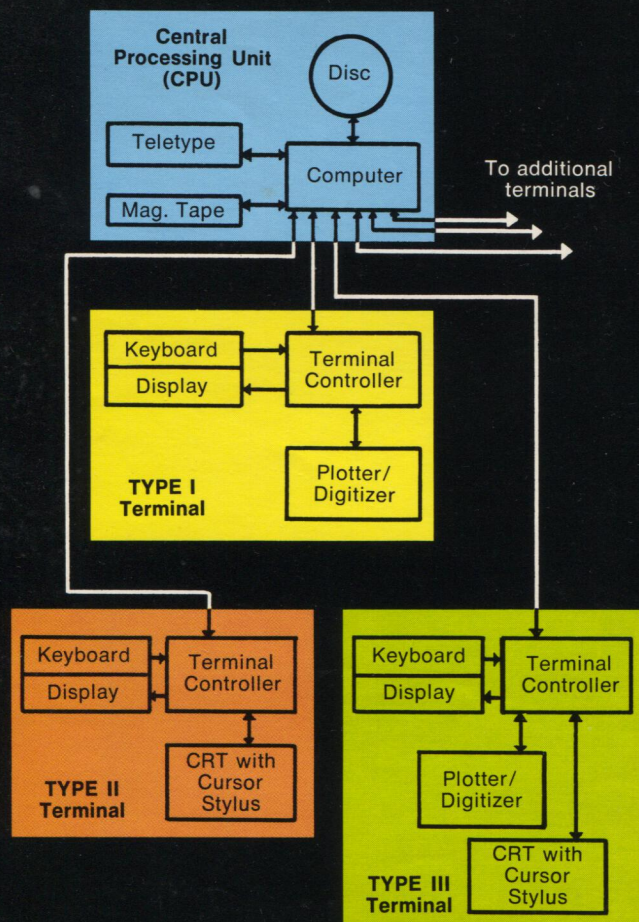
The Interactive Design System from Gerber solves design and graphics problems efficiently and economically. Gerber Scientific offers an Interactive Design System (IDS) for use by circuit designers, mechanical designers, cartographers, architects, and engineers of every discipline. The IDS provides all hardware and software tools needed to create, compose, digitize, draw, and edit the most complex:

- mechanical drawings
- artwork masters (PC & IC)
- photogrammetric plans
- manufacturing drawings
- schematics
- architectural drawings

The Interactive Design System is a product of Gerber's unparalleled graphics system experience and years of interactive software development. The IDS integrates the tremendous speed and vast memory of the modern computer with human creativity. This means efficiency and economy wherever graphic information, whether on paper or in the mind's eye, must be manipulated creatively. At the same time, IDS puts "computer power" with "man power" in the same location.

System Organization

The Interactive Design System is composed of up to six terminals interfaced to a Central Processing Unit (CPU). Each terminal consists of a stored program Terminal Controller and one or more work stations. This diagrammed three-terminal system illustrates basic hardware configuration and modular concept.

GERBER INTERACTIVE DESIGN SYSTEM (IDS)

Specifications

CENTRAL PROCESSING UNIT

Computer

- Hewlett-Packard Model 2100A
- 24K 16-bit word core
- Parallel logic
- 16-bit word length; 17th bit for memory parity checking
- Unlimited levels of indirect addressing allowed
- Power fail interrupt, with automatic restart
- 80-instruction repertoire
- Hardware floating point arithmetic
- Two direct memory access channels; maximum transfer rate for both channels operating together is 1,020,400 words per second.

Disc Drive

- Single-cartridge disc, removable
- 2.4 million words expandable

Magnetic Tape Cartridge I/O Unit

- Two-cartridge capacity
- Cartridge capacity to 150,000 16-bit words

Teletypewriter

TERMINAL HARDWARE

Terminal Controller

Keyboard/Display Unit

- 48 alphanumeric keys
- 80 function keys
- 80-character alphanumeric display

Plotter/Digitizer

- 36" x 48" common digitizing and plotting area
- Vacuum holddown
- Backlighting
- Four-pen head
- Powered height adjustment, manual tilt
- Quiet servo drive system
- Maximum plotting speeds, switch selectable: 600 ipm or 1000 ipm
- Performance:
  - Absolute accuracy: ± 0.005", overall
  - Repeatability: ± 0.003", overall
  - Resolution: 0.001"
- Pressure sensitive "free-floating" digitizer cursor.

CRT/Stylus Unit

- Storage CRT
- 11-inch (diagonal) display (6 x 8 inches)
- Graphic resolution to 1 part in 4096
- Software generated cursor
- Mechanically coupled stylus for cursor positioning
- Desk mounted

Hardware Options

Hard Copy Unit provides 8½" x 11" prints of all CRT displays.

Synchronous Data Set Interface with communications software for two-way communication with user's computer network. Used in conjunction with user-supplied modems. Conforms to EIA Standard RS-232A.

Expanded Disc Drive with one fixed and one removable cartridge disc. 2.4 million word capacity expandable to 9.6 million words.

Magnetic Tape Cartridge I/O Unit with 4-cartridge capacity. Used in place of standard 2-cartridge unit.

Magnetic Tape Input/Output. 7 or 9-track, IBM compatible; 10½ inch reels. Interfaced to CPU.

Large Area 19-inch (diagonal) storage CRT display (11 x 15 inches). Replaces 11-inch (diagonal) CRT display.

Design Software

Basic 2-Axis Design Package for IC and PC design. Features include windowing, gridding, scaling, cross-hatching, component listing, connection listing, and output of tapes for numerically controlled artwork generators, drilling machines, and component insertion machines.

Basic 3-Axis Design Package, written in Fortran, for any three-dimensional design problem. Features include rotation, splining, automatic dimensioning, cross sectioning, multiple viewing and auto scaling.

2/2½ Axis Machining Package, supplements Basic 3-Axis Design Package, and provides facilities for creation of 2- and 2½-axis APT CL N/C machine tool tapes.

3/5 Axis Machining Package supplements Basic 3-Axis Design Package and provides facilities for creation of 3- and 5-axis APT CL N/C machine tool tapes.

Pre-Processors to allow Gerber formatted tapes and cards to be entered into the interactive data structure.

Post Processors to permit the IDS to output tapes for driving off-line Gerber plotters and artwork generators, David Mann pattern generators, and others.

THE GERBER SCIENTIFIC INSTRUMENT COMPANY
P.O. Box 305   Hartford, Connecticut 06101
TEL: (203) 644-1551   TWX: (710) 427-2218