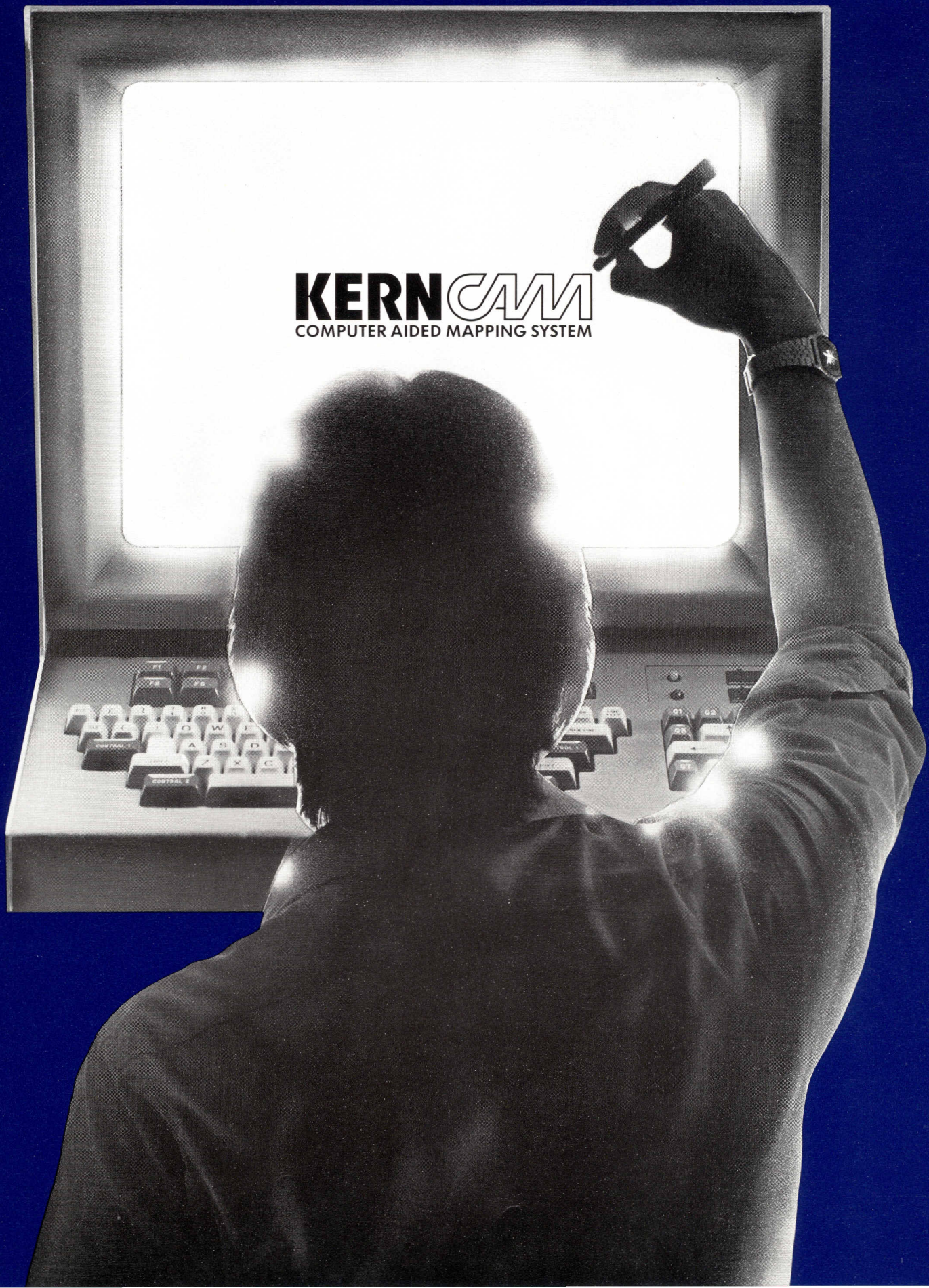
Kern MAPS 300
Interactive Graphics Station



Surprisingly low-cost

The Kern MAPS 300 Station addresses the interactive graphics data capture, editing and design needs of the professional surveyor, photogrammetrist and civil engineer/site planner.

Highest resolution

It is a surprisingly low-cost, high-resolution, stand-alone interactive graphics station. It also can be used on-line with a stereoplotter or digitizing table. MAPS 300 incorporates a powerful computer, mass storage, archival storage, ultra fast, high-resolution graphics display and a complete stock of interactive graphics, text editing and coordinate geometry (KOGO) computation and design software.

Stand-alone station

MAPS 300 supports industry standard data acquisition instruments and hardcopy output devices.

MAPS 300 is menu driven. Thus it is easy to learn and friendly for the operator.

All changes brought about by graphics and text editing can be seen on the screen as they are carried out, without having to wait for the operator to clear the screen and redisplay the changed or added data. All computations are done with double precision, i.e. 14 significant digits.

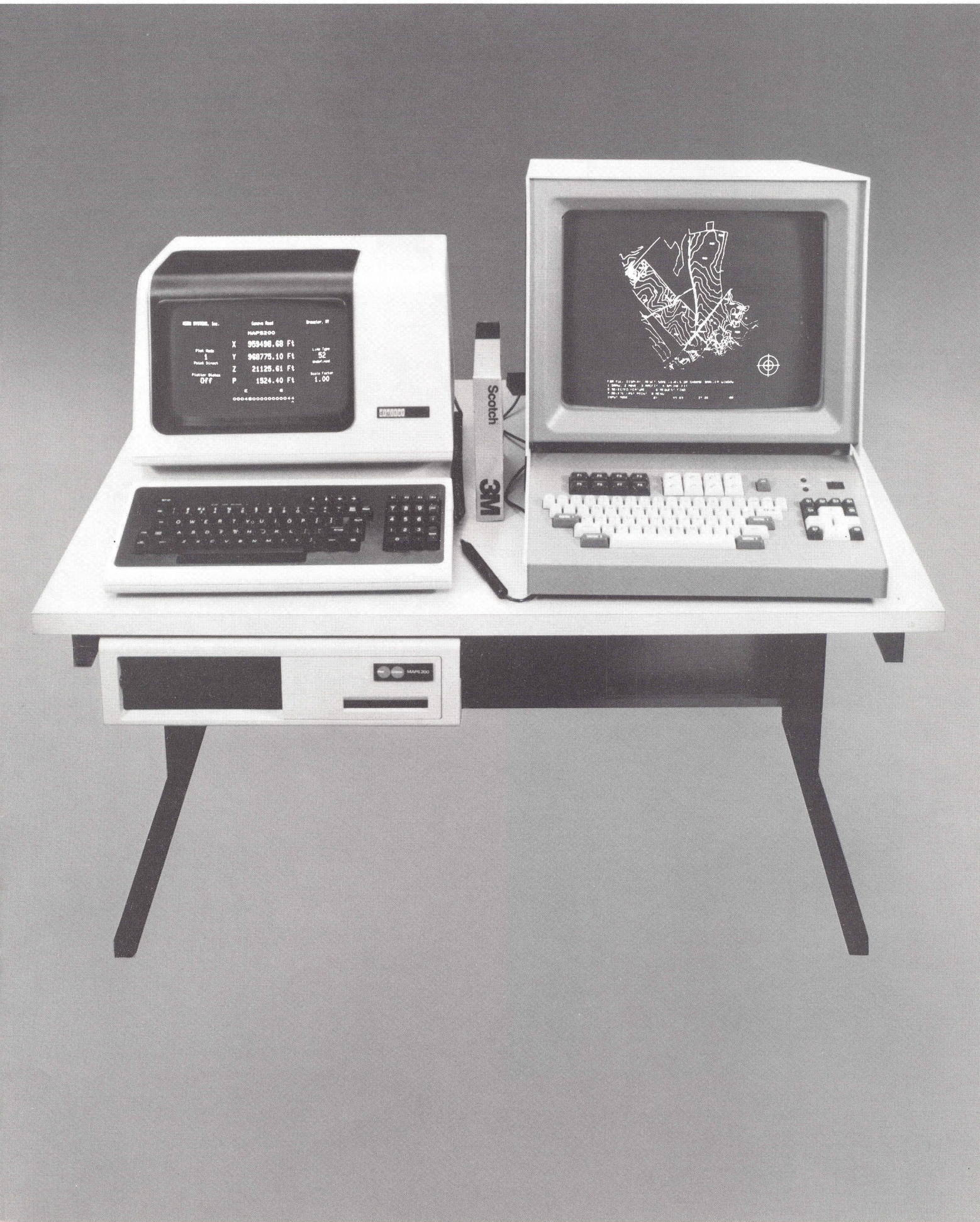
MAPS 300 supports 999 layers which can be manipulated by the user to divide the data into logical groups. These layers can be switched on and off as required to allow viewing and editing of subsets of the whole picture. However, the whole picture remains available as ready reference for the subsets.

Data is compatible with any industry standard Data Base Management system

Data from any source complying with the international accepted Graphics Kernel Standard (GKS) serves as input to MAPS 300. Edited data is again compatible with GKS and is, thus, easily transported via optional post processing software available from Kern to any industry standard data base management system.

MAPS 300

The Stand-Alone Interactive Graphics Station



MAPS 300

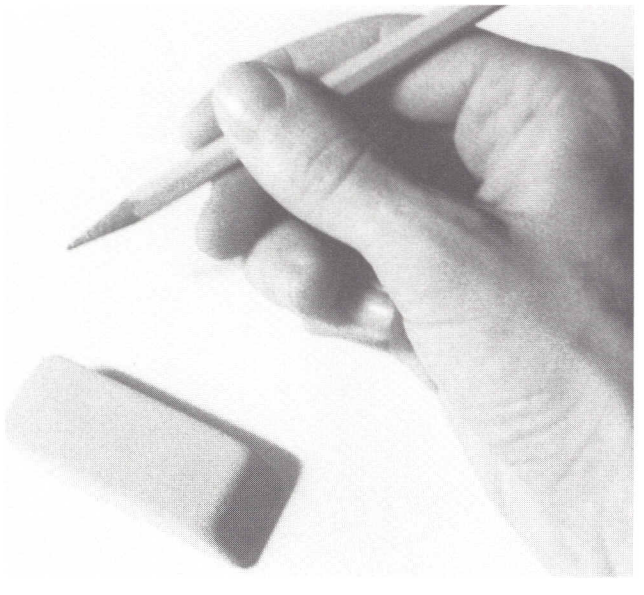
Editing Software

INTERACTIVE EDITING ROUTINES

- create graphics and attribute files
- merge files
- display single layer, combination of layers up to 999 layers
- use highlighted subsets for editing
- create symbols and line types for repeated placing
- window zoom for fine editing
- transform points, lines, and arcs
- edit feature attributes
- close polygons
- cross-hatch any polygon
- place alphanumeric annotation centered, and along straight, angled and curved lines
- lock any feature to the cursor for digitizing
- audit trail of edit, annotation, and design computations
- find points, lines, and arcs withing a file
- snap to a point, line, and radius
- create groups
- make lines and features parallel
- square buildings
- erase inside a rectangular box
- erase outside a rectangular box
- rotate spot elevation annotation

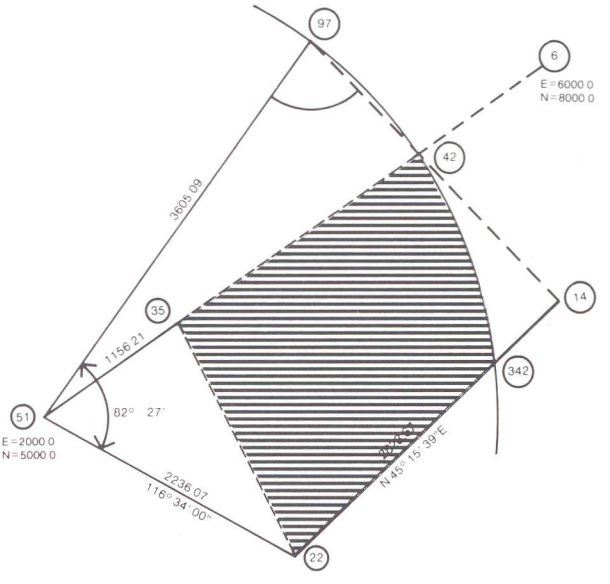
INTERACTIVE EDITING MACROS FOR THE PHOTOGRAMMETRIST

- make roads parallel
- fix intersections
- annotate index contours
- connect models
- place title block, north arrow, and other large symbols



GRAPHICS DESIGN, KOGO ROUTINES

- accepts input from KOGO tables
- availability of all locate, intersect, spiral, and miscellaneous KOGO commands
- automatic point numbering and assignment of point numbers
- selected point labels and figures are displayed as overlays
- displays zone level coordinates
- full KOGO precision for generated points - prevention of "step-on" and "wipe-out" of previously generated point numbers
- audit trail of design and survey computations
- push back of manipulated data to KOGO tables



MAPS 300

Hardware

COMPUTER

(Minimum Requirement)
DEC 11/23 CPU, 128k bytes RAM, floating point unit, RT-11 operating system, two open RS232C ports, full keyboard.
1.0Mbyte floppy disk, 7 Mbyte Winchester disk.

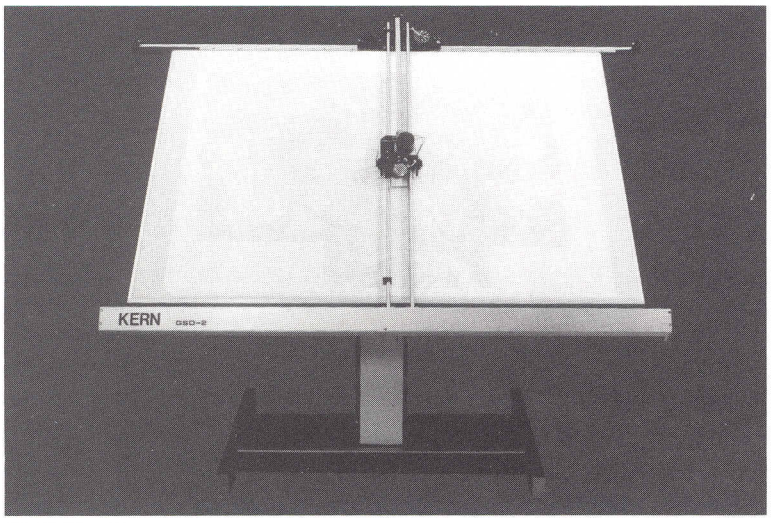
Optional: Up to 4 additional RS232C ports, IEEE Parallel port, 30, 50, or 120 Mbyte Winchester disk, printer, printer-plotter, plotter, 800/1600 BPI magnetic tape unit.

GRAPHICS DISPLAY

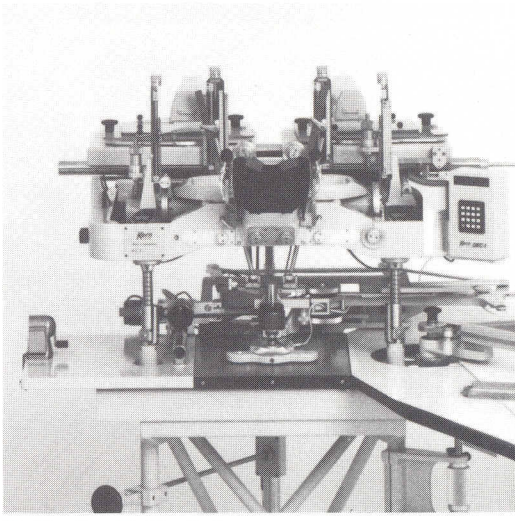
19 inch diagonal screen, 11 x 11 inch viewable, 2048 x 2048 screen addressable points, bit-sliced display processor, 8086 central terminal processor, 64k bytes of RAM, 64k bytes EPROM, 92 key keyboard and light pen.

Optional: 192k bytes of RAM, 11 x 11 inch menu tablet with stylus, Versatec and Tektronix hardcopy units.

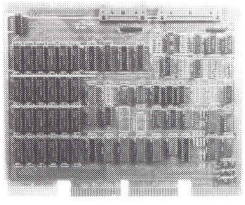
MAPS 300 ON-LINE



GSD 2



PG 2, PG 21

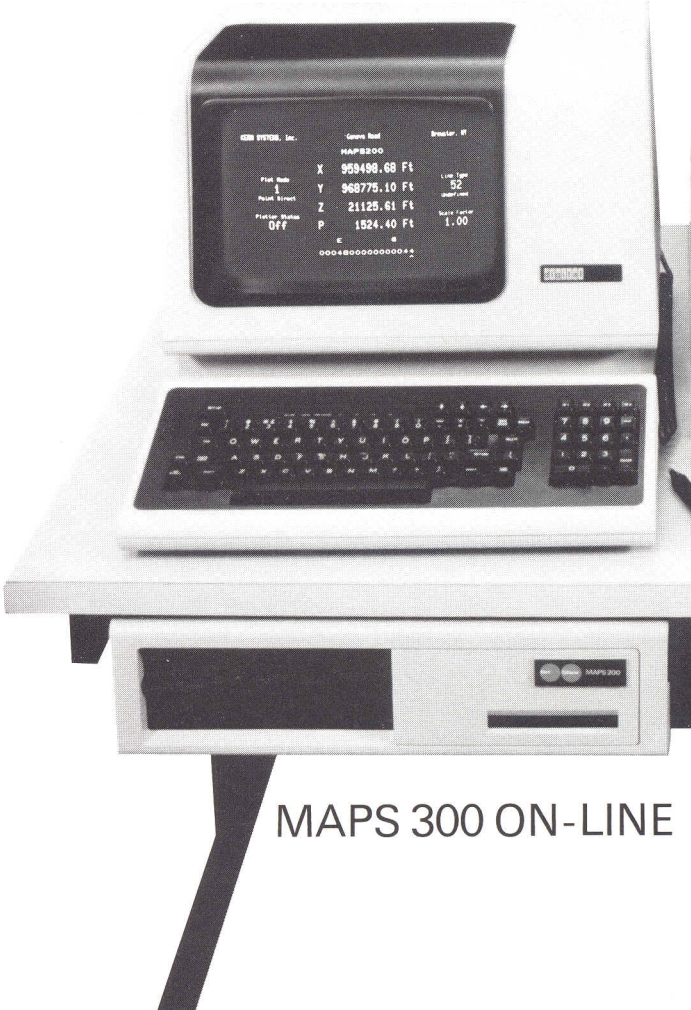


KSIO 11

The MAPS 300 ON-LINE Station provides, in addition to its stand-alone capability, a real-time interface to the Kern computer-aided date compilation module, MAPS 200 (for details, see Kern leaflet "MAPS 200 Computer-Aided Data Compilation"). Thus, MAPS 300 ON-LINE can serve as a real-time softcopy graphics feed-back and editing device during data compilation.

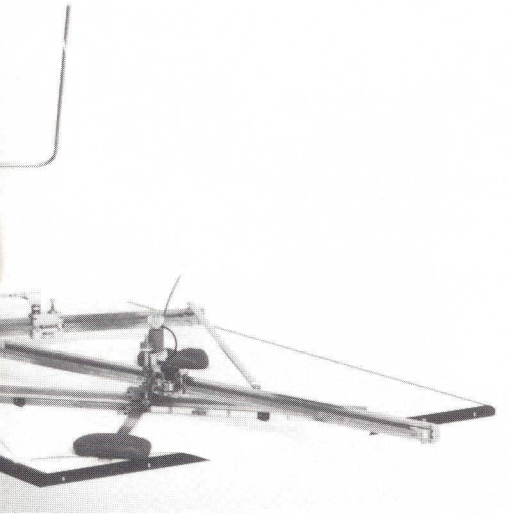
MAPS 300 ON-LINE consists of the MAPS 300 hardware and software and, the Kern KSIO 11 four-axis digitizer module, a 16-key operator imput key-pad, and dual footpedals.

MAPS 300 ON-LINE is upwardly expandable from the Kern MAPS 100 and 200 data compilation modules. Owners of MAPS 100 and 200 modules need only add larger storage, the graphics terminal with associated peripherals, and software.



MAPS 300 ON-LINE

The On-Line Interactive Graphics Station



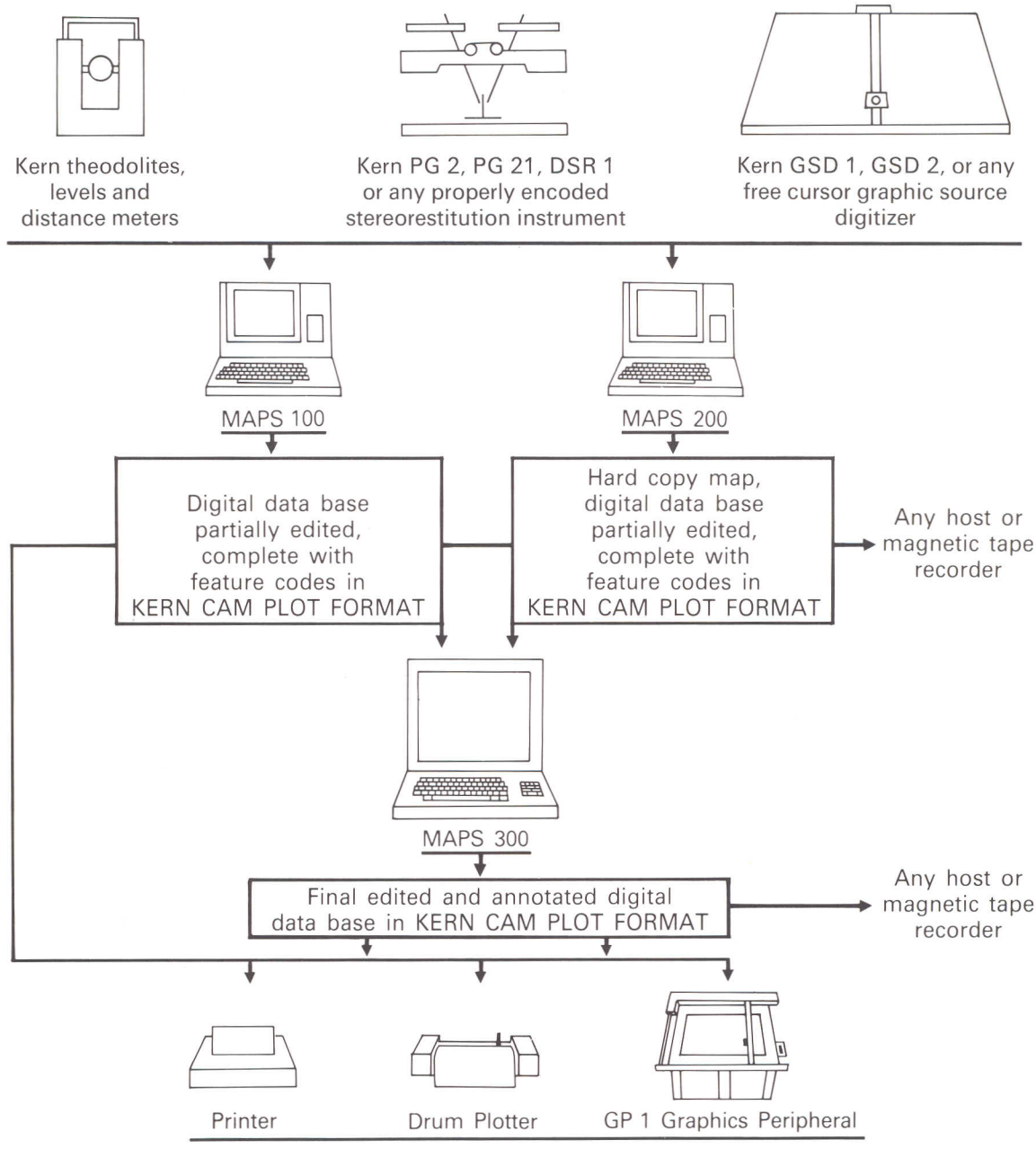
DSR 1

MAPS 300 ON-LINE, in operation, displays the alphanumeric data with all feature code information on the alphanumeric display terminal, while the respective graphics complement is displayed on the interactive graphics screen. Thus, the operator has an exact graphical feedback of the data he is collecting and also all alphanumeric information, including the feature codes associated therewith, available to him for review at all times. MAPS 300 ON-LINE is a powerful tool to collect data in digital form, free of blunders, and fully edited the first time around.

MAPS 300 supports all industry hardcopy output devices such as printers, electrostatic, drum, and pen plotters.

Kern CAM System

Hardware Modules



Since its founding 170 years ago, Kern has specialized in the manufacture of scientific instruments. A large staff of mechanical, optical, electronic, computer, and software engineers uphold this tradition today.

The specifications for the Kern computer-aided surveying and photogrammetric mapping system were established in 1972-1974. Today, 120 man-years later, a total, state-of-the-art CAM system offers the surveyor, photogrammetrist, and civil engineer/site planner low-cost, step-by-step entry to collect, manipulate, and transport data in digital form to his client's data base management system. The Kern CAM system contains all the tools necessary to compile, complete, merge, transform and edit such data, in digital as well as hardcopy alphanumeric and graphical form. Truly a unique and versatile product, in ever increasing demand now and for the remainder of the 20th century.

The Kern CAM system is based on a highly distributed hardware and software architecture. This results in a low-cost, highly efficient system. It is easily learned and operator-friendly throughout. The distributed architecture assures expansion and grows as ever more efficient hardware and software becomes available.

Kern CAM System

Software Modules

MAPR
A menu-driven program which maintains files describing a mapping project, and which are used by other programs in the CAM System. Its files are also valuable as a specification and costing tool for the efficient organization of digital mapping projects.

AETRI
A software stock for collecting aerotriangulation data with on-line and off-line computation of model joints, strip formation, and polynomial block adjustment with on-line and off-line editing capabilities.

BLUH
A bundle block adjustment program which computes an adjustment for up to 300 photographs, including photo orientation parameters, coordinates of the tie and pass points in a chosen block coordinate system, and featuring numerous error checks.

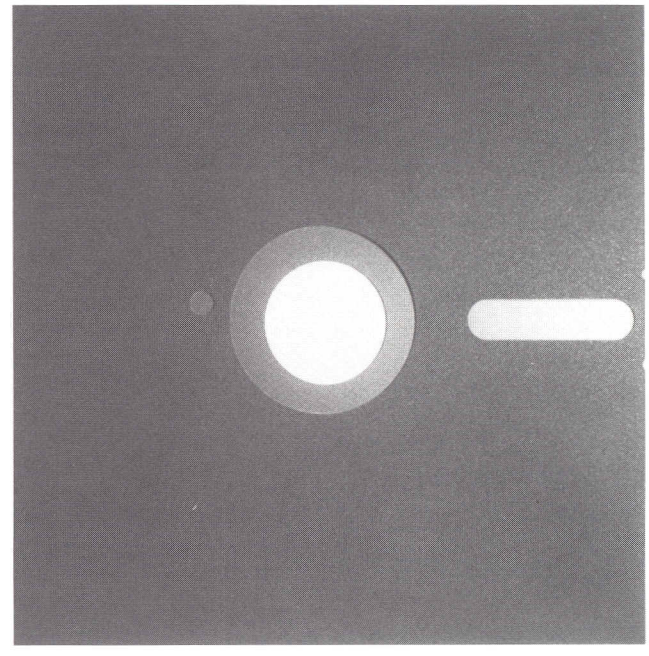
KOGO
A program designed to solve and plot on the GP 1 plane coordinate geometry problems for surveying and photogrammetry from raw field data.

CRISP
A software package for close-range photogrammetry which processes metric and non-metric camera photography in the form of single images, stereomodels, and image blocks.

MAPS 200
A set of programs designed for digital and graphical data compilation, including review, edit, and storing planimetric and height information in various digitizing modes with complete feature coding of all digitized nodes. Data entry is operator-friendly and rapid voice recognition and voice feedback are optionally available.

DTMCOL
A program designed to collect data from cross-sections and for the precise collection of regular and irregular grid data which constitutes the basis for any form of DTM.

CONTUR
A program to generate contour lines from regular grids or from profiles. The input file is typically taken from DTMCOL. The input and output files are user defined, also the contour interval and the grid interval from which the contours are interpolated.



CAMEDT
An automatic editing program which accepts map data collected with the Kern MAPS 100 or MAPS 200 Computer-Aided Plotting Station, and clips lines to create clean intersections.

GRID
A program for plotting of manuscript grids at any scale and orientation angle with a variety of grid annotation possibilities.

PLOTR
A program for plotting the data collected with MAPS 200 or edited with MAPS 300 in the KERN CAM format.
All or only selected features can be plotted at any scale, rotation and with any window. Lines, symbols and pens are changeable at plot time if required.

SINGLE POINT RECORDING FORMAT

Single point recording provides for only one data point per record, but adds the capability of extended data coding such as foot pedals, plot mode and line or symbol number. It is flexible as to the formatting of the file.

```
 E       X         Y         Z              CODE

324   9328.26   6672.24   641.14    1L3   6   1.00   0
325   9372.99   6678.63   645.22    1R3   6   1.00   1
326   9376.18   6675.29   645.22    1R3   6   1.00   1

E = Event Counter
CODE: 1 = Plot Mode (Straight Line)
      L = Pen Up
      R = Pen Down  (Foot Pedal Commands)
      3 = Pen 3
      6 = Line Type 6
      1.00 = Scale Factor
      0 = No Special Function active
      1 = Special Function (Squaring) active
```

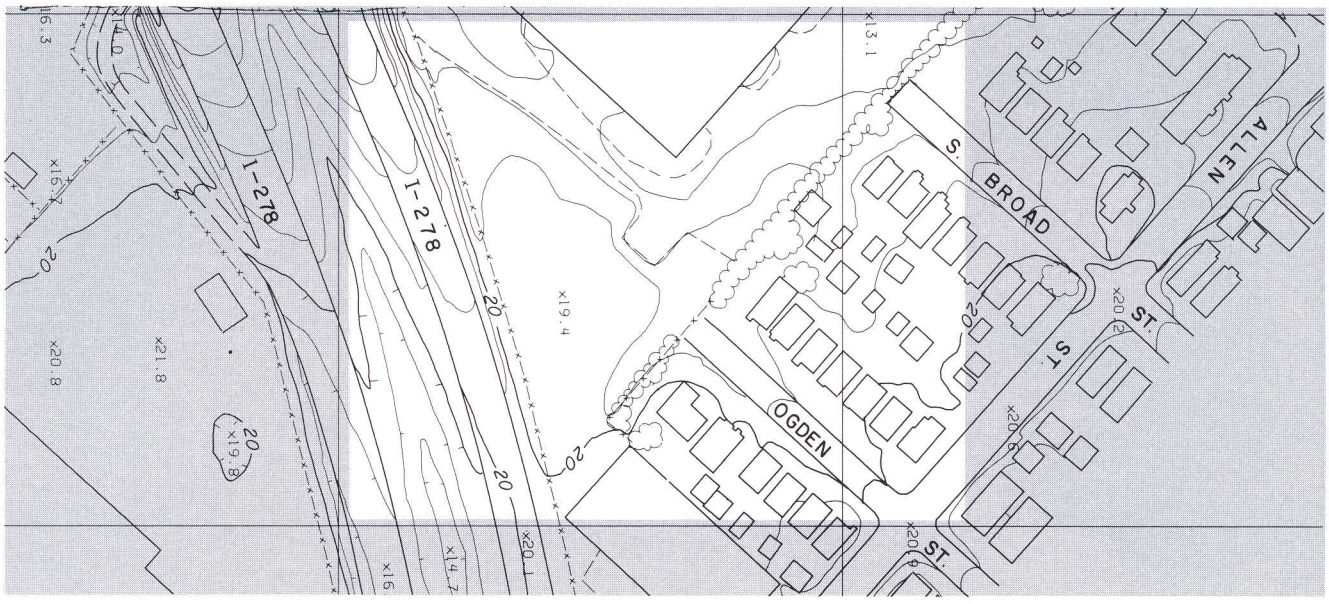
CAM RECORDING FORMAT

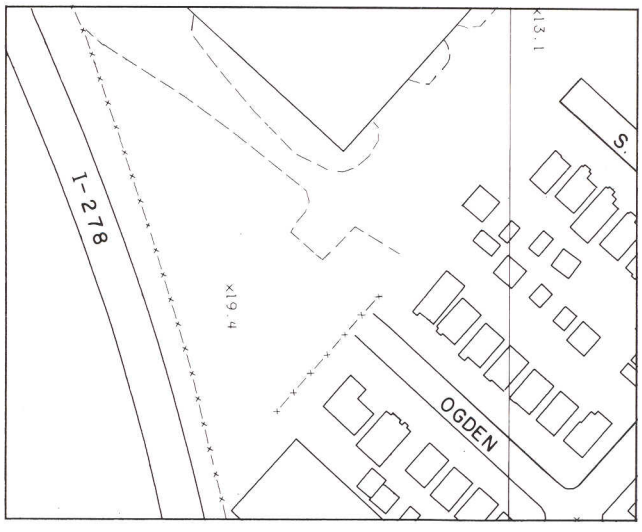
The CAM recording format is a sequential ASCII text file which is completely transparent, and therefore allows easy reviewing of the recorded data and translation to other data bases. The off-line editing program (CAMEDT) as well as the off-line plot program (PLOTR) use the CAM recording format as input.

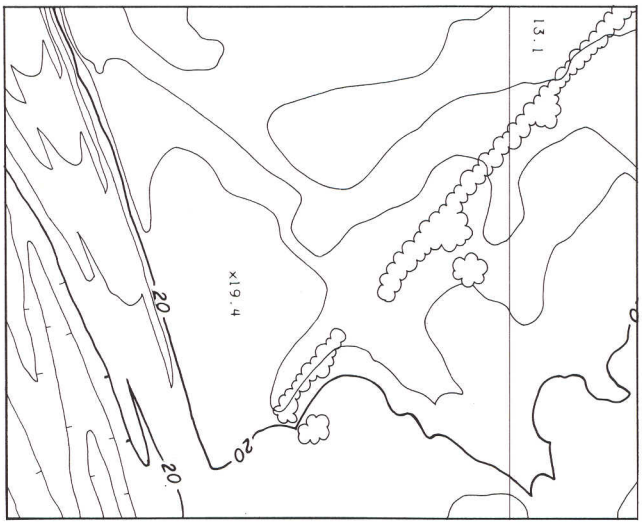
```
CHANGE TO STRAIGHT
CHANGE TO PEN UP
CHANGE TO PEN 3
CHANGE TO LINE TYPE 6
 9328.26   6672.24   641.14
CHANGE TO SQUARE
CHANGE TO PEN DOWN
 9372.99   6678.63   645.22    325
 9376.18   6675.29   645.22
```

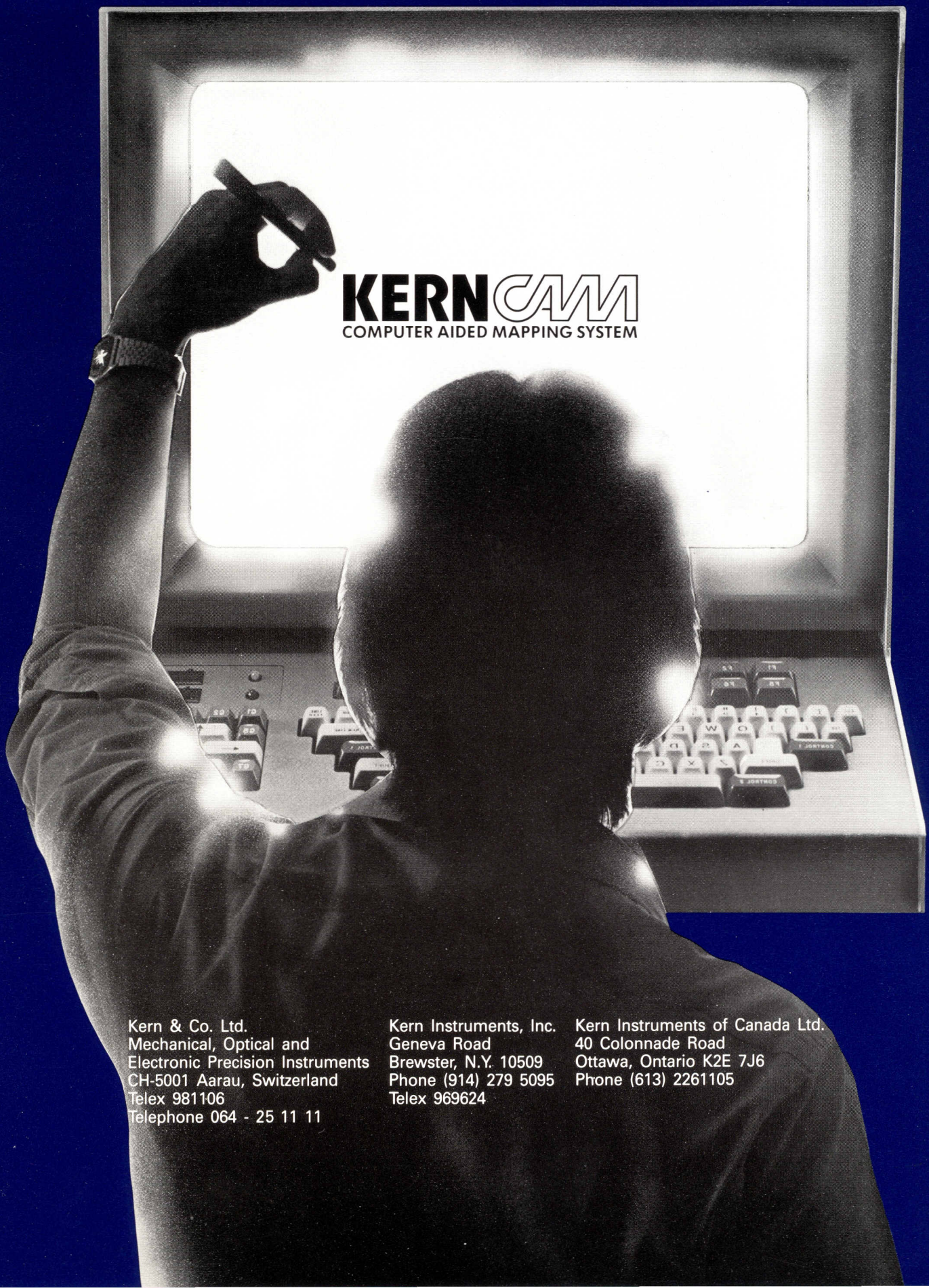
COMPATABILITY OF DATA WITH OTHER SYSTEMS

Data from any source complying with the international accepted Graphics Kernel Standard (GKS) serves as input to MAPS 300. Edited data is again compatible with GKS and is, thus, easily transported via optional post processing software available from Kern to any industry standard data base management system.









Kern & Co. Ltd.
Mechanical, Optical and
Electronic Precision Instruments
CH-5001 Aarau, Switzerland
Telex 981106
Telephone 064 - 25 11 11

Kern Instruments, Inc.
Geneva Road
Brewster, N.Y. 10509
Phone (914) 279 5095
Telex 969624

Kern Instruments of Canada Ltd.
40 Colonnade Road
Ottawa, Ontario K2E 7J6
Phone (613) 2261105