

MAPS 200 DESIGN COMPANY

MAPS 200

Computer-Aided Data Compilation

USER-FRIENDLY
MENU-DRIVEN SOFTWARE

All MAPS 200 features have been designed for easy and trouble-free operation from the Point Menu Command.



KERN

KERN MAPS 200 COMPUTER-AIDED DATA COMPILATION

The Kern MAPS 200 (Microcomputer-Aided Photogrammetric Station) for the analytical plotters of the Kern DSR series as well as for any type of analogue instruments is another example of the modular, clearly structured and user friendly Kern Software. It brings the increase in productivity and provides the digital capability which every user can rightfully expect from computer-aided instrumentation.

The premier computer aid for map compilation on the market today, MAPS 200, simultaneously produces a nearly fairdrawn manuscript, and a completed, edited data file. The on-line graphical plot and interactive editor allow intelligent, clean data collection.

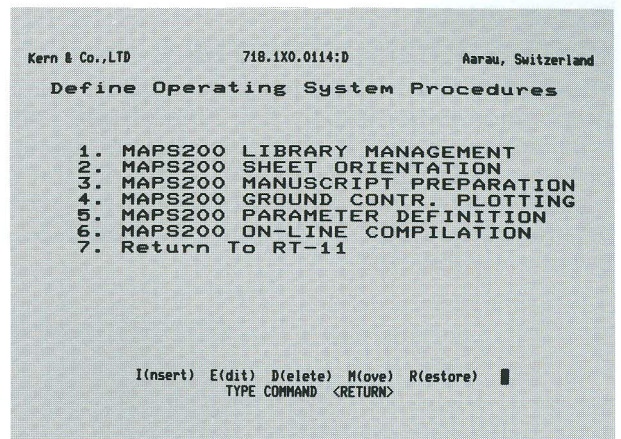
MAPS 200 is a cost-effective tool, for use with all suitably encoded compilation instruments. It is also an operator's dream; from its friendly menu-based programs, to its automatic parameter storage, it gives complete control over extensive operations with ease. "HELP-PAGES", addressable at any time during all operations, and translatable to the local language, guide the operator comfortable and fast through all possible functions and prove again the user-friendliness of the Kern Software.

With MAPS 200, KERN's commitment to provide the latest and best in photogrammetry systems is once more demonstrated.

MAPS 200 DESIGN CONCEPTS

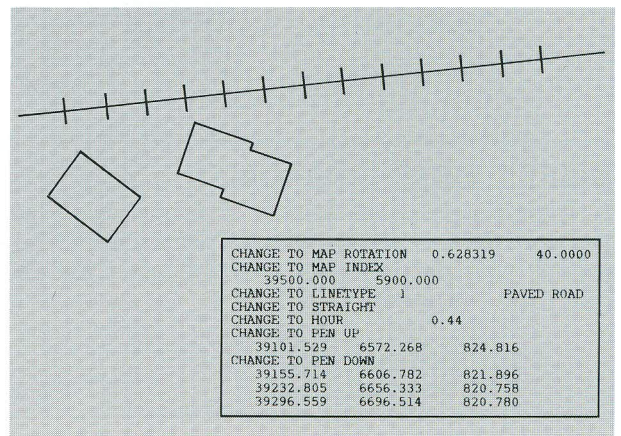
USER-FRIENDLY, MENU-DRIVEN SOFTWARE

All MAPS 200 functions have been designed for easy and friendly operation built around the Kern Menu approach.



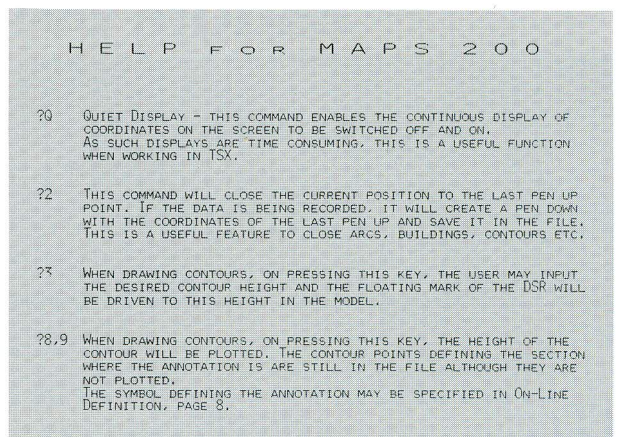
SIMULTANEOUS DIGITAL AND GRAPHICAL OUTPUT

Nearly fairdrawn manuscripts may be plotted on-line with simultaneous creation of an edited data file.



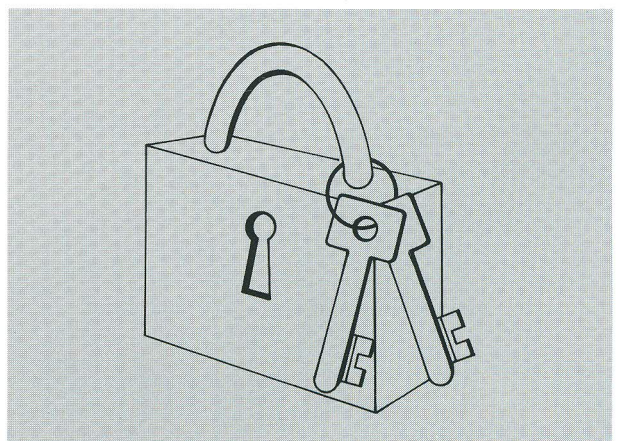
HELP PAGES

The relevant pages of the manual can be called up on the screen by pressing ⟨?⟩ during operation. Thus the operator is always guided comfortably through the multitude of functions of MAPS 200. Operator instruction time is reduced to a minimum. The text of the ⟨Help Pages⟩ can be translated in the local language.



SAFETY OF THE FILES

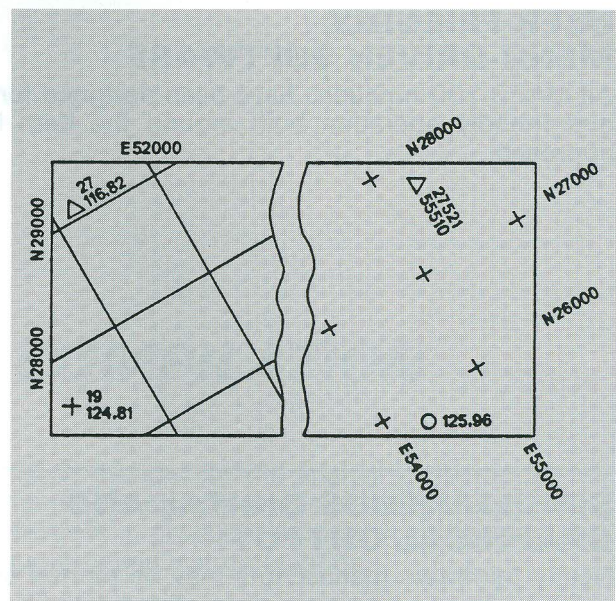
Particular attention has been paid to make sure that data can not be lost in case of power failure. The software has been designed in such a way that points are sent immediately to the file after digitizing.



MANUSCRIPT PREPARATION

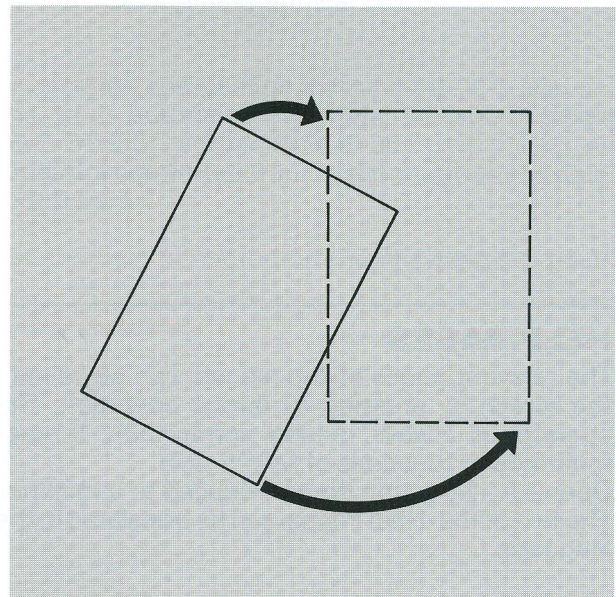
PLOT GRID PLOT GROUND CONTROL

The PLOT GRID program provides for manuscript preparation with virtually any type of grid lines, grid intersection symbols and annotation styles. The program PLOT GROUND CONTROL plots the ground control points with symbols of which the type, size, rotation and annotation (e.g. point number X, Y, Z) can be selected by the user.



SHEET ORIENTATION

A manuscript sheet which is arbitrarily placed on the Kern GP 1, is computationally oriented to the stereo model. The program can also be used for digitizing points on the sheet.



ON-LINE COMPILATION

The Operator is in control. At one glance to the display he knows at all times where he is and what he is doing.

XYZ real time display in ground coordinates
P real time distance counter.

Digitizing Mode

Active Pen

File Name

XYZ real time display in ground coordinates
P real time distance counter.

Feature Code

Scale Factor

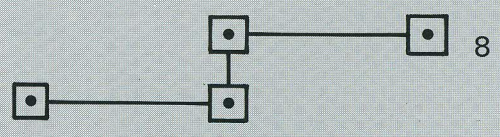
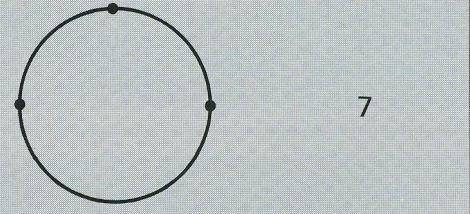
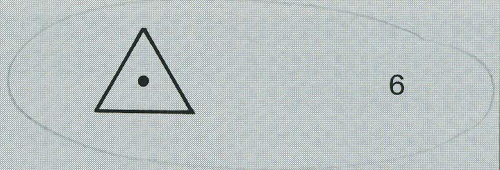
Number of blocks used and available

Event Counter

Scrolling Display of recorded data in the file

EIGHT DIGITIZING/PLOTTING MODES

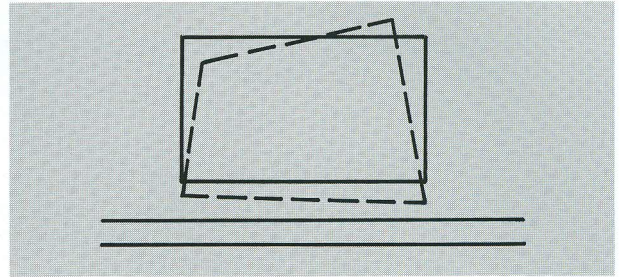
- 1 STRAIGHT
- 2 CURVE
- 3 CONTINUOUS STRAIGHT with data filtering
- 4 CONTINUOUS CURVE with data filtering
- 5 SYMBOL
- 6 SPOT HEIGHT
- 7 ARC
- 8 NETWORK: Point symbols as nodes, connected with symbolized lines



MAPS 200 FUNCTIONS

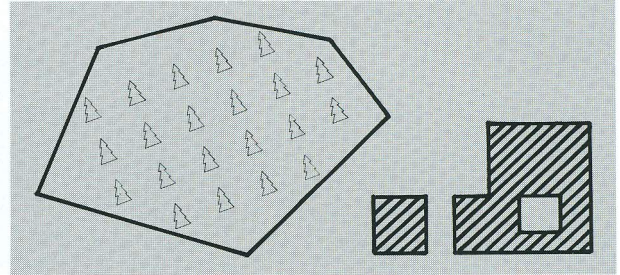
SQUARING

Squaring according to a user defined tolerance.
Squaring and aligning to a road and/or to each other.



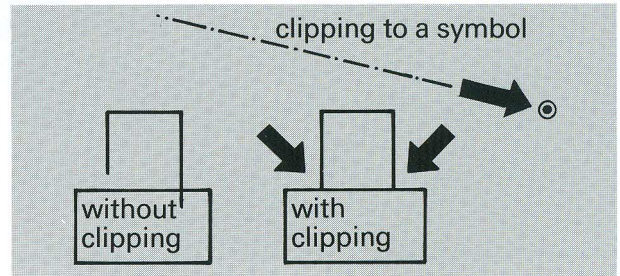
HATCHING AND FILLING OF FEATURES

Spacing and azimuth of hatching and line/symbol selection are user selectable.



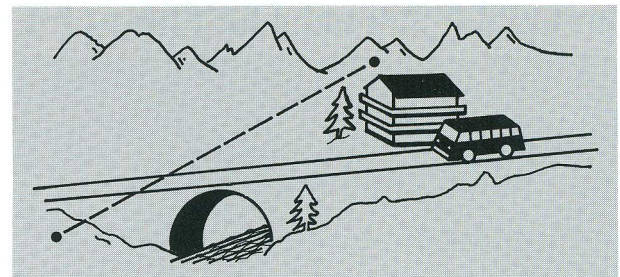
ON-LINE CLIPPING

Lines can be clipped to previously stored lines and symbols, resulting in perfect joins.



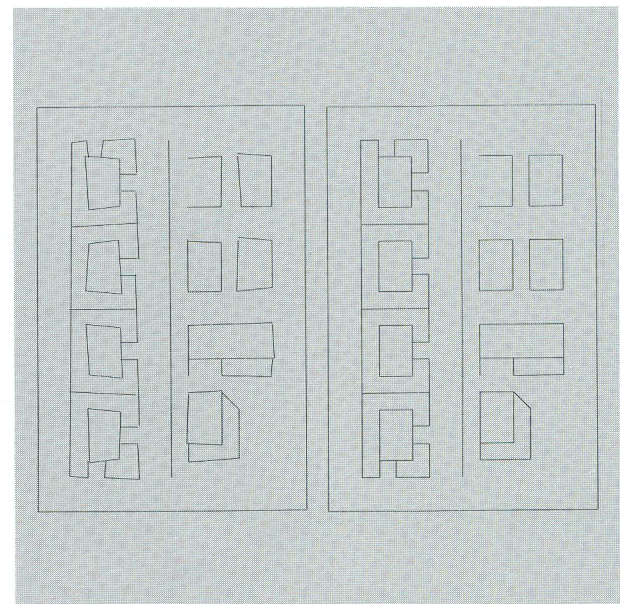
SPACE PROFILING

Profiling can also be performed in space by entering the 3D coordinates of the beginning and end point either via keyboard or digitizing. The measuring mark moves along the "space profile" and features which are protruding can be digitized.



ORDER: GROUPS OF FEATURES ACCORDING A USER DEFINED TOLERANCE

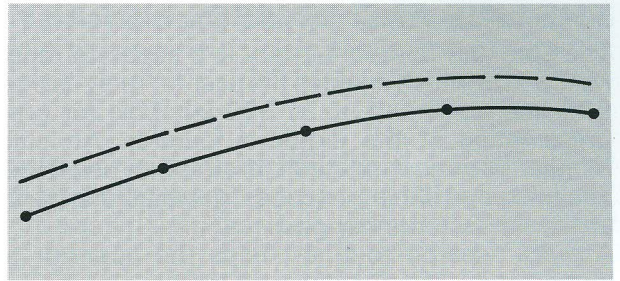
The new sub-routine "ORDER" stands for Organisation and Realignment of Directions Employing Regression. Groups of features will be squared, aligned, oriented parallel and lines will be clipped.



MAPS 200 FUNCTIONS

PARALLEL LINES

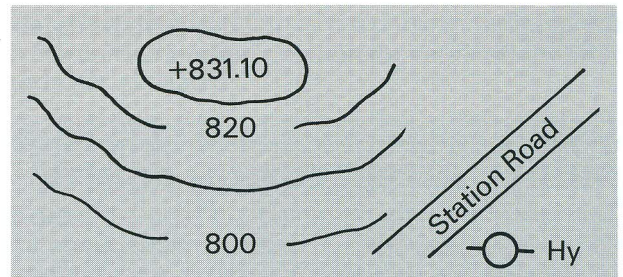
The parallel to a digitized line is computed drawn and recorded according to a digitized or specified separation. Each of the two lines can have different graphical specifications.



ANNOTATION

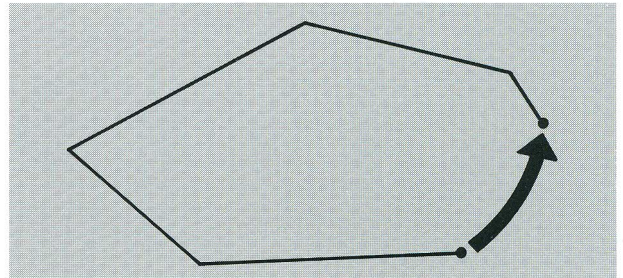
Spot Heights
Contour Annotation
Variable Annotation
Fixed Annotation

All annotations can be freely specified as to text size, text slant, azimuth or according to digitized axis.



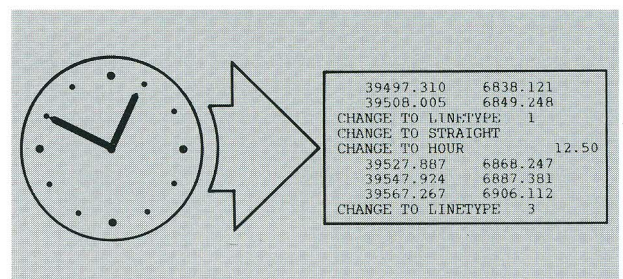
CLOSE

Features like arcs, buildings, parcels, contour lines etc. can be closed.



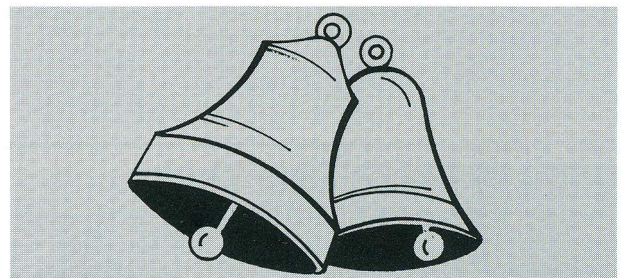
THE FOURTH DIMENSION: TIME

The time is recorded and will be automatically attached to each selected feature code, thus permitting cost analysis at a later stage.



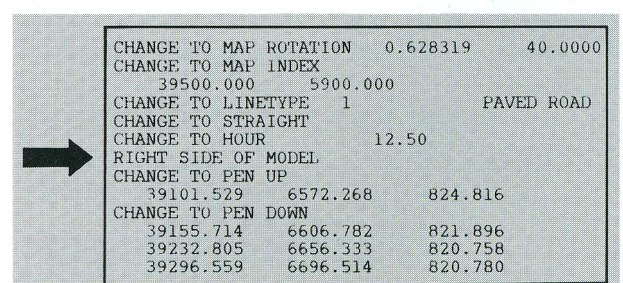
RECORDING BELL

The user can switch on a "bell" which audibly confirms each recorded point by means of a beep on the terminal.



RECORDING OF USER DEFINED MESSAGES

During data collection, the user may write predefined messages into the file by pressing the relevant key. Other messages or comments can be entered into the file by typing on the keyboard.



FLEXIBLE LINE- AND SYMBOL DEFINITION

THE LINE AND SYMBOL LIBRARY

The Line and Symbol Library is a separate module of MAPS 200 which enables the user to freely assign up to 999 line types and up to 999 symbols for graphical presentation of the digitized features. An unlimited number of project-related Libraries can be created.

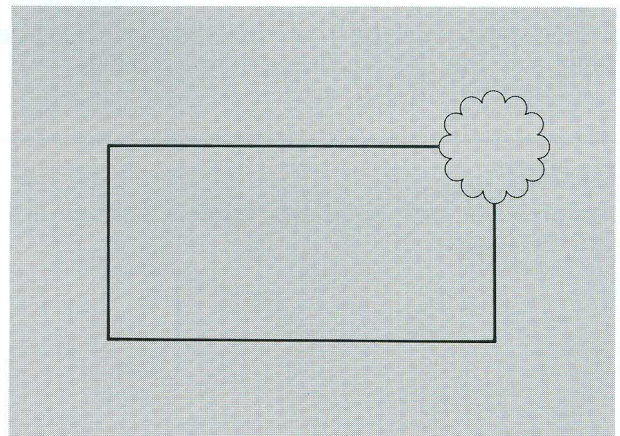
The full range of feature codes is available to be entered at any time via the key-pad.

A quick "search routine" helps the operator to find immediately infrequently used feature codes.

```
-----  
LIBRARY DEFINITION          PAGE 4          SYMBOL TYPE DEFINITION  
-----  
1.          SYMBOL CODE NUMBER = 2  
2.          LEVEL = 1  
3.          ALPHA DESCRIPTION = LAMP POST  
4.          AUTOMATIC PEN SELECTION = 1  
5.          HARDWARE SYMBOL NUMBER = 3  
6.          SYMBOL FILE NAME =  
7.          STANDARD SYMBOL SIZE = 2.00  
8.          SYMBOL ROTATION = 0.00  
9.          ANNOTATION = F  
10.         FIXED TEXT = "LAMP POST"  
11.         ANNOTATION SIZE = 1.00  
12.         TEXT SLANT = 0.00  
13.         SYMBOL TEXT ROTATION = 0.00  
14.         RELATIVE TO (G/H/N/D) = HORIZONTAL  
15.         VOICE RESPONSE =  
-----  
  
THE HELP PAGE FOR SYMBOL DEFINITION
```

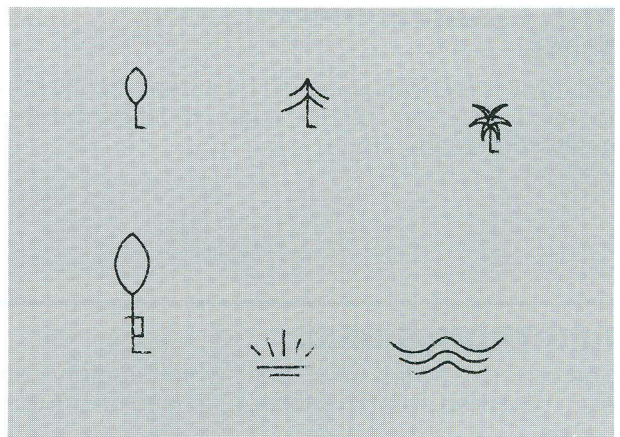
HIDDEN INTERSECTION POINTS

The function "I" for "Intersection" activates the on-line computation routine for hidden intersections and can be applied for different line types and symbols. The computed intersection points are plotted and stored.



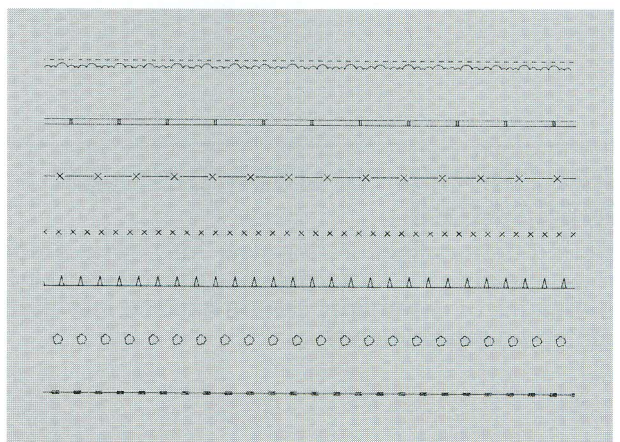
USER DEFINED SYMBOLS

The user may create his own special symbols which are not part of the predefined symbol set resident in the intelligence of the GP1. Each symbol is digitized with the measuring mark from a drawing on transparent paper which is put on a stage plate of the stereo restitution instrument. Such user defined symbols might even include company logos.



USER DEFINED LINE TYPES

The user may create his own special line types by using the line type and symbol set of the GP1 Graphic Peripheral. Combinations of line types and symbols give a high degree of flexibility for graphical presentation.



EDITING OF RECORDED DATA

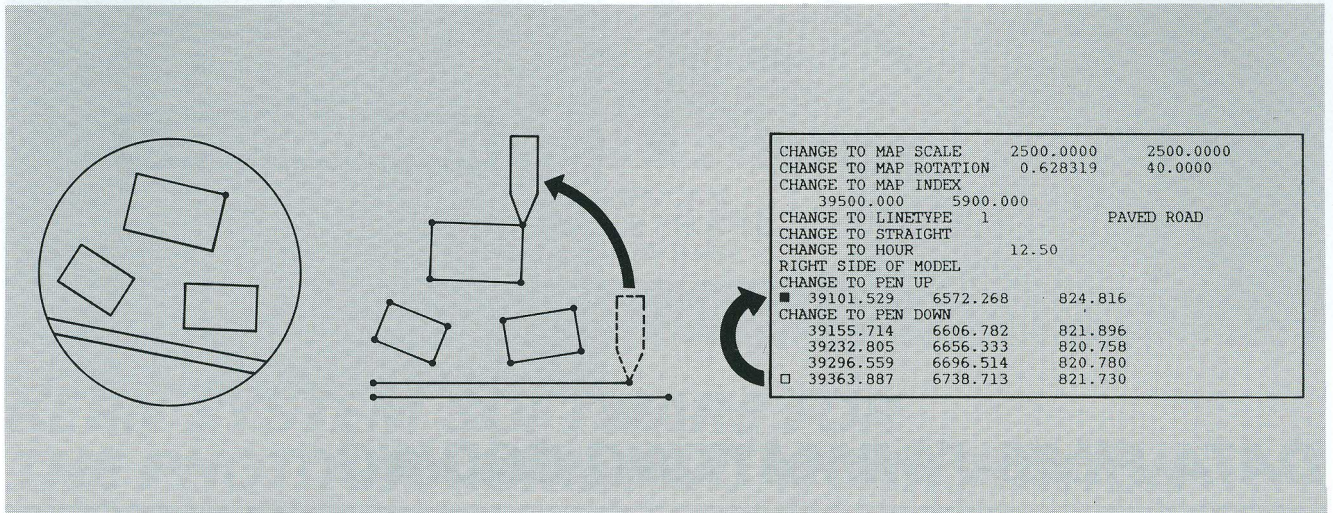
The last lines of recorded data are continuously displayed on the terminal screen in ASCII-Format and therefore very easy to read and to edit. In order to enable the operator to generate a practically error-free data-file, MAPS 200 supports four powerful on-line editing modes:

● DATA FILE SCROLLING

This powerful function can be used for verification of recorded data. In addition to this, points can be "flagged" for deletion by typing "D". This scrolling through the data file is done through the up- and down arrow keys. The measuring mark of the Kern DSR and the drawing tool move again simultaneously with the datafile cursor and indicate its actual position.

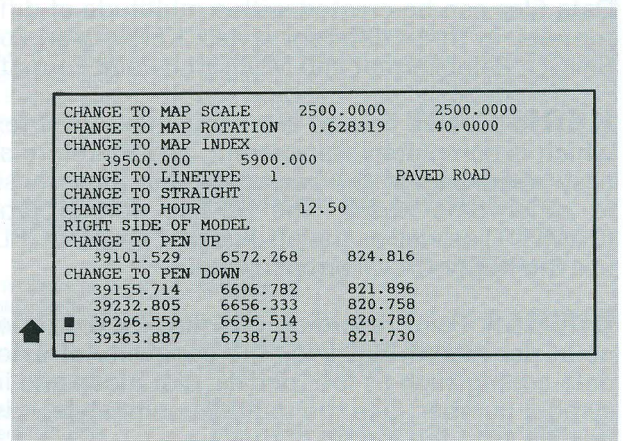
● BACK SEARCH EDITING

By identifying a point with the measuring mark, the back-search editing mode finds the corresponding point in the file and drives the drawing tool of the plotting table to the corresponding position for verification. After this quick search, all function of the "data file scrolling" mode are available.



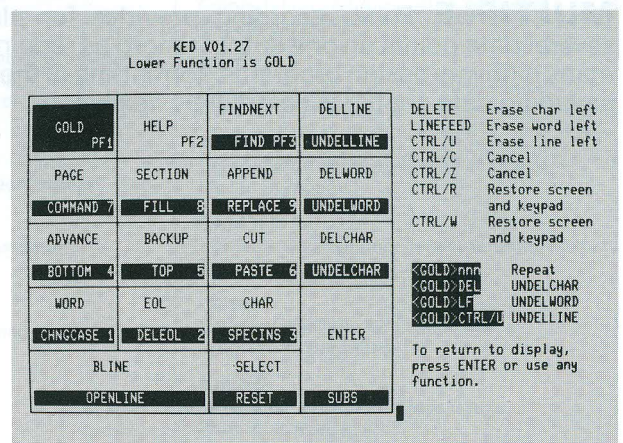
● DELETE LAST VECTOR

The last line of recorded data is removed from the file by simply pressing one key. This functions can be repeated as many times as required. During this "back stepping" the measuring mark of the Kern DSR as well as the drawing tool of the plotting table are moving back also and therefore serve as "cursors".



● SCREEN EDITING

The screen editor provides a facility for interactive editing of the data file by using the built in editing functions of the computer's operating system.

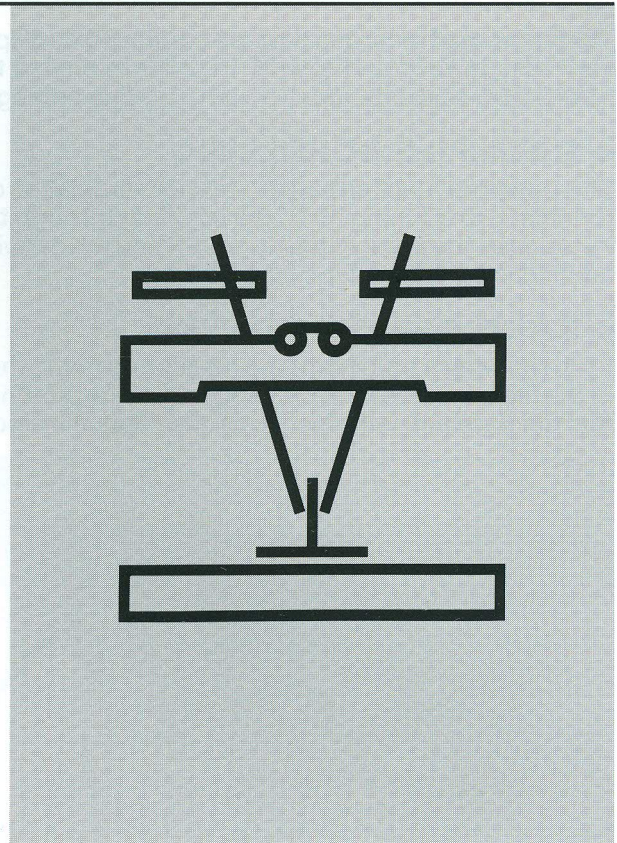


KERN MAPS 200 FOR ANALOGUE STEREOPLOTTERS

The domain of digital mapping is not only reserved for analytical plotters. Kern MAPS 200 can also be connected to any type of analogue stereoplotters such as Kern, Wild, Zeiss, Santoni etc. In this way, the digital mapping system is standardized for the whole organisation.

ABSOLUTE ORIENTATION

A flexible Absolute Orientation Program performs a least square adjustment to ground control points and computes the settings for the instrument specific elements of absolute orientation to be introduced by the operators.



DATA FILES-FORMATTING CODING

Data files can be created with a multitude of different formats, in three different styles: KERN-CAM Format, SINGLE Point Format and MULTIPLE Point Format.

KERN-CAM 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 (PLOT) use the KERN-CAM Format as input.

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. Like the multiple point style, it is also flexible as to the format of the file.

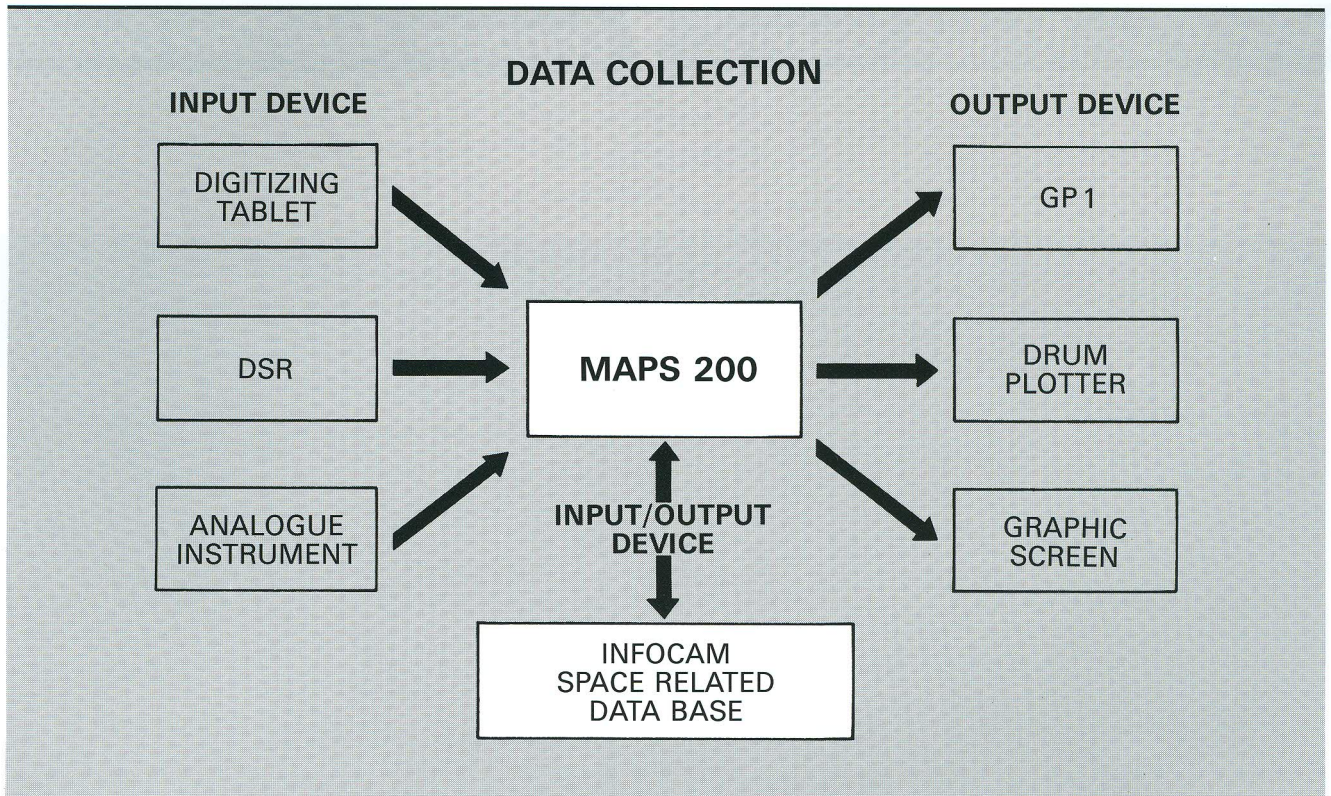
MULTIPLE Point recording provides for placing several data points on one output record as required by many highway design programs. Formatting of the data, including data coding is completely flexible.

```
CHANGE TO MAP SCALE      1000.0000      1000.0000
CHANGE TO MAP ROTATION   0.612234      38.9760
CHANGE TO MAP INDEX
      39600.000      5900.000
START
CHANGE TO LINETYPE      1                PAVED ROAD
CHANGE TO STRAIGHT
CHANGE TO HOUR          0.19
CHANGE TO PEN UP
```

```
81 1L2  1  1.00 039700.90 6418.96 853.93
83 1R2  1  1.00 039701.46 6419.35 853.93
85 1R2  1  1.00 039702.00 6420.21 853.93
87 1R2  1  1.00 039703.17 6423.74 853.93
89 1R2  1  1.00 039702.29 6424.37 853.93
91 1R2  1  1.00 039702.50 6424.29 853.93
93 1R2  1  1.00 039704.28 6421.71 853.93
95 1R2  1  1.00 039707.07 6417.25 853.93
97 1R2  1  1.00 039673.51 6449.93 849.41
```

```
1  677.40 344.67 500.40 2  899.45 566.66 500.53
3  700.30 455.56 501.50 4  900.34 655.78 499.76
5  600.56 600.67 500.67 6  800.98 600.90 498.56
7  700.67 566.78 498.20 8  900.78 599.90 500.00
9  800.70 600.67 598.78 10 800.23 577.45 599.20
11 799.45 600.78 506.45 12 700.98 570.00 501.77
```

HARDWARE FOR MAPS 200



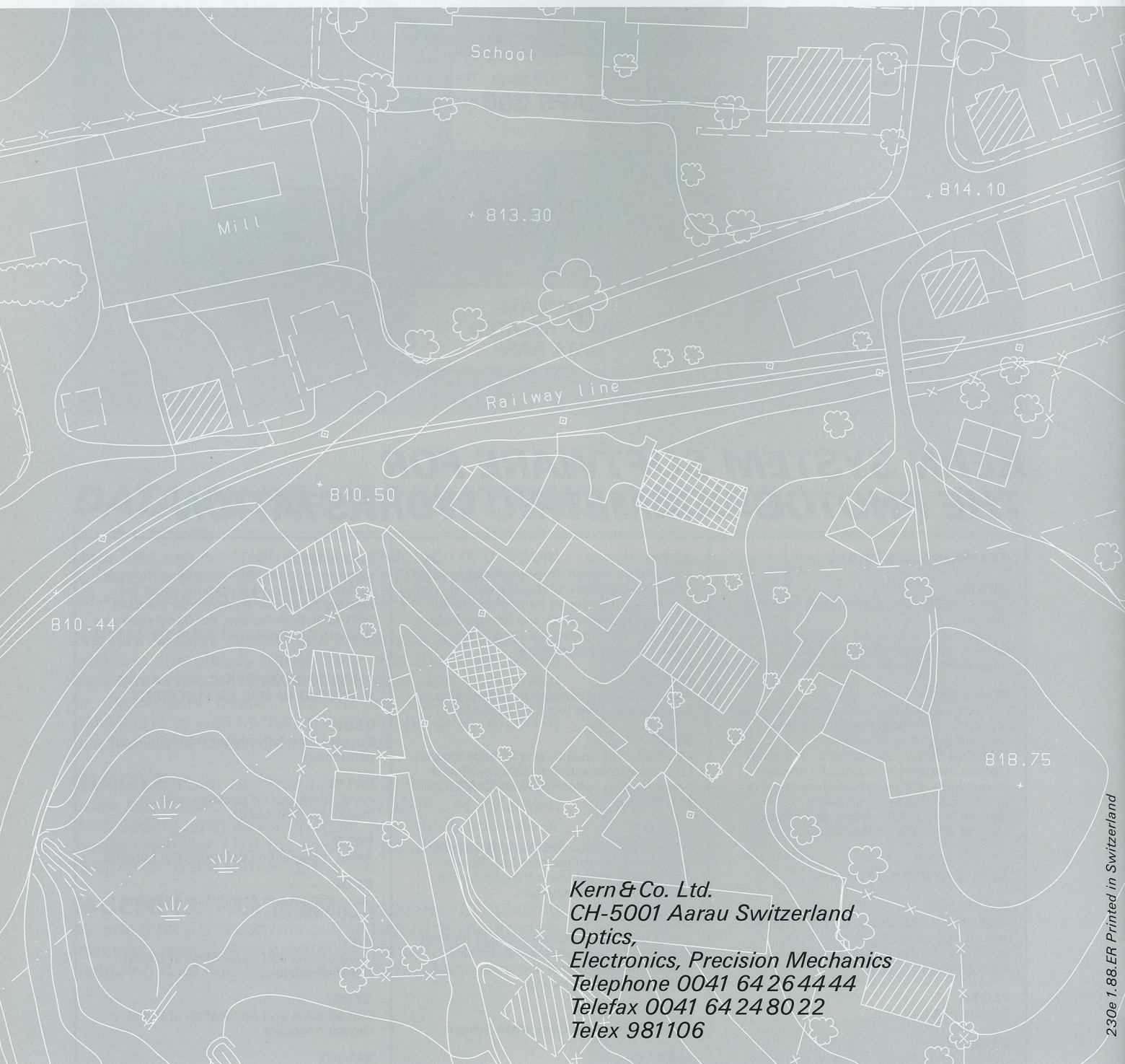
KERN SYSTEM SOFTWARE FOR THE PHOTOGRAMMETRIC WORKSTATION

<p>STANDARD SOFTWARE</p> <p>DSR1B Operating System for Kern DSR Analytical Plotters. Consisting of instrument calibration, camera management, control-point management, model set-up procedures.</p> <p>MAPS 200 Computer Aided Digital and Graphical Data Acquisition for digital mapping systems, with many editing functions. Graphical output on precision- and drum plotters, resulting in practically finished manuscripts. For analytical plotters using aerial photography, close range photography, SPOT images and others. Also for analogue stereoplotters.</p> <p>APPLICATION SOFTWARE</p> <p>MAPS 300 Interactive graphic editing system for on- and off-line use with the Kern DSR analytical plotters as well as analogue stereoplotters.</p> <p>PLOTR Off-line plot program.</p> <p>DTMCOL Digital Terrain Model. Window definition, data collection through regular grid or parallel profiles and cross section recording.</p> <p>CONTUR Contour interpolation of DTM datafiles and break-line data files.</p>	<p>AETRI Aerial Triangulation. Data collection with on-line model connection display, default point numbering and digital transfer for model overlap. Reobservation and Reorganisation module. Preliminary Strip- and Block Adjustment by polynomials.</p> <p>CORREL Automatic point correlation software based on the vertical line locus (VLL) concept.</p> <p>SPOT Orientation of Level 1A and 1P Spot imagery. User selectable and definable coordinate systems. Data collection with DTMCOL or MAPS 200.</p> <p>CRISP Close Range Image Software Package for metric and non metric cameras. Bundle adjustment, direct linear transformation, multiple model observation.</p> <p>DOTXS Data Collection Software package for road construction applications: Alignment definition, longitudinal and cross section collection, profile plotting.</p> <p>KDOS Digital Orthophoto Generation System.</p> <p>MAPABS Absolute Orientation for Analogue Instruments.</p> <p>DSRSPT Digital data capturing for panoramic photography.</p>	<p>LIBRARIES Libraries of subroutines, enabling the user to develop his own programs, using the existing hardware. Available for the Kern DSR Analytical Plotters, the Correlators and the Kern GP1 Precision Plotting Table.</p> <p>PHOTOGRAMMETRIC SOFTWARE RUNNING IN DEC ENVIREMENT</p> <p>BLUH Bundle Block Adjustment with additional parameters.</p> <p>PATM Aerial Triangulation package with independent models.</p> <p>PATB Aerial Triangulation package with bundles.</p> <p>SCOP Computation and Application of Digital Elevation Models.</p> <p>HIFI Computation and Application of Digital Elevation Models.</p> <p>ATOS Computation and Application of Digital Elevation Models.</p> <p>SMART Software Package for Stereo Mapping with Radar Techniques.</p> <p>COPS Software Package for Composite Progressive Sampling.</p> <p>BINGO Software Package for Close Range Photogrammetry.</p>
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KERN MAPS 200 FOR ALL
STEREOPLOTTERS 500S 25

MAPS 200

Computer-Aided Data Compilation



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