

UPGRADE KIT FOR KERN DSR'S BASED ON THE CONCEPT OF THE LEICA PHOTOGRAMMETRIC WORKSTATION

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Abstract

The well known PDP-11 real time processor of the DSR line can be replaced with the PC controller and Leica Mapping Terminal software of the SD line. The user therefore benefits from the same user interface as the SD line together with the possibility of easy connection to any host computer, operating system and applications software.

Key words: Analytical Plotters, Instrument Design, System Design

INTRODUCTION

DSR analytical plotters have for years ranked among the world's most successful photogrammetric systems. High accuracy, modular design, a fixed optical system and reliability of less than one breakdown in three years represent highest Swiss quality. The DSR's system architecture with distributed processing was unique world-wide, when the first DSRs were launched in 1980. This approach has meanwhile become the classic design standard for analytical plotters.

After introducing the new SD2000 workstation, early 1991, Leica is supplying for all DSR's an upgrade Kit based on the workstation concept.

THE NEW STANDARD FOR DISTRIBUTED PROCESSING

The Leica Mapping Terminal (L.M.T) is a new landmark development based on the DSR system architecture. An entirely new PC-based plate-Processor has been developed, which now is standard in all DSR's as well as in the new photogrammetric workstations Leica SD2000 and SD3000.

It can also be retrofitted to all DSR's, replacing the previous DEC PDP plate-processor (P2). L.M.T is a fast Compaq personal computer complemented by only one, highly integrated printed circuit board.

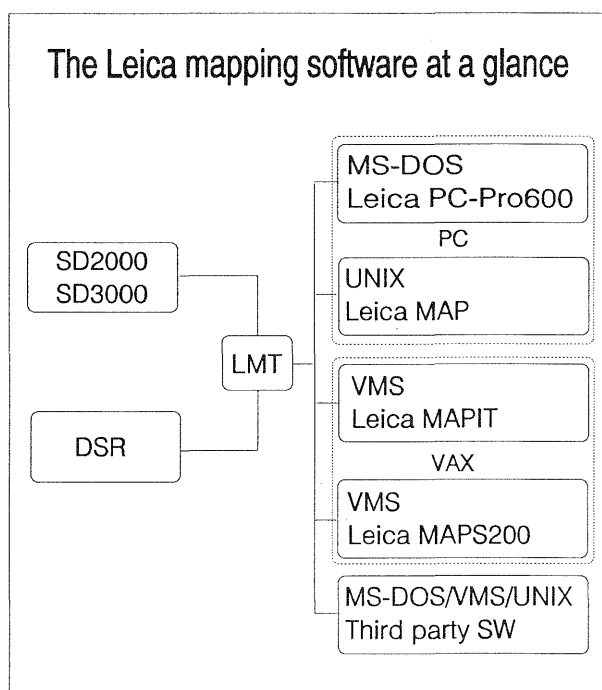
The new processor controls the real-time movements of the plates and serves the communication, via a standard serial line, with the host computer and, via a new structured user interface, with the operator.

Generally speaking, the new plate-processor which includes a monitor and a keyboard is acting as an intelligent mapping terminal to the host computer.

THE NEW STANDARD FOR HARDWARE INDEPENDENCE

All DSR's fitted with L.M.T are virtually independent of the host computer's hardware, which communicates with the control processor via a standard serial link RS 232. The host computer runs the mapping and other applications software and stores the captured data for further processing, such as editing, transfer via LAN (Local Area Network), or plotting. The choice of the host computer depends mainly on the available mapping and application software. This allows the user to work either with sophisticated Leica Software or with well tested third party packages in their respective operating system environments. In all cases, the operator will be able to work with one and the same user interface.

THE NEW STANDARD FOR SOFTWARE INDEPENDENCE



The L.M.T fully ICON-based structured user interface facilitates efficient communication with the operator and with the host computer and runs the mapping and application software. It can be customized by defining macros for routine tasks, allocating them together with operator or project related functions to "hot keys". Menu items etc. are selected with the trackball or over the keyboard. The new operator-friendly user interface, a standard equipment in both the DSR's and the new photogrammetric workstations SD2000, SD3000 facilitates operator training and comfort and ensures full compatibility. Thus, it constitutes a major economics factor for the Leica customer.

Regardless of the operating system of the host computer, all Leica, partner and third party software for data collection and processing can be implemented and controlled by the same user interface. This applies in particular to the powerful mapping packages PC PRO 600/MicroStation (MS-DOS), MAP (PC-UNIX) and MAPIT (VMS). User defined communication protocols facilitate linking with various third party packages, with which the DSR/L.M.T is used as 3D-digitizer.

CONCLUSIONS

The rapid development in the computer world makes earlier models become obsolete. In all photogrammetric systems, the computers have to be replaced sooner or later, just in order to maintain the initial investment in stereoviewer, software and operator training.

The well proven DSR recently has been adapted to the most advanced computers technology, which greatly enhances its flexibility. With the new hardware and software the performance of the upgraded system is generally improved: its value has been increased.

A good reason for upgrading existing systems is to standardise the working environment when a new workstation is added to the equipment. This will permit a more efficient and productive use of the instruments and operators.