

THE INSTRUMENT THAT CAN DO ALMOST EVERYTHING

WEST BERLIN

A measuring instrument that works as a digital oscilloscope, a transient recorder, a frequency counter, a signal processor, a sampling scope, and a digital voltmeter is on the way. What's more, this versatile unit wedges all these functions into a package about the size of a hand-held notebook.

Called the SC01 signal computer, because it combines signal analysis and computing functions, it is the first major product from three-year-old Createc GmbH in West Berlin. It is one of the star attractions in the electronics display area at this month's Industrial Fair in Hanover, West Germany.

Despite its size—the unit measures 26 by 10.5 cm and is only 4 cm thick—the 21-oz SC01 sports impressive performance for each application. In its oscilloscope function, the instrument shows aperiodic signals sampled at a rate of 20 MHz. As a sampling scope, the SC01 is suited for periodic signals, displaying them with a resolution of 50 ns/division.

When it's used as a transient recorder, nine nonvolatile memories (each storing 256 horizontal dots for the display) and one memory for the operating mode come into play. As a digital voltmeter, it measures root-mean-square voltages from 0 to 60 V over a frequency range of 1 Hz to 1 MHz. The frequency counter is accurate to within 0.05% for signals up to 6 MHz, and the digital signal processor operates on two voltages to add, subtract, multiply, or divide them.

Manfred Koslar, general manager and developer of the signal computer, thinks the instrument can be sold for a little more than \$1,000. Mounting of components on printed-circuit boards is contracted to another company, and Createc handles instrument assembly and quality control.

West Germany's Ministry for Research and Technology covered about 40% of the instrument's development cost. But the market is not limited to Germany; Koslar is about to enter negotiations with a U.S. instrument company interested in selling the signal computer in the States.



HANDY. The SC01 signal computer is a hand-held, notebook-size unit.

Essential to the instrument's small size, says Koslar, is the rigorous use of very large-scale integrated circuits, including microprocessors and microcomputers. "We thoroughly surveyed the American and European markets to get

the best available," he says. The application of miniaturized slide switches, bus connectors, and other mechanical parts made especially for Createc by other companies also contributes to the unit's size. Use of the space-saving surface-mounted-device technology in pc-board production helps, too.

The 6-by-6-cm display also contributes to the unit's compactness. A Japanese design, the liquid-crystal display uses a multiplexed matrix and 128 by 128 dots. It's controlled by a Createc-designed graphics controller.

The instrument's architecture is based on four processors, and an 80C31 microcomputer with a 64-K read-only memory serves as the main processor. Besides handling organizational tasks, it controls the other three processors, one each for the keyboard, the LCD, and the converter. Also distinguishing the SC01 are auto-calibration, two-stage broadband measuring amplifiers for signals extending from dc to 10 MHz, and a flash analog-to-digital converter.

PROGRAMMABLE. The instrument has a feature that is common in logic analyzers but unusual for scopes: it can be programmed for a post-trigger function for 256 samples and for a pretrigger mode for 4,000 samples. The two-channel scope works with two independent horizontal scaling factors and two time bases for each channel. All key functions, such as selecting scaling factors, searching for trigger parameters, and calibration, are handled automatically.

The operator can program the instrument with the keyboard and positioning switches. Consuming only 3 W, the signal computer has backup nickel-cadmium batteries that protect stored data for at least three months. —John Gosch