

Frequency Synthesizer

The BFS 100 is useful in applications such as nuclear and electron resonance spectroscopy where frequency stability and range and spectral purity are important. The instrument provides an output from 300 hz to 100 Mhz with selection in 1-hz increments and an option that allows increments of 0.001 hz. The output is selected in eight-decade ranges (11 with the option) and is adjustable manually or by remote control. Continuous frequency adjustment is by means of a ten-turn helipot with 3 percent linearity over the Δf range from ± 1 hz to ± 5 Mhz. The reference frequency is provided by an internal 10-Mhz quartz oscillator. Other features include rapid switching speed and synchronization of the reference oscillator with external sources. Bruker Scientific. Circle No. 149 on Readers' Service Card.

Peristaltic Pumps

Motor speeds are stable regardless of fluid viscosity, back pressure, slow operating speed, or fluctuations of line voltage in the Sage 375A peristaltic pumps because of a motor tachometer system. This servo system of speed control enables reproducibility through a flow range of from 1.2 ml per hour to 1000 ml per hour per channel. The pressure plates of the 370 series pumps have been redesigned to increase tubing life and to minimize tubing creep. Interchangeable plates are color coded for use with specific tubing. Orion Research, Inc. Circle No. 148 on Readers' Service Card.

High-Temperature Adhesive

Ceramacoat 512 is useful in attaching thermocouple leads to metal surfaces which can be exposed to temperatures (up to 2500°F) that

exceed those (above 600°F) at which epoxy resins fail. The material has inherent resistance to high temperatures, it is adhesive, and it has good dielectric strength. Ceramacoat 512 is available as a paste which is brushed onto the leads and the surface, allowed to dry in air, and then baked at 200°F. It then offers dielectric strength of 40 volts per mil at 400°F and good resistance to oil, solvents, and acids, except for hydrofluoric. Aremco Products, Inc. Circle No. 140 on Readers' Service Card.

High-Contrast Hand Refractometer

The model 6 detects concentration of diluent from 0 to 32 percent in solutions and reads directly to 0.2 percent. The boundary line between the bright and dark portions of the scale is sharp, which makes the instrument easy to read. The model 6 (Fig. 1) is operated by placing one or two drops of test solution on the prism surface, closing the cover, and pointing the instrument toward a light source. Concentrations of solutions such as battery electrolytes, cutting oil, beverages, and many others may be rapidly assayed in the field or laboratory. National Instrument Company. Circle No. 139 on Readers' Service Card.

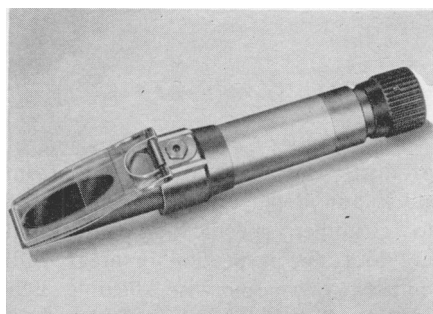


Fig. 1. National Instrument Company's model 6 hand refractometer provides high-contrast reading of concentrations from 0 to 32 percent and reads directly to 0.2 percent.

Pulse-height analysis and scaling are simplified in the model 8100. The device consists of sections for signal conversion, control, and display. The signal conversion section comprises an amplifier with Gaussian pulse shaping, a gain range of 16 to 2000, and noise of less than $9 \mu\text{V}$ r.m.s.; a single-channel analyzer for line scanning which can be used in the pulse-height analysis mode to improve dead time in analog-digital conversion; a Wilkinson-type analog-digital converter with a 50-Mhz clock rate and 8192 channels of resolution; and a digital offset that eliminates the need for a biased amplifier because it can be varied from 0 to 7936 channels in 256-channel increments. Coincidence or anticoincidence gating may be selected also. The control section allows the operator to choose conditions such as count and live or true time as preset functions. There are controls for collect, display, and input/output cycles. In the collect mode, the operator specifies pulse-height analysis (events versus amplitude), multichannel scaling (events versus time), multiple-input multichannel scaling (up to four inputs), or list (digital words in order of occurrence). Input/output can utilize tape, teletypewriter, printer, or plotter. The display section offers many options. The cathode-ray tube features a 5-inch rectangular display with adjustments for vertical range, gain, and bias. There is a character generator to display simultaneously the energy where the cursor (an intensified vertical line) is located, total counts in the cursor channel, start and stop channels of region of interest, total counts in region of interest, and elapsed time in pulse-height analysis mode or sweeps in multichannel scanning mode. A pushbutton matrix is used to select from a variety of display or analysis functions. These include the cursor mentioned above, an intensifier, an index, an integrator, a calibrator, and seven others. The device and its features are well described in a 16-page product bulletin. Canberra Industries. Circle No. 146 on Readers' Service Card.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card (see pages 110A and 190C) and placing it in the mailbox. Postage is free.—RICHARD G. SOMMER

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