

new products

The items listed have been selected from among those appearing concurrently in "New Instruments" or "New Materials and Components" in *Review of Scientific Instruments*. We gratefully acknowledge the cooperation of the editor of *RSI*, J. B. Horner Kuper, the associate editor for New Instruments, Joshua Stern, and the associate editor for New Materials and Components, R. K. Eby.

These descriptions are based on information supplied by the manufacturer and in some cases from independent sources. Neither *Review of Scientific Instruments* nor *PHYSICS TODAY* assume responsibility for their correctness.

Chemical lasers

Two new continuous wave HF/DF chemical lasers are available. Model CLI is intended for use as a medium power mid-IR source or as a probe laser, producing 100 W with HF multi-line, 8 W with DF multi line. Wavelength range is 2.58 to 3.05 micrometers with HF, 3.58 to 4.05 micrometers with DF. Amplitude stability is $\pm 2\%$, frequency stability is 30



MHz. Both devices are operated with easily-handled gases: SF_6 , O_2 , He, and H_2 or D_2 . A standard system includes the laser head, optics, ballast system, and control panel. Single line optical cavities, beam and mode control accessories, and field installation are also available. *Helios Inc., P.O. Box 2190, Boulder, Colo. 80302.*

Circle No. 140 on Reader Service Card

Counter

The model 5720A, 80-MHz frequency counter covers the direct count frequency range 10 Hz to 80 MHz and features an audio tone multiplier circuit that provides resolution of 0.01 Hz in 1-s measurement time. Frequency and ratio measurements are

shown on an eight-digit LED display. Direct readings are in MHz, kHz, or Hz, selectable by switch, and the decimal point is automatically positioned to give resolutions of 1 kHz, 1 Hz, and 0.01 Hz, respectively, for the three display units. Input impedance is 1 M Ω shunted by 25 pF. The instrument is fully protected against accidental overvoltage to 250 V rms from 10 Hz to 1 kHz, decreasing to 10 V rms above 10 MHz. Sensitivity over the 10 Hz–80 MHz range is 50 mV. Input sensitivity is continuously adjustable. The time base is derived from either a built-in 1-MHz crystal clock or from an external frequency reference. The built-in oscillator has an aging rate less than 2 ppm/month and temperature induced drift less than $5 \times 10^{-7}/^\circ\text{C}$ between 0° and 40°C .—*Ballantine Laboratories, Inc., Box 97, Boonton, NJ 07005.*

Circle No. 141 on Reader Service Card

Waveform processing systems

Six waveform acquisition and processing systems offer a range of performance capabilities for specific applications. Three of the systems are based on the manufacturer's digital processing oscilloscope. The other three are based on the R7912 transient digitizer. Both types acquire waveforms and digitize them for display or for processing by computer or programmable calculator. Typical operations include addition, multiplication, integration, differentiation, level crossing detection, fast Fourier transform, inverse Fourier transform, signal averaging, signal correlation, and digital filtering. The digital processing oscilloscope is suitable for repetitive waveform applications up to 150 MHz, 175 MHz op-

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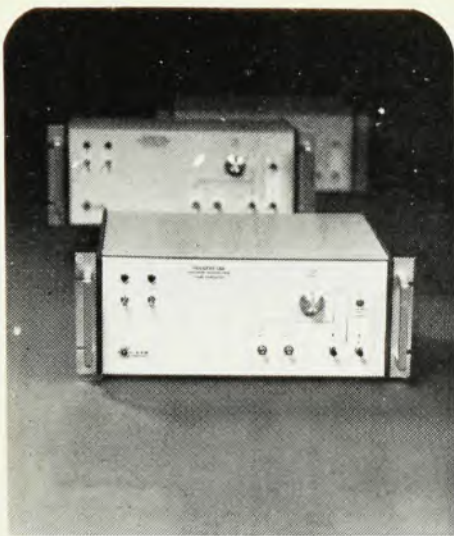
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Output Pulse

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Fall-time	150 nS
Throughput Delay	55 nS
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tional. Bandwidth up to 14 GHz can be achieved with sampling plug-in units. For fast, nonrepetitive signals, the R7912 transient digitizer offers the highest available signal acquisition and digitizing performance. Single shot transients are captured and automatically digitized with 512×512 point resolution. Bandwidth is 500 MHz, extendable to 1 GHz by use of the 7A21N direct access plug-in unit.—*Tektronix, Inc., Box 500, Beaverton, OR 97077.*

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Spectroradiometer

The series 700/760/780 portable spectroradiometer system features programmable input to allow direct read-out at each wavelength of spectral irradiance. A selectable flash integration mode can measure pulses as short as 6 μ s or as long as 5 min, and the complete system is powered by self-contained rechargeable batteries for portability, and also operates on ac line. The instrument consists of a research radiometer, spectroradiometer detector head, and a high-voltage power sup-



ply. The monochromator dial reads wavelength directly. Constant bandwidths of 4.25, 8.5, or 12 nm are provided by 0.5-, 1-, or 1.4-mm slits, respectively, over the entire spectral range.—*International Light, Inc., Dexter Industrial Green, Newburyport, MA 01950.*

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Wheatstone bridges

The models RN-1B and RN-3A bridges measure resistance in ranges from 1 to 9 999 000 Ω . A self-contained power supply, consisting of three 'D' cells, is adequate for measurement in the lower portions of the ranges. An external power supply is available for increased sensitivity in the higher ranges. The model RN-3A provides, in addition, ratio settings used for Murray and Varley loop tests. The bridges are housed in impact resistant carrying

cases with removable gasketed lids.—*Beckman Instruments, Inc., 89 Commerce Rd., Cedar Grove, NJ 07009.*

Circle No. 144 on Reader Service Card

Oscilloscopes

A line of portable oscilloscopes comprises four models: The OS 3300B is a 50-Hz dual trace, dual timebase oscilloscope with sensitivity 1 mV/cm,



time base speeds to 10 ns/cm, 13-kV accelerating potential, and comprehensive triggering capabilities. Delayed sweep time base and composite triggering can be used to break up complex waveforms and mixed sweeps permit continuous examination of waveform portions, even for noncoherent signals. A beam finder compresses off-screen traces regardless of position settings, and a warning light indicates when a vertical channel or timebase is uncalibrated. The OS 1100 is a 30-MHz, 5-mV/cm, dual trace oscilloscope with a wide range of triggering facilities, sweep rates down to 50 ns/cm, and sweep delays from 10 μ s to 100 ms. The OS 260 is a true dual beam, dual trace, 15-MHz oscilloscope with 2 mV/cm sensitivity and sweep rates to 50 ns/cm. The OS 245A is a dual trace instrument with 10-MHz response, 5-mV/div sensitivity, and sweep rates to 100 ns/div. In the X-Y mode, channel 1 data and channel 2 data, respectively, cause X and Y deflection.—*Gould Inc., 3631 Perkins Ave., Cleveland, OH 44114.*

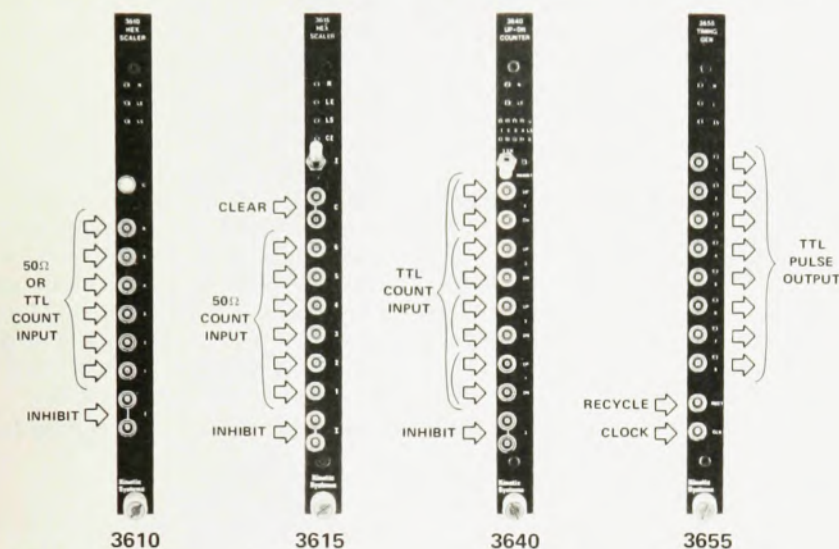
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X-Y controller

The BCS 208 is a programmable X-Y positioning system for driving stepping motors of any size. The controller is programmed entirely from the keyboard with a program that consists of numeric position data and two optional numeric control entries. The system includes the control unit and a power supply tailored to the motor

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3610

3615

3640

3655

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3610

6-Channel, 50 MHz Counter

- Six independent 24-bit counters
- Counter inputs are 50 ohm terminated or TTL (strap selected)
- Input pulse rate from DC to 50 MHz
- Independent clear by command for each counter
- LAM status bits set on overflow

3615

6-Channel, 100 MHz Counter

- Six independent 24-bit counters
- Counter inputs are 50 ohm terminated
- Input pulse rate from DC to 100 MHz
- Independent clear by command for each counter
- LAM status bits set on overflow

3640

4-Channel, Up-Down Presettable Counter

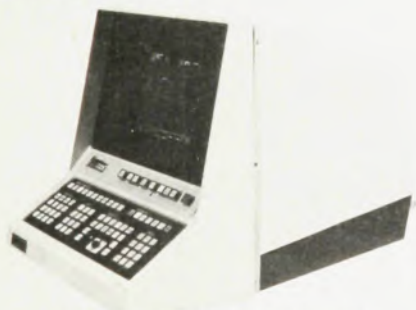
- Four independent 16-bit up-down counters
- Separate up/down inputs for each channel
- Counter inputs are TTL
- Input pulse rate from DC to 20 MHz
- LAM status bits set on underflow and overflow

3655

8-Channel Timing Pulse Generator

- Eight independent pulse outputs
- Includes eight 16-bit set point registers
- Operates from internal or external clock
- Controls Dataway Inhibit to provide timing window for counters such as the 3610 or 3615
- LAM status bit set by each pulse output

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size. The controller has external trigger capability, accepts an external start signal, permits zero reset anywhere, and provides five-digit LED display for X and Y positions. Automatic, semi-automatic, and manual operating modes can be changed during a run. The instrument can be used as a digital measuring system as well as a single axis or dual axis controller.—*Semprux Control Systems, Box 134, Los Gatos, California 95030.*

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Mass spectrometer

The MAT 250 mass spectrometer system is intended for automatic analysis of isotope ratios in gases: H/D, $^{13}\text{C}/^{12}\text{C}$, $^{15}\text{N}/^{14}\text{N}$, $^{18}\text{O}/^{16}\text{O}$, $^{34}\text{S}/^{32}\text{S}$. The spectrometer operates according to the sample/standard principle employing a double or triple collector for CO_2 and other gaseous isotope measurements;



H/D measurements can be carried out without modification of the analyzer system. An integral programmable calculator controls the pneumatic valves of the dual inlet system for viscous gas flow, centers the ion beam in the collector, evaluates the results, and prints the data. The inlet system provides for compensating automatically the pressure between sample and standard. The high accelerating voltage, 6–10 kV, and large dispersion result in an abundance sensitivity of 10^{-6} . System sensitivity is better than 0.2 A/Torr referred to the pressure in the analyzer. Internal reproducibility is better than 2×10^{-5} .—*Varian MAT GMBH, 14 40 62, 28 Bremen 10, Germany.*

Circle No. 147 on Reader Service Card

Counters

The model 1912A counter provides a frequency range 5 Hz to 520 MHz and offers period, period average, and totalize capability. Up to 10^4 periods may be averaged in the period average mode, giving a period resolution range 100 ns–10 ps. In totalize mode, 9 999 999 events may be counted at up to 125 MHz. A trigger level control and at-

tenuator provide the signal conditioning needed in the presence of noise. Input impedance is 1 M Ω from 5 Hz to 125 MHz and 50 Ω from 50 to 520 MHz. Sensitivity is 15 mV across the major portion of the input bandwidth. The display is seven-digit LED with overflow capability and full units annunciation. Options include choice of crystals, either 2 ppm or 0.5 ppm, 0° to 50°C, an internal rechargeable battery pack that will provide 4-h continuous operation, and a basic serial data output unit. The model 1925A, a similar instrument, is specifically designed to meet military specifications. Frequency range of this model is 5 Hz–125 MHz at 1-M Ω input impedance, with a 520-MHz, 50- Ω option available. Readout is nine-digit LED.—*John Fluke Mfg. Co., Inc., Box 43210, Mountlake Terrace, WA 98043.*

Circle No. 148 on Reader Service Card

New Literature

Electronic components—A 36-pp. catalog describes a wide variety of control knobs, UL approved miniature switches, panel hardware, and optoelectronic devices. The illustrated catalog gives specifications and dimensional drawings for a complete line of commercial and MIL spec control knobs; toggle, rocker, lever, push button, and slide switches; and optoisolators and photoconductive cells. Test jacks, mounting brackets, and binding posts are also covered.—*Raytheon Co., Fourth Ave., Burlington, MA 01803.*

"AC/DC, DC/DC Power Supplies"—An 8-pp. catalog covers a broad line of modular ac/dc power supplies and dc/dc converters. Product summaries are provided for the 900 series of power supplies which are available with 5–24-V output (single and dual) and current ratings from 25 mA to 2 A and for converters that satisfy a wide variety of floating single 5-V and dual 15-V power requirements.—*Analog Devices, Inc., P.O. Box 280, Norwood, MA 02062.*

"Solid State Silicon Photodiodes"—A 16-pp. product guide, OPT-112C, provides tabulated data and outline configurations for a standard line of silicon photodetectors. The line includes the following types: (1) single element and quadrant types p-i-n photodiodes, (2) avalanche photodiodes, and (3) hybrid photodiode–preamplifier assemblies. The document also features simplified selection guides for these devices, which are characterized by key system requirements and electrical characteristics.—*RCA, Box 3200, Somerville, NJ 08876.* □