

new products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy.

Microtape drive

The "Microtape" drive from Data Electronics is a 34-megabyte digital-cartridge tape drive. The high data capacity is asserted to result from the first application of 7-track technology to the quarter-inch ANSI/ECMA digital cartridge, which was until now limited to 4 tracks. Furthermore, group-code recording is



used, with a resultant bit density of 7200 bits per inch. Recording is serpentine, with adjacent tracks recorded in opposite directions. This does away with the rewind time that was previously required when moving from one track to the next. The new drive will be exhibited at the National Computer Conference in New York (4-7 June), and will be available at about \$1500 (in quantity) this summer. Data Electronics, 370 N. Halstead St., Pasadena, California 91107

Circle No. 137 on Reader Service Card

Frequency-voltage converter

The Gould model 13-14618-20 is a wide band frequency-to-voltage converter intended for the convenient measurement of frequencies from frequency generating devices such as transducers, magnetic-proximity pickups, oscillators, optical pickups and radiation detectors. This plug-in converter detects the zero crossings of sine waves, square waves or any other ac waveform from 10 millivolts to 500 volts rms, and puts out an analog dc voltage proportional to the input frequency.

The manufacturer claims 99.9% linearity on each of the nine full-scale ranges

covering the measurement range of 10 Hz and 50 kHz, and high common-mode rejection. The high-impedance input amplifier will absorb excess signal voltage, and 10^5 ohms will not load the signal source.

Fully floating input provides 1.5 kV isolation from input to output. The model 13-14618-20 offers calibrated zero suppression so that the static portion of the input signal can be suppressed by a known amount and the dynamic portion expanded. An input offset of ± 1 volt permits the use of the converter with unipolar signals such as TTL logical-level pulses that do not go through zero. Gould Inc., Instruments Division, 3631 Perkins Ave., Cleveland, Ohio 44114

Circle No. 138 on Reader Service Card

Mode-locked dye laser

Spectra Physics claim that their new, synchronously pulsed, mode-locked dye laser is the first commercially available pulsed dye laser. This system is a source of tunable picosecond light pulses, suitable for time-domain spectroscopy. Its physics applications include non-radiative relaxation and semiconductor charge-carrier recombination-time studies. The picosecond pulses can also be used to monitor dispersive effects in fiber optics, and to generate picosecond ultraviolet pulses through frequency doubling.

The system consists of the model-171 ion laser, the model-342S acousto-optic mode locker, the model-375 dye laser and the model-341 synchronously-pumping accessory package. By adding the model-344S cavity dumper and the model-343 cavity extender one has a cavity-dumped dye laser. The output pulses of the mode-locked ion laser synchronously pump the dye laser, whose cavity has been extended so that the intermode frequency spacing is an integral multiple of the mode-locker frequency. With this frequency matching, the output of the dye laser is a continuous train of tunable picosecond pulses. Longer pulses can easily be achieved by placing addi-

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Typical Applications

- ▶ Raman and other frequency-shifted scattering
- ▶ Exacting radiometry
- ▶ High-resolution luminescence
- ▶ Inductively coupled plasma analysis



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82-410



82-487

UV-vis

catalog no.
82-410

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back-to-back; UV
to IR at turn of
a knob

focal length
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focal ratio
3.5

wavelength
175 nm-1.0 μ m

dispersion
3.3 nm/mm

resolution
0.34 nm*

stray light
0.3%

full range of
accessories

vis-IR

catalog no.
82-487

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quickly
interchangeable
gratings

focal length
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focal ratio
3.85 to 4.25

wavelength
175 nm-40 μ m

dispersion
3.0 nm/mm

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0.40 nm*

stray light
0.05%

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*with 25 μ m x 18 mm slits, 1200 g/m grating

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new products

tional etalons inside the dye-laser cavity.

After initial optimization, the manufacturer tells us, the system can generate repeatable pulses for hours, without adjustment. This long-term stability allows measurements to be made with powerful signal-averaging detection techniques. The picosecond pulses have been tuned from 580 to 620 nanometers by synchronously pumping a Rhodamine 6G dye laser with the 514 nm output of an argon laser. With other dyes this tunability can be extended still further.

Because of the short pulse width, hundreds of watts of peak power can be obtained with less than 100 mW of average power. This combination of high peak power and low average power is advantageous for many applications where thermal effects must be avoided. The modular design, which permits easy conversion to cavity-dumped operation, also permits the user to convert the system to continuous-wave operation. *Spectra Physics, Laser Division, 1250 W. Middlefield Rd., Mountain View, California 94042*

Circle No. 139 on Reader Service Card

Optical multimeter

Photodyne's model-22XL optical multimeter is claimed to be the only instrument available to date that can calibrate and measure the performance of all the elements of a fiber-optics system. This portable meter measures absolute light output from sources and cables, absolute response of photoreceivers, transmission of fiber-optic cables, and losses at splices and connectors. The manufacturer asserts that this is the only meter measuring directly in decibels, decibel milliwatts and decibel microwatts, the basic units of fiber optics.

The design of the 22XL incorporates two matched silicon sensor heads and a built-in infrared LED source. The instrument autoranges in dB over nine decades, with selectable readout in decibel milli- or microwatts, a selectable 0.1-dB or 0.01-dB resolution, plus dc response and unlimited ac response. Photodyne claims that this meter offers greater sensitivity and range than any other commercially available light-measuring instrument with silicon sensor heads. The resolution is better than a picowatt, and one can measure light levels up to 2 watts. The two heads can be used in a dual mode for comparative measurements (log ratio) of two sources or cables.

All sensor heads are socketed and interchangeable, and carry their own calibration to electronics. Each head comes with a computer generated calibration. A 34-pin edge connector brings out all dig-

ital and analog signals. The price is \$685, not including sensor heads, which are priced from \$175. *Photodyne Inc., 5356 Sterling Center Drive, Westlake Village, California 91361*

Circle No. 140 on Reader Service Card

Digital phase meter

Wiltron's model-355B digital phase meter measures phase differences between two signals in a range from 10 Hz to 2 MHz. The meter has a dynamic range of 66 decibel (1 mV to 2 V, and 0.2 V to 400 V), with an input-signal voltage range of 112 dB. Within these ranges one can compare two signals of greatly differing amplitude. The test signals are applied to



two identical processing channels. The phase meter accepts either balanced, differential inputs or unbalanced, single-ended inputs. It will accept balanced and unbalanced signals together.

An error indicator alerts the user when practical range limits are reached, so that he may select a more appropriate range. Two ranges (-180° to $+180^\circ$ and 0° to 360°) are provided, so that all phase measurements can be made in the middle of the phase range. Phase readings are displayed on a 4-digit LED readout. An analog voltage proportional to the phase is provided for recording or remote display. An optional binary-coded decimal output is also available. The price is \$1990. *Wiltron, 825 East Middlefield Road, Mountain View, California 94043*

Circle No. 141 on Reader Service Card

Microcomputer

Digital Equipment Corporation claims that the model LSI-11/23 is the most powerful microcomputer yet available. It is said to have the functionality and software compatibility of a midrange minicomputer, while costing less than \$1800 (in quantity) and consisting of only two 5 by 9-inch boards and backplane. A rack-mountable, packaged version, the PDP-11/23, priced at \$4500 is also available. Both versions can run the RSX-11M and -11S multi-tasking, multi-user operating systems, previously only available on mid- and high-range PDP-11 minicomputers.

The new microcomputers are suited for use as build-in elements for complex instrumentation. The LSI-11/23 has an optional floating-point processor chip,

which permits five times faster operation than software floating point. DEC claims that this is the first microcomputer with full floating-point hardware implementation. The LSI-11/23 offers 256 kilobytes of memory capacity, with 16-bit word length. It uses the full instruction set of the PDP-11/34 mini-computer, and the software-supported memory segmentation and protection features of the RSX-11M and -11S operating systems. The microcomputer accommodates FORTRAN IV, FOCAL and other high-level languages. The CPU cycle time is 290 nanoseconds, and memory access time is 210 nanoseconds. *Digital Equipment Corp., Maynard, Massachusetts 01754*

Circle No. 142 on Reader Service Card

Gauss/flux meter

RFL Industries' model 906 is a portable, digital gaussmeter and fluxmeter for measuring both magnetic flux density and total flux. In the gaussmeter mode the instrument uses Hall-effect probes available in a variety of transverse and axial designs. It is claimed that built-in reference magnets provide an overall ac-



curacy better than 3%. Resolutions of 1 and 10 gauss respectively are provided by the 1 and 10 kilo-gauss full-scale ranges. A 100% overrange capability makes possible measurements up to 20 kilogauss on the instrument's 3½-digit liquid-crystal display.

As an integrating fluxmeter the instrument provides ranges of 10^5 and 10^7 maxwell-turns. One can use probes available from RFL, or the user can fabricate his own. The meter, which weighs 4½ pounds, is provided with a rechargeable internal battery for field operation. The price without a probe is \$665. *RFL Industries, Boonton, New Jersey 07005*

Circle No. 143 on Reader Service Card

Ion source

The model-B92 saddle-field ion source from Ion Tech Ltd is intended to permit new, low-pressure ion-plating techniques to be used for high-quality thin films. The ion source, which also produces a beam of close to 100% neutrals, is mounted in a high-vacuum evaporation work chamber alongside a resistance-

heated evaporation filament or electron-beam gun. It operates with a chamber pressure below 10^{-3} torr, and has an output equivalent to 10 milliamps of ion current, with ion energies from 0.8 to 4 keV. The beam spreads with a half angle of 12° from a 25-mm aperture. Thus it can easily irradiate a substrate work area from four to twelve inches in diameter within an average coating unit.

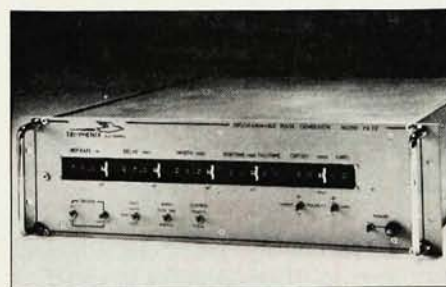
Low-pressure ion-plating techniques produce fine-grained thin films of good adhesion on clean substrate surfaces. After the ion source is energized, the neutral beam cleans contaminants from the substrate surface. This cleaning action is continued while the evaporation source is heated and the first layers are deposited. This ensures a clean surface without the pump-down interruption required by conventional glow-discharge cleaning.

This new technique can be applied to an existing vacuum-coating plant with a minimum of system engineering. The B92 saddle-field ion source can be easily installed to convert a standard evaporation system to low-pressure ion plating. *Ion Tech Ltd, 2 Park St, Teddington, Middlesex, England TW1 0LT*

Circle No. 144 on Reader Service Card

Pulse generator

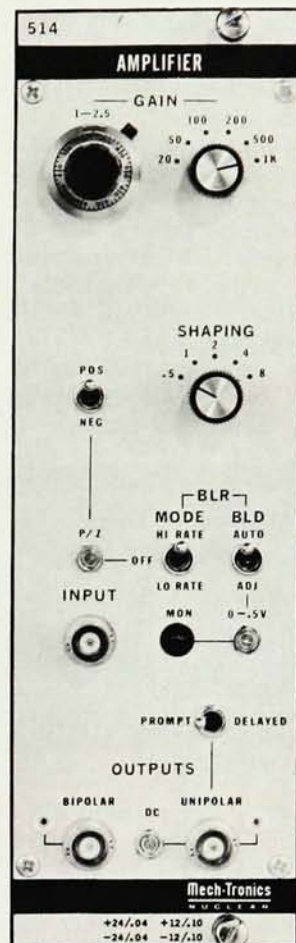
The Tri-Phenix model PX32 is a fully programmable pulse generator with repetition rates to 20 MHz and output amplitude of ± 10 volts into 50 ohms. All parameters of this general-purpose pulse generator can be programmed in BCD, either remotely or by front-panel controls. Rise time at minimum settings is less than 5 nanoseconds. An optional maximum



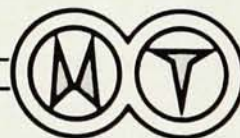
output amplitude of ± 25 volts is available. The manufacturer claims that linearity and accuracy are typically within 1%.

Repetition rate, delay, width, rise and fall times, offset and amplitude are all programmable, using an IEEE 488 bus. Trigger mode, gating pulse pair and polarities of both the output pulse and offset can also be programmed with the same bus. Each function has a unique address so that individual parameters of the pulse output can be modified without the necessity of reprogramming all functions. In fact, any one significant figure of any function parameter can be altered while the generator is active. The price

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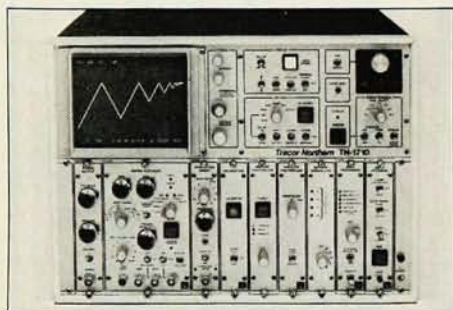
is \$4750. *Tri-Phenix Electronics, 15823 South San Pedro St., Gardena, California 90248.*

Circle No. 145 on Reader Service Card

Signal averager

Tracor Northern's TN-1710 signal averager is now available in a parametric-sweep-averaging configuration. In this configuration one can control data memory address advance by means of an externally supplied voltage. This facilitates the use of the signal averager with optical, Raman and other spectrometers that are scanned in a non-linear or non-time-dependent manner.

Other features available with the TN-1710 system include multiple data-storage memories, photometric data



processing, differentiation and integration, smoothing and normalization of data. The signal averager has I/O capacity to printers, plotters, mag-tape units, disk units and other computers systems through an RS-232-C serial interface. *Tracor Northern, 2551 W. Beltline Highway, Middletown, Wisconsin 53562*

Circle No. 146 on Reader Service Card

Miniature power supply

The Spellman model WRM.6P18KDX is a miniature, high-voltage power supply, claiming a high efficiency of 75% at full rated output. The unit is only $2\frac{3}{8}'' \times 5'' \times 1''$ in size, but Spellman asserts that it meets the stringent requirements of high-voltage, pulsed ultrasonic transducers.

This power supply is a fully regulated, high-efficiency dc-dc converter, designed to operate from an input of $+24 \pm 0.5$ volts dc, providing an adjustable output range of +15 to +600 volts at 30 microamps. Line regulation is 0.01%, and load regulation is 0.1% for zero to full load, when input variation is within 5%. At full load the output ripple is claimed to be only 0.1%. Full output-voltage adjustability is provided by remote resistance or voltage programming.

Electrostatic and electromagnetic shielding is provided by the power sup-

ply's steel container. Reflected rf interference noise on the input is less than 100 mV. The unit has reversed-polarity input protection and self-restoring short-circuit protection. The price is \$100 in quantity. *Spellman High-Voltage Electronics, 7 Fairchild Ave., Plainview, N.Y. 11803*

Circle No. 147 on Reader Service Card

Germanium photodiode

Rofin's germanium photodiode is a high-speed, wide-optical-bandwidth device. Silicon photodiodes are limited in their long-wavelength response to about 1.1 microns, while germanium continues to respond up to 2 microns. The manufacturer claims that this germanium photodiode is designed for high quantum efficiency, with a maximum quantum efficiency of about 74%. It is suited for use with HeNe lasers operating at 1.15 microns, as well as other light sources operating in the near infrared.

Each photodiode is calibrated for responsivity at 1.06 microns and zero bias. The responsivity peaks near 1.4 microns, and is typically 28% higher at 10 volts negative bias than at zero bias. The germanium photodiodes are priced at \$99. A low-leakage version is also available. *Rofin Inc., Echo Bridge Office Park, 381 Elliot St., Newton Upper Falls, Mass. 02164*

Circle No. 148 on Reader Service Card

New literature

Electro-optics—Rofin offers a catalogue of its electro-optics products for bending, filtering, shaping, chopping, attenuating and measuring light. The brochure presents laboratory models of Rofin arc lamps, modulators, high-voltage pulse and sine generators, light choppers, and photon-drag and photodiode detectors. *Rofin Inc., 381 Elliot St, Newton Upper Falls, Massachusetts 02160*

Optical filters—Corion offers its 28-page 1979 optical-filter catalogue of standard and surplus stock. The stock of filters includes laser-line filters, neutral-density filters, calibrating filters and mercury-line filters. A variety of accessories are also described. *Corion Corp, 73 Jeffrey Ave, Holliston, Massachusetts 01746*

Refractive-index increments—Chromatix offers a four-page applications note (LS-7), which includes a tabulation of specific-refractive-index increments for 55 polymer systems. These were measured with a Chromatix KMX-16 laser differential refractometer. *Chromatix, 560 Oakmead Parkway, Sunnyvale, California 94086*

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