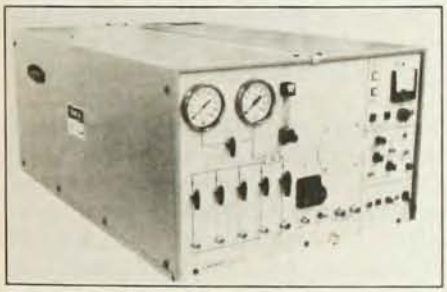
new products

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.

Excimer lasers

The Lumonics TE-290 series of rare-gas halide excimer lasers is designed to provide high pulse energies and large-area beams of particularly uniform energy density. The first laser of this new series, the model TE-292, offers single-shot pulse energies greater than



1.5 joules on KrF (249 nm) and greater than half a joule on XeCl (308 nm), with pulse rates up to one per second. With KrF the beam area is 2.5×3.2 cm, and with XeCl the gas lifetime is greater than four hours at a pulse rate of 0.5 per second. *Lumonics Research Ltd, 105 Schneider Road, Kanata, Ontario, Canada K2K 1Y3.*

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Holographic laser

Apollo's model 22-HT is claimed to be the first commercially available 3-pulse holographic laser. This ruby laser is intended for interferometric applications such as speckle diffraction, fluid and stress analysis, and nondestructive testing. When done with a two-pulse ruby laser, such holographic interferometry results in a single interferogram of two holograms registered on a photographic plate. With a three-pulse system one gets two easily identified interferograms.

With two interferograms of a single event, it is claimed, one gets considerably more information than one has from the conventional double-pulse laser. This is particularly useful in nondestructive testing. The speckle pattern generated by the two interferograms also permits micro and macroscopic analysis of fluid dynamics and strain patterns. Pulse separation can be generated from one to 500 microseconds, with an energy of up to a joule per pulse. Pulse widths are nominally 30 microsec. Prices for the model 22-HT start at $30 000. *Apollo Lasers, Inc. 6357 Arizona Circle, Los Angeles, California 90045.*

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Data converter

The SAC model DC-6 is a parallel-to-serial data converter, intended as an interface between older data-processing equipment and telephone lines. This data serializer accepts parallel input data, from which it creates serialized output suitable for transmission over phone lines. The input may come from digital voltmeters or clocks, radiation counters, spectrophotometers, pressure and temperature transducers, or any device generating parallel output data. The output of the DC-6 is compatible with standard modems, acoustic couplers, CRT terminals, time-sharing networks, and any RS-232-compatible or current-loop device.

Thus the DC-6 can interface with almost any computer. It can be introduced into existing terminal-to-modem systems using normal software—without disturbing the system. The converter is completely programmable, with a very flexible output format. Up to 34 characters can be transmitted in response to a single data-ready pulse. Baud rates, either pre-fixed or switchable, range from 112.5 to 9600. Internal programming switches permit transmission of data in binary, BCD

new products

and a number of other forms. *Science Accessories Corporation, 970 Kings Highway West, Southport, Connecticut* 06490.

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Mass spectrometer

The Kearns Group's Supavac is a new mass spectrometer intended for residual gas analysis in vacuum systems. Its mass range is 1–100 daltons, with 10% valley resolution throughout, permitting sensitive detection of low-level contaminants. The Supavac employs a dual system of two different amplifiers with Faraday cups. The Faraday/fast amplifier scans up to 60 daltons per second, and detects down to 5×10^{-10} torr. The Faraday/lownoise amplifier detects down to 5×10^{-12} torr.

The Supavac offers a one-button leak-check mode, which selects a pretuned search gas (helium or argon) and activates an audible signal-level indicator. The twin-filament ion source has a degas mode that automatically regulates the degas power ramp, to avoid excessive degas pressure. To protect the filament, it is tripped off when the pressure rises to damaging levels. *Kearns Group, 58 Buckingham Drive, Stamford, Conn. 06902.*

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Nanovoltmeter

Keithley claims that its new model 181 is the first commercially available microprocessor-based nanovoltmeter. The microprocessor is said to increase the instrument's capabilities while lowering its cost. We are told that the precision of the 181 exceeds that of any

other nanovoltmeter currently available. It provides $5\frac{1}{2}$ to $6\frac{1}{2}$ digit resolution, with a one-standard-deviation sensitivity of 10 nV.

The 181 has a built-in IEEE-488 interface. All front panel controls can be programmed from the bus. The input preamp is a microprocessor-controlled, ultra-low-noise dc FET amplifier. By multiplexing the amplifier input, the system automatically compensates amplifier drift and minimizes $1/f$ noise. In this way the traditional chopper-amplifier design has been eliminated. Digital filtering permits a variety of noise/speed tradeoffs and an order of magnitude reduction of settling times. The price of the model-181 nanovoltmeter is $2490. *Keithley Instruments, 28775 Aurora Road, Cleveland, Ohio 44139.*

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Broadband rf amplifier

The model 2000L from Amplifier Research is a 2-kilowatt amplifier for broadband radiofrequency applications. The manufacturer stresses its compact size (5 feet high$\times$4 ft^2) and light weight. The amplifier delivers 2 kW minimum continuous-wave power across its entire bandwidth—10 kHz to 220 MHz. In its pulsed mode, the 2000L delivers 4 kW minimum up to 150 MHz, at 25% duty cycle. Its pulse and blanking capability are said to make this an attractive amplifier for nuclear magnetic resonance and physics applications requiring high-power pulsing.

This class AB linear amplifier can be driven at its rated power by a 1-mW signal from a frequency synthesizer or sweep generator. The 2000L is claimed to be totally impervious to load mismatch. The entire bandwidth is instantly available without tuning or gain adjustment during sweep operations. A computer interface module is available for automatic control of amplifier switching. The price of the 2000L (without the interface module) is $38 000. *Amplifier Research Corporation, 160 School House Road, Souderton, Pennsylvania 18964.*

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Inverting transformers

Avtech's model AVX-2 is a new member of their AVX line of pulse-inverting transformers, designed for use with nansecond pulse generators, to provide an inverted output pulse equal in magnitude to the input signal. The rise and fall times of the AVX-2 are less than 60 picoseconds for a 10-nanosec input pulse, with a droop of less than 10%. The transformer is intended for use with 50-ohm systems, with voltages up to 50 volts, for example Avtech's AVH, AVP, AVM and AVN pulse generators. The model AVX-1 pulse-inverting transformer has a rise time of 300 picosec, with a maximum voltage of 250 volts. Both models measure $1.5\times1.1\times0.7$ inches. The AVX-1 and 2 are priced at $180 and $420 (US), respectively. *Avtech Electrosystems Ltd,*

PO Box 5611, Station F, Ottowa, Ontario, Canada K2C 3M1.

Circle No. 146 on Reader Service Card

Photon counting

EG & G Princeton's model 1182 amplifier/discriminator is intended for photon-counting applications. Its internally adjustable threshold and output pulse width allows it to be matched to any photomultiplier tube while discriminating against dynode pulses and noise. The amplifier's emitter-coupled and transister-transister logic output is compatible with most photon counters. It can go directly into multichannel scalers.

A monitor output measures the anode current of the photomultiplier tube. The model 1182 is claimed to

offer high immunity from radiofrequency interference and a wide operating-temperature range, making it suitable for applications in astronomy, chemiluminescence, fluorescence lifetime measurement and surface studies. The price is $825. *EG & G Princeton Applied Research, P.O. Box 2565, Princeton, N.J. 08540.*

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Cryogenic monitors

Laser Analytics have introduced two instruments intended for the continuous monitoring of cryogenic vacuum pumps. The model-ST31 indicator and the ST14 sensor, which can be used together as a monitoring system or purchased separately, are designed for the temperature range 10–300 K. The ST31 indicator is an analog instrument with enhanced sensitivity in the region 10–20 K. At 20 K its accuracy is ± 1 K. Two adjustable set points, which activate relays, can be used to control system pumping and recycling. The indicator retains its accuracy over an ambient temperature range of 0–50°C.

The model ST14 sensor is a glass-fused, silicon-diode unit, mounted in a miniature OFHC copper package. The hermetic package is insulated with beryllium oxide. Easily mounted to cold stations, it offers standard calibration conformity of better than 0.5 K at 20 K. The sensitivity of this low-noise sensor is 2.7 mV/K above 20 K, and greater than 20 mV/K below 17 K. It will withstand baking to 200 °C. *Laser Analytics, 25 Wiggins Avenue, Bedford, Mass. 01730.*

Circle No. 148 on Reader Service Card

Photodiode preamplifiers

Rofin's series-1000 preamplifiers are designed specifically for use with silicon and germanium photodiodes. They provide ac and dc amplification for photodiode signals, offering six decades of current linearity and good noise immunity. There are two models: the model 1000 operates at high gain with medium frequency response, and the 1001 offers ultra-low noise and higher impedance.

Two levels of sensitivity are available in each model. Both models operate as transimpedance amplifiers, with the photodiode connected directly to the virtual ground of an operational amplifier configuration. The operation of the photodiode is always linear as it feeds an effective short circuit provided by the virtual-ground amplifiers. Model 1000 is priced at $295. *Rofin Inc., Echo Bridge Office Park, 381 Elliott Street, Newton Upper Falls, Mass. 02164.*

Circle No. 149 on Reader Service Card

New literature

Reflectors. Melles Griot's new 28-page brochure describes in detail what is said to be "the widest range of mirrors and reflectors available anywhere." A substantial number of these are new products. The brochure also describes several new proprietary coatings. *Melles Griot, 1770 Kettering Street, Irvine, California 92714.*

Microwave catalog. Wiltron's 1980 catalog describes their complete line of microwave measurement systems, instruments and components. New products include the 5610 automated scalar-network analyzer. The catalog also serves as a microwave measurement handbook. *Wiltron, 825 East Middleton Road, Mountain View, California 94043.*

Optical coatings. A 12-page brochure from Balzers describes their extensive line of thin-film products—now produced for the first time in the United States. The brochure displays reflection and transmission spectra for antireflection coatings, filters and beamsplitters. *Balzers, 8 Sagamore Park Road, Hudson, N. H. 03051.* □