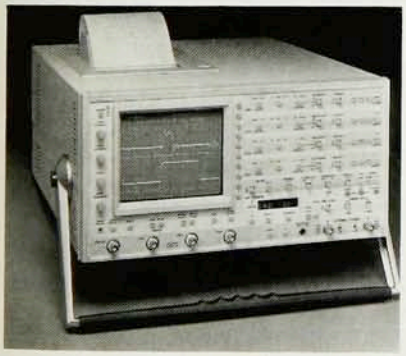
The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

High-Speed Digital Oscilloscopes

Gould has introduced a new line of digital storage oscilloscopes—the 4080 series. One of the two models, the four-channel Model 4084, offers a digitizing rate of 800 megasamples/second and is priced at $13 800. The new oscilloscopes can capture very short single-shot events with a time resolution down to 1.25 nanoseconds. They offer dual-timebase operation similar to that found on many real-time oscilloscopes. This allows the user to get an overview of a repetitive signal and to zoom in on structural detail.

The Model 4084 samples at 800 megasamples/sec in a two-channel



mode at 125 ns/division, and at 400 megasamples/sec in a four-channel mode. The other model, the 4082, offers a sampling rate of 800 megasamples/sec in a single-channel mode at 125 nsec/division timebase range, and a rate of 400 megasamples/sec in a dual-channel mode at 250 nsec/division. A storage length of 2 K words per channel lets the user view signals 2.5 μsec long at a resolution of 1.25 nsec.

The 4080 series offers a range of signal triggering functions, including delay by time or events triggering. One can also trigger the oscilloscope after a fixed number of trigger events. A hand-held waveform processor provides a range of post-storage processing functions such as fast Fourier transforms and trace calculations. It also provides a range of signal-capture functions such as limits testing and envelope mode, and signal measurement functions such as rise time, overshoot and rms values.

The most commonly used controls are all directly accessible from the front panel, and the menu functions are accessed from a "shallow", two-level menu system. All commonly used front-panel setups can be stored and recalled on demand. The price of the Model 4082 is $8900. *Gould Electronics, 3631 Perkins Avenue, Cleveland, Ohio 44114*

Circle number 140 on Reader Service Card

Thickness and Rate Monitor for Thin Film Deposition

The Model STM-100 thickness and rate monitor from Sycon Instruments is a precision mass and film-thickness measuring instrument for use in thin-film deposition processes. The unit utilizes a 6-MHz oscillating quartz crystal as the sensor. The instrument's LSI and microprocessor technology lets it take precise account of the frequency shift versus mass-loading characteristics of the quartz crystal sensor. It converts the measurement of the material accumulated on the sensor crystal to the film thickness, using the exact characteristic equation, thus avoiding inaccuracies due to approximations and limited ranges of material constants.

A high-frequency internal reference lets the instrument make and display four measurements per second with 0.1-angstrom resolution. The manufacturer describes the Model STM-100 monitor as "the highest-resolution, most accurate, and most versatile quartz-crystal-based thickness rate monitor to date."

The instrument is equipped with 4 setpoint relays, 4 remote input con-

trol lines, a serial RS-232C computer interfaces supporting two protocols, and bipolar high-resolution analog-recorder output for rate or thickness. IEEE-488 or BITUS computer interfaces are available options. The unit may be configured to operate in a negative rate mode. A frequency-only mode is also available for chemistry applications requiring a sensitive quartz-crystal microbalance. *Sycon Instruments, 6757 Kinne Street, East Syracuse, New York 13057*

Circle number 141 on Reader Service Card

Portable Instrumentation Amplifier

The new Model 29 precision amplifier from Leyh Instruments is a portable and complete unit that requires only a standard wall outlet for its power source. It has a fully differential, low-noise input stage, and it provides 0.1% gain accuracy, 50-ohm output drive capacity and an integral, low-pass filter.

Extensive protection circuitry has been designed into the Model 29 to guard against a number of fault conditions. Each input can withstand a full overvoltage of 40 volts, for a total of up to 80 volts differential. The power supply connections to the amplifier are protected against reverse polarity, and any bipolar supply from ± 15 to ± 25 volts will suffice if the wall-plug adapter (included with the unit) is not used.

The amplifier's circuitry is housed in a die-cast aluminum shell that is said to provide excellent shielding from electromagnetic and radio-frequency interference, as well as resistance to mechanical shocks. The unit price is $256 if one buys 10 or more amplifiers. *Leyh Instruments, 701 Welch Road, Suite 1119, Palo Alto, California 94304*

Circle number 142 on Reader Service Card

Enhancing the Resolution of Germanium Detectors

EG&G Ortec tells us that "it is no longer necessary to accept the energy resolution of a germanium detector as is". The firm's new Model 675 Ge resolution enhancer electronically eliminates the unfavorable effects of majority-carrier trapping in germanium gamma-ray spectrometers. This improves the energy resolution significantly in situations involving charge trapping or ballistic deficit effects in P- and N-type detectors.

The Model 675 makes individual corrections on every pulse received; none are discarded. Thus the resolution improvement is accomplished without loss of detector efficiency. A data sheet, available from EG&G Ortec on request, gives examples of performance improvement for a variety of Ge detectors with relative efficiencies ranging from 14% to 77%. The firm also offers copies of recently published technical papers on the new technique. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831-0895.*

Circle number 143 on Reader Service Card

Polaroid Improves Its 4″×5″ Film Holders

Polaroid is introducing an improved version of its Model 545 film holder that is claimed to offer greater functionality, performance and reliability for photography in physics research. Placed in a 4×5-inch imaging system, the Model 545 holder positions and processes individual sheets of Polaroid instant film or, for that matter, conventional 4×5-inch film.

To expose and process Polaroid film in the Model 545 holder, the photographer sets the film holder's lever to the "load" position, inserts an individually packaged sheet of film and retracts the light-tight, paper envelope. After exposure, the paper envelope is reinserted and the lever moved to the "process" position. The photographer pulls the film through rollers that break the chemical pod, spreading the processing chemicals across the film. After the appropriate processing time the paper envelope is removed and the film peeled apart, revealing the finished image.

The Model 545 film holder was introduced more than 20 years ago. The present improvements to this 28-ounce device include a strengthened processing lever, less susceptible to breakage; a roller mechanism that produces a more consistent spread of the chemicals; adjustments to prevent "flyby," in which the paper envelope slips out of the holder and cannot be reinserted; and changes in the end clip to minimize jamming during the catch-and-release function.

Polaroid advises researchers who bought Model 545 film holders before 1986 or who use newer ones heavily to trade in their old holders for the latest version. As an inducement, they offer research users a 5-year warranty, a

print archive and a *Guide to Instant Imaging* if the purchase is made before next July. *Polaroid, 575 Technology Square, Cambridge, Massachusetts 02139*

Circle number 144 on Reader Service Card

Triple-Grating 0.5-Meter Spectrometer

Acton Research has introduced its new Spectrapro-500 triple-grating spectrometer with a focal length of 0.5 m. The new instrument's triple indexable-grating turret allows installation of one, two or three gratings at the same time. Other features include proprietary autotracking electronics, direct digital scanning, a fast $f/6.9$ optical system, microprocessor control and compatibility with focal-plane detectors and RS-232 computers.

The autotracking electronic system automatically tracks each grating in-

stalled in the Spectrapro-500. It tells the user what grating is in operating position as well as the groove spacing and blaze wavelength for that grating, and it automatically displays the correct wavelength for the gratings installed—all on a large, backlit LCD display.

From the built-in control panel one can change gratings, adjust scanning speed, program repeating scans or scan manually. The Spectrapro–500 accepts standard EG&G Princeton instruments and other focal-plane detection systems. Optional accessories include fiberoptic input capability, light sources, detection systems and sample wheels. *Acton Research, P.O. Box 215, 525 Main Street, Acton, Massachusetts 01720*

Circle number 145 on Reader Service Card

Current Monitor for Pulsed Electron Beams

Ion Physics is offering a sensitive current monitor that can measure ac and pulsed currents of electron beams of any width up to a diameter of 5 feet. The new current monitor, Model CM-10-ES, measures ac and pulsed currents up to at least 500 kA in a current-carrying conductor or beam of charged particles. The monitor is basically a loop that generates an output voltage proportional to its sensitivity (which ranges from 10 mV/A to 100 mV/A) times the current threading the loop. The output can be read on a voltmeter, oscilloscope or other measuring device.

The monitor provides a uniform frequency response up to 5 MHz and a rise-time response on the order of 100 ns. It can withstand temperatures up to 100 °C. Its accuracy, we are told, can be as good as $\pm 3\%$, depending on frequency, temperature and other variables. This passive device can be built to user requirements, with provision made for eliminating interference noise and ground loops. *Ion Physics Corporation, 323 Andover Street, Wilmington, Massachusetts 01887*

Circle number 146 on Reader Service Card

Turbomolecular Vacuum Pump with Magnetic Bearing

At last month's Vacuum Society show in Boston, Leybold exhibited a new magnetic-bearing turbomolecular pump designed to improve pump life and minimize maintenance requirements. The new bearing system consists of a combination of passive, permanent-magnetic bearings and one actively controlled bearing. This lubricant-free pump can be mounted in any desired position. Its built-in power generator provides active bearing control even in the case of complete power failure.

This hydrocarbon-free pump is quite shock resistant, promising low levels of vibration and noise. The pump incorporates an integral inert-gas purge system. The solid-state power-control unit has a built-in process-control system with RS-232 interface and drive control for backing pumps and pump system components. It is sized for mounting on one half of a standard 19-inch rack. *Leybold Vacuum Products, 5700 Mellon Road, Export, Pennsylvania 15632*

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