

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. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

Fast signal amplifier with wide dynamic range

LeCroy's model 612 AM is a fast signal amplifier stressing high rate, wide dynamic range and good stability for applications where high-speed analog signal processing or critical timing is important. Packaged six channels per module, the unit features a bandwidth from dc to 100 MHz with adjustable maximum gain of 40. Maximum output is -5 V into two $50\text{-}\Omega$ loads. Input noise is less than $50\text{ }\mu\text{V}$. The Model 612 AM offers both input and output protection.

Good stability is achieved with a high-speed amplifier circuit design that is claimed to render the performance of the instrument virtually independent of external variables such as supply voltage or temperature. Input and output quiescent dc levels remain small even when the module is moved from bin to bin or if operated under temperature extremes. There is essentially no warmup drift at startup; the linearity is 0.2%. Applications using photomultipliers, photodiodes, channeltron and microchannel plate signals include scintillation counting, fluorescence, decay measurements and laser ranging.

The 612AM is packaged in a #1 NIM module and is directly compatible with standard LeCroy ADCs and multichannel discriminators. The price is \$1465. *LeCroy Research Systems, 700 South Main Street, Spring Valley, New York 10977*

Circle number 140 on Reader Service Card

Solid-state engine uses memory effect

A simple engine has been designed by Innovative Technology International. Known as the Thermobile, it converts low-grade thermal energy into mechanical energy by means of a Nitinol wire looped around two wheels. Nitinol is a nickel-titanium alloy that



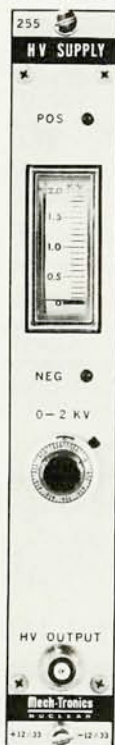
reacts forcefully to small changes in temperature: Its "memory effect" causes the wire to revert to its original shape; when a Nitinol wire is bent around a metal wheel and heated in hot water, it forcefully straightens out, thus spinning the wheel. The engine will continue to spin as long as the Nitinol wire remains heated.

The Thermobile engine was designed to demonstrate to engineers a new possible source of low-cost mechanical energy. It would also serve as a classroom demonstration. Potentially, the engine can operate on any inexpensive or waste heat source, for example sun-warmed water, discarded industrial fluid or heat released from combustion engines, boilers, electronic equipment and computers. As long as a low-temperature heat source is available, the Thermobile will generate power. The design of this engine is claimed to be unique in that the heat source can be in either an open or closed system. The power increases with the number of Nitinol wires used in the engine. Current tests, which have already passed 70 million cycles, indicate no fading of memory effect or breaking of the wire or wire joint. Small demonstration engines are available at nominal cost. *Innovative Technology International, 10747-3 Tucker St., Beltsville, Maryland 20705*

Circle number 141 on Reader Service Card

NEW

2 kV : 2 mA POWER SUPPLY



**Model 255
\$600.00**



- Single Width NIM
- 0 to 2 kV Output with Front Panel Meter
- Reversible Polarity with Front Panel Indicators
- Output Short Circuit and Arc Protected

Mech-Tronics

NUCLEAR

430A Key Ave., Addison, IL 60101

For more information
WRITE OR CALL COLLECT
(312) 543-9304

Circle number 45 on Reader Service Card

CONTROL/MEASURE LOW* TEMPERATURES

* ANY TEMPERATURE WHERE LOW
SENSOR SELF HEATING IS A MUST.



LR-400

Auto-Balance Four Wire AC Resistance Bridge.

4 1/2 DIGIT DISPLAY. 8 RANGES OF
.02Ω TO 200KΩ. LINEARITY .025%.
4 1/2 DIGIT SET RESISTANCE CONTROL.
IDEAL FOR PLATINUM OR GERMANIUM
SENSORS. DIGITAL IN/OUT OPTION.
MUTUAL INDUCTANCE READOUT OP-
TION.



LR-110

Manual Balance AC Resistance Bridge

SETABLE TO 1 PART IN 100,000
GOOD CHOICE WHERE SENSORS
FALL BETWEEN 1KΩ TO 1MΩ.
3 WIRE/2 WIRE MODE.



LR-130

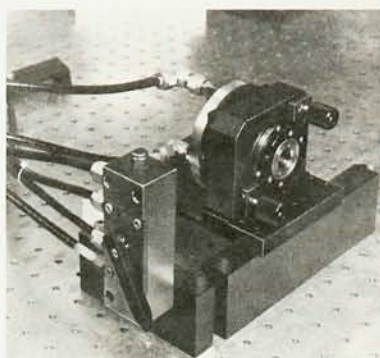
Temperature Controller

CAN BE DRIVEN FROM EITHER OF
THE ABOVE BRIDGES OR FROM
YOUR OWN BRIDGE OR LOCK-IN.
WIDE-BAND, INTEGRATION, AND DE-
RIVATIVE TUNING ALLOWS FOR SU-
PERB STABILIZATION OF THERMAL
TIME CONSTANTS FROM 0.1 TO 1,000
SECONDS.

LINEAR RESEARCH

5231 Cushman Place
Suite 21
San Diego CA 92110
Phone (714) 299-0719

new products



Tunable dye cell for use as passive mode locker

A new tunable flowing-dye cell from
Lasermetrics allows "total optimiza-
tion" of mode-locked lasers, we are
told. The model FDC-100 offers a con-
tinuously variable optical path length
in the dye medium, over a specific
range. Varying the optical thickness of
the dye solution is accomplished, with-
out disturbing optical alignment of the
laser system, by simply rotating an
adjustment ring.

The windows, which will withstand
more than 20 gigawatts/cm² power
density, are made of a proprietary,
specially doped, uv-absorbing glass.
These windows extend the life time of
most standard dyes, which degenerate
when exposed to uv from the laser flash
lamp. One window of the cell may be
replaced by a dielectrically coated re-
flector and used as the rear mirror of
the laser system. This interchangeable
mirror can also be provided in a num-
ber of radii of curvature. The cell,
therefore, may be used in either the
transmissive or reflective mode.

Noncorrosive, chemically stable ma-
terials such as stainless steel, teflon
and Kalrez are used in the construction
of the dye cell, ensuring that the dye is
not contaminated by any system com-
ponent. Hydrodynamic design of the
flow chamber is said to ensure a perfect
laminar flow for laser pulse stability.
The dye flow rate through the chamber
is also adjustable by using the integrat-
ed flow regulation manifold. *Lasermetrics*,
196 Coolidge Avenue, Englewood,
New Jersey 07631

Circle number 142 on Reader Service Card

Signal enhancer for sampling oscilloscope

The model SE10 signal enhancer from
Opto-Electronics is a signal-averaging

system designed to improve the signal-
to-noise ratio of signals obtained by a
sampling oscilloscope in the subnanose-
cond and gigahertz domains. The max-
imum signal-to-noise improvement, we
are told, is a factor of 220. The SE10
works in conjunction with a Tektronix
7000-Series oscilloscope, with 7S11 and
7T11 plug-in units. Connections to oth-
er sampling oscilloscopes are available.

The SE10 digitizes the vertical and
horizontal signals from the sampling
units and averages the oscilloscope
traces. Since the SE10 works with the
sampled signals (not the input signals),
the full bandwidth of the oscilloscope is
preserved. The averaged data may be
displayed on the real-time channel of
the sampling oscilloscope or on a sepa-
rate scope. The display can be scaled in
the vertical direction, thus permitting
examination of entire signals or signal
details that were originally too small to
see.

Other features of the instrument in-
clude the calculation and digital dis-
play of the risetime and pulsewidth of
pulse signals, an RS232-interface that
permits transfer of the averaged data
to an external computer, and interrupt-
driven, front-panel controls and dedi-
cated display electronics. The combina-
tion of the latter two features enable
the system to run as fast as the sam-
pling oscilloscope, (approximately
30 000 samples/sec), thus permitting
the SE10 to be used as a near real-time
signal averager or a high-speed data
acquisition system. The price is \$7630
US. *Opto-Electronics*, Unit 9, 2538
Speers Road, Oakville, Ontario L6L
5K9 Canada

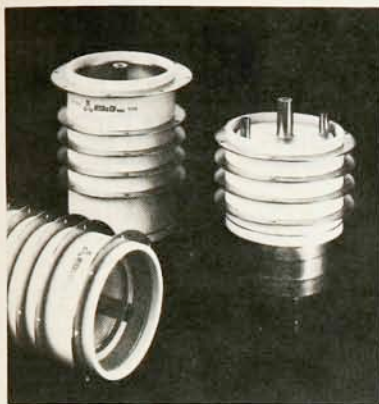
Circle number 143 on Reader Service Card

Ceramic-metal thyratrons and triggered spark gaps

EG&G Electro-Optics is introducing a
variety of ceramic-metal hydrogen
thyratrons and triggered spark gaps.
The 5000 series of multistage tubes is a
low-inductance line, featuring an auxil-
iary grid for precision triggering and
fast switching. It is designed for use
with command charge in oil. Tubes in
the series are 5" in diameter and 9"
high; the large, efficient cathode is said
to result in high current capability and
long life.

The 3400 series of ceramic-metal
thyratrons is designed for pulsing gas
lasers. The series is packaged in 3"-
diameter tubes. Available as triodes
and tetrodes with auxiliary grids for
precise triggering, these tubes are said
to offer long life, convection or water
cooling, fast recovery time, 6-10 Hz
repetition rates, and 10-20 nsec switch-
ing times. Rating are up to 35 kV, 2.5
kA for 5 μsec or 6 kA for 500 nsec.

The model-GP4615 triggered spark



gap is a small, rugged, ceramic-metal gap that operated up to 30 kV, 5 kA, 5 joules, 5Hz for 5-10 million shots. Its small size—only 1" in diameter $\times$ 1.5" in length—suits it for use with CO₂ and other pulsed gas laser systems. *EG&G, Electro-Optics, 35 Congress Street, Salem, Massachusetts 01970*

Circle number 144 on Reader Service Card

Storage dewars for liquid helium

Janis Research has introduced a new line of low-cost, light-weight storage dewars for liquid helium. These dewars incorporated a newly designed thermal insulation that is claimed to provide "dramatically improved efficiencies" over containers currently on the market. The evaporation rate is also correspondingly decreased.

The inner diameter of the neck is 2 inches, allowing one to use these containers as "dipping dewars" with a wide variety on insert cryostats. Containers are available in three sizes: 35, 65, and 100-liter capacities. The weight of the empty 35-liter dewar is 50 lbs. A variety of accessories is available to increase the dewar's versatility in areas such as air transportation and laboratory mobility. *Janis Research Company, 22 Spencer St, PO Box 487 Stoneham, Massachusetts 02180*

Circle number 145 on Reader Service Card

High-frequency variable optical chopper

Light beams up to an inch in diameter can be chopped at any frequency from 500 to 20 000 Hz using Scitec's new model 300 chopper with the model 300-HF high-frequency accessory. The new accessory utilizes the Moiré effect between fixed and rotating blades to modulate the total transmittance of a 1-inch-diameter aperture between zero and a maximum 50% of incident intensity. Photolithographic blade manu-

facturing and high-quality electronics and motor, we are told, combine to provide a chopped-beam phase stability of 0.5° peak-to-peak or better.

The model 300HF high-frequency accessory costs \$275 and requires that the user also have the basic Scitec 5-to-300-Hz variable-speed chopper (model 300, analog or digital), yielding a system continuously variable in chopping frequency from 5 to 20 000 Hz. Scitec Instruments is a British firm. In the US, contact *Boston Electronics, 72 Kent Street, Brookline, Massachusetts 02146*

Circle number 146 on Reader Service Card

Streak tube with two-picosecond time resolution

The Hamamatsu N1357 is a streak tube capable of measuring phenomena as short as two picoseconds. The tube has a multi-alkali photocathode on a uv-transmitting glass window. This combination is said to produce high sensitivity from the ultraviolet to the infrared. A microchannel-plate electron multiplier is included in the tube, obviating the need of external light intensification. The N1357 is designed for two-picosecond time-resolved studies in such fields as laser spectroscopy, laser fusion and optical communication. *Hamamatsu Corporation, 420 South Avenue, Middlesex, New Jersey 08846*

Circle number 147 on Reader Service Card

Contactless probe for thin-film conductivity

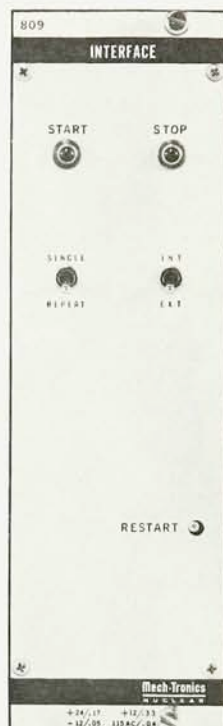
The model 1010 from LEI is a contactless conductivity probe for measuring the sheet conductance of semiconductor wafers and thin-film layers. It permits the nondestructive characterization of diffusions, implants and epitaxial and thin-film depositions. Furthermore, the instrument's bulk-conductivity display mode is convenient for characterizing starting wafers of known thickness.

Because measurements are made without contact, samples are not modified in any way. Using advanced eddy-current technology that employs feedback linearization circuitry, the model 1010 measures sheet conductance up to 1.0000 mho per square and displays bulk conductivity up to 10.000 mhos/cm. A transducer size of only 0.56" diameter permits mapping across wafer surfaces. The modified model 1010A is available with display ranges to 100.00 mhos per square and 1000.0 mhos/cm. *Leighton Electronics Inc, PO Box 328 Leighton, Pennsylvania 18235*

Circle number 148 on Reader Service Card

NEW

"INTERACTIVE" INTERFACE



**Model 809
\$900.00**



- Primary Channel RS232C Communications loop for ASCII Code Terminals
- Secondary RS232C and 20 mA Current Loop Outputs for ASCII Code Printers
- Accommodates Current Loop Terminals with internal jumper and switch position change
- Accepts up to 10 MTN Scalars or Timers of up to 8 digit capacity

Mech-Tronics

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430A Kay Ave., Addison, IL 60101

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