

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.

Storage oscilloscope

The 1741A oscilloscope combines the advantages of variable persistence to integrate glitches or low-duty-cycle traces into clear displays, with the advantages of storage, for single shot events. Writing speed is 100 cm/ μ sec. An auto erase mode produces single shot displays at rates up to 1/sec. The sequence of scan, display, erase, and



reset is automatic. To read a stream of data, the instrument can be set to scan, display, erase, and quickly repeat the sequence, automatically. A variable brightness control is provided and the CRT is protected by a dynamic feedback, current-limiting circuit for burn resistance. To relate the timing of events in a pulse system accurately to one another and to the triggering event, external trigger is shown as a center screen third trace in alternate or chopped modes. Sensitivity is 5 mV/div at 100 MHz, and 1 mV/div to 30 MHz, with a $\times 5$ magnifier.—*Hewlett-Packard Co., 1501 Page Mill Rd., Palo Alto, CA 94304.*

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Frequency source

The model 110 is a stable, high-resolution frequency source that produces square waves from below 0.5 Hz to above 50 MHz. The instrument's stable oscillator is tunable over a range of approximately 11–52 MHz with a six-turn control; the output of the oscillator may be prescaled by 4 and/or divided

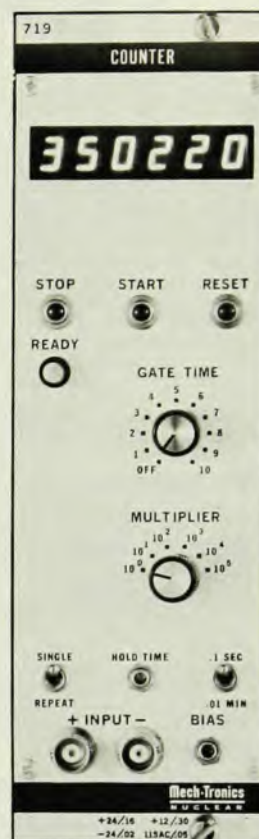
by 1, 10, 10^2 , 10^3 , . . . , 10^7 , to provide frequency coverage down to less than 0.5 Hz. The output frequency may be determined to better than six digits even at low frequencies by connecting a standard counter to an output that is provided after prescaling but before decade division. This permits measurement at frequencies high enough for the counter to operate with a 1-sec or shorter gate time. The oscillator may be disabled and the instrument driven externally from below 100 Hz to above 50 MHz for prescaling and division. Two of the instruments, when properly connected in series, will extend frequency coverage to below 1 cycle every 5 days. A 10-turn control produces a frequency change approximately 0.5% at any frequency. This control may be disabled to allow a frequency variation of approximately 1% from an external voltage of +1 to +15 V to permit the source to be frequency modulated or to become part of a phase lock loop.—*Matec, Inc., 60 Montebello Rd., Warwick, RI 02886.*

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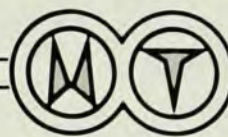
Silicon photodiodes

Three of these new devices, the C30817, the C30884, and the C30895, are supplied in low-profile TO-5 packages and have useful photosensitive areas of about 0.5 mm². The other, the C30872, is a large area photodiode; its useful photosensitive area is about 7 mm². This diode is supplied in a low-profile TO-8 package. The C30817 and C30872 have a useful spectral range extending from about 400 to 1100 nm and rise and fall times of typically 2 nsec. The C30884 has very high modulation capability, up to 400 MHz, and typical rise and fall times of 1 nsec. Its spectral range is from 400 to 1100 nm. The C30895 is optimized for high responsivity and low noise at 1060 nm. Its spectral range extends from about 700 to 1100 nm. Rise and fall times are typically 2 nsec. This device is also designed for use in adverse en-

20 MHz COUNTER



Model 719
\$585.00



- Adjustable Display Time
From 1 to 5 seconds
in REPEAT Mode
- Positive and Negative
Discriminator Inputs
- 20 MHz Counting Rate

Mech-Tronics

NUCLEAR

430A Kay Ave., Addison, IL 60101

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POWER MODULE



Model 2202

To regulate an AC-line connected load by means of a small DC signal from an automatic control instrument. It supplies large amounts of power for control of resistive heaters, thermo-electric elements, light sources, etc. in temperature controlled ovens, vacuum deposition equipment, infrared heat sources, temperature baths and other applications. The instrument features a pulse-width-modulated zero crossing - fires TRIAC circuit to minimize RF interference, electronic protection against current overloads and voltage transient, and provides linear control to a AC power line up to 25 Amp. (110 V or 220 V).

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LABORATORY Temperature Controller



Model 5301-E

With an input circuitry designed to accept resistance or voltage generating temperature sensors such as GaS-diodes, thermocouples, Ge & Pt Sensors, Carbon Resistors and Thermistors. The 5301-E, three mode controller offers temperature regulation to better than 0.01°K (or $^{\circ}\text{C}$) in Vacuum chambers, Cryogenic dewars, Optical ovens, Tensile strength test apparatus, etc. for physics, metallurgy, chemistry and other scientific fields where the control and temperature range requirements are broad or change frequently. Set point readout is either directly in mV or Ohms (4-terminal measurement), with unlimited temperature range. Proportional, rate and reset modes are all internally adjustable, allowing to tune the controller to the thermal time constants of the process. 100 Watts, DC output or up to 5KW with Model 2202.

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new products

vironments.—*RCE Solid State Div., Box 3200, Somerville, NJ 08876.*

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Single crystal tungsten

Single crystal disks used as electron target materials to produce x-rays are now available. They are an excellent x-ray target material because the high melting point allows high electron flux density. As a single crystal, the material exhibits much higher thermal conductivity than does polycrystalline tungsten. This permits miniaturization of the x-ray source. The disks are available from Aremco in diameters from 0.125 to 0.373 in. and minimum thickness of 0.010 in.—*Aremco Products, Inc., P.O. Box 429, Ossining, NY 10562.*

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Thermal shock test unit

The model 7106 liquid-to-liquid thermal shock test unit operates with two specimen baskets that interchange between hot and cold liquid baths. Each stainless steel basket has a diameter of 12 in. and is 12 in. high. An electrically operated transfer system raises both baskets, delays an adjustable interval of time for draining, rotates 180° , and lowers, thus cycling the test loads. The chamber is available with mechanical refrigeration or cryogenic cooling, or both, and is rated for -70 to $+200^{\circ}\text{C}$. Proportional controllers, cycle counters, adjustable timers, digital temperature readout, and a maintenance indicator panel are standard. Agitators that do not require seals enhance heat transfer.—*Ransco Industries, 2221 Statham Blvd., Oxnard, CA 93030.*

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Specimen stage

The model 032 stage for use with the Balscan scanning electron microscope has a chamber size $6 \times 10\frac{1}{4}$ in. and full controls for handling extra large specimens of unusual shape. With an X-Y travel ± 38 mm, 0° - 90° tilt, 360° continuous rotation, and an externally variable Z-axis control of 8-38 mm, a specimen area 3 in. in diameter can be examined in its entirety, at all magnifications, without specimen remounting. The X-Y traverse, Z working distance, tilt, and rotation, are all digitally displayed. The stage is hinged-mounted to provide rapid access for specimen interchange, and bayonet-type mounts accommodate standard

Cambridge stubs for specimen attachment. Built-in clutches on the control knobs protect specimens, the stage mechanism, and the instrument. The clutches can be individually adjusted for particular requirements. Optional items include a 36-pin electrical feed-



through and a BNC connector for collection of specimen current.—*Bausch and Lomb, Dept. 6602, Rochester, NY 14602.*

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Plastic scintillator

A polyvinyltoluene-base scintillator with twice the light output of acrylic scintillators has been introduced. The NE-114 is designed for large-area, high-volume use.—*Nuclear Enterprises, Inc., 935 Terminal Way, San Carlos, CA 94070.*

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dc voltage reference

The AN3100 portable, line-powered dc voltage standard is furnished with a test report and certificate of performance that specifies calibration voltages, calibration equipment employed, final calibration accuracy to six places, and traceability to NBS standards. The reference source provides up to 222 221 discrete voltage outputs. Five dialable decade controls furnish full-scale dc voltages of 1.0, 0.1, 0.01, 0.001, and 0.0001 V. Absolute accuracy is said to be 50 ppm of the reading ± 50 μV over a six-month interval following primary transfer calibration. The instrument offers 100- μV resolution in the setting of any selected voltage up to the maximum of ± 11.1110 V at currents up to 50 mA. Maximum dc output impedance is 10 m Ω . After a 10-min warmup, stability with respect to temperature change is ± 2 ppm/ $^{\circ}\text{C}$ from 0 to $+60^{\circ}\text{C}$. Noise is less than 0.001% of the reading ± 50 μV . An auxiliary output provides outputs up to ± 11.1110 mV with 1- μV resolution. Outputs are ungrounded and may be floated 500 V dc from ground. Polarity

is switch reversible with settling time less than 300 msec. Voltage output is short-circuit proof.—*Analogic, Audubon Rd., Wakefield, MA 01880.*

Circle No. 146 on Reader Service Card

Direct drive vacuum pumps

In these pumps, lightweight modular construction permits quick replacement of all working parts. The 30-l/min single-stage pump is especially suitable for general lab work. It weighs 7.25 kg and can be carried by a removable handle. An anti-suck back valve prevents oil backup into the vacuum system when the pump is stopped. An elastomeric valve permits gas ballast operation. Particles are removed by an oil filter. Splash is eliminated by a baffle at the outlet. The entire pumping mechanism is removable as a single module. A module replacement package permits complete overhaul of the pump in 5 min by untrained personnel. Ultimate vacuum is better than 0.7 Pa.—*Central Scientific Co., 2600 South Kostner Ave., Chicago, IL 60623.*

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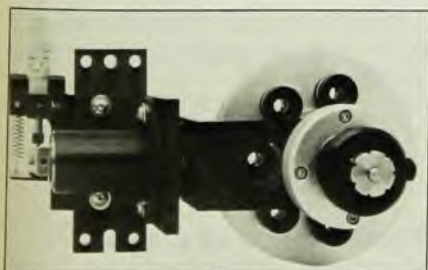
Test instruments

Included in this line are digital universal timers, digital frequency counters, and an automatic AM/FM modulation meter. Standard features include RFI-shielded enclosures, bright LED readout, 10-mV sensitivity, automatic gain control input circuitry, and $\pm 3 \times 10^{-7}$ /month crystal stability. Optional features include ultrahigh stability, crystals in ovens, battery packs, carrying cases, and ultralow direct frequency measurements.—*Data Tech Div., 2700 South Fairview St., Santa Ana, CA 92704.*

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Laser frequency doubler

Frequency doubler accessories for tunable dye lasers extend the continuous tuning range of nitrogen-pumped dye lasers to 217 nm in the ultraviolet.



The doublers incorporate three KDP (potassium dihydrogen phosphate) and three KPB (potassium pentaborate)

crystals in a turret and fine-angle tuning mechanism. Models DL072 and SP105 are available to mount extracavity to the DL series and Spectroscan pulsed dye lasers, respectively. The crystal assemblies may be selected individually if the full doubling range is not immediately required. Each crystal incorporates a filter to reject the fundamental beam. Pulse duration of the doubled output is about 3 nsec and conversion efficiency varies between 0.5% and 10%. Doubled pulse powers as high as 10 kW have been obtained.—*Molelectron Corp., 177 N. Wolfe Rd., Sunnyvale, CA 94086.*

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New Literature

Infrared analytical accessories—A 36-pp. catalog gives a complete listing of accessory products used for infrared spectroscopy. Product descriptions, photographs, and complete technical specifications are included. The accessories can be used with all standard infrared spectrophotometers, including models manufactured by Perkin-Elmer, Beckman, Varian, and others. Accessories covered in the catalog include: crystals, featuring a transmitting guide; gas sampling accessories, including ultramicro gas cells and econo gas cells; liquid sampling cells and holders; solid sampling accessories; reflectance units; and other useful accessories.—*Barnes Engineering Co., 30 Commerce Rd., Stamford, CT 06904.*

"Knobs switches hardware"—A 20-pp. illustrated catalog contains complete specifications and ordering information on five different series of control knobs: push-button, miniature toggle, and rocker-lever switches; test jacks; mounting hardware; and binding posts.—*Raytheon Co., Distributor Products Operation, Fourth Ave., Burlington, MA 01803.*

Motion control valve—Brochure B7539, 4 pp., describes a valve adaptable for any rotary or linear actuator. The brochure gives the advantages of the Rotac MCV including improved machine performance, longer machine life, reduced maintenance, and ease of installation.—*Ex-Cell-O Corp., Rotac Products, 945 East Sater St., Greenville, OH 45331.*

ICs—A 24-pp. pamphlet contains a detailed description of integrated components, an answer section for the most often asked questions about custom ICs, and 20 design examples.—*Inter-design, Inc., 1255 Reamwood Ave., Sunnyvale, CA 94086.* □

COMPUTER PLOTTING



Model 1653

A high speed, 22 inch recorder designed to operate on-line to scientific and general purpose computers in graphic output applications.

- Plug-to-plug compatibility (hardware and software) with all standard 300 steps/sec. plotters used in the computer field (CAL-COMP and COMLOT).
- Z-fold paper (367 ft. long) folding conveniently into notebook size.
- 0.01 inch step (0.25 mm optional) with 300 steps/sec. operation.
- Single step resolution with one step repeatability.
- Pen point exposure for manually setting origin.
- Simple control panel layout with single function switch.
- Integral chromed steel stand with paper storage.

Price: \$3,300.00

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