PRINTOUT

JOSEPH B. SIDOWSKI

Products

Bio-Telemetry

Barrows Company is producing a low-cost system for monitoring the physiological parameters of core temperature and EKG with an optional heart-rate output. The chronically implantable transmitters are claimed to have a 1- to 2-year useful life. The physical size of these transmitters has proven to be compatible with animals as small as a 200-g rat. The useful transmitting range is about 3 ft.

The Model T implantable transmitter for measurement of core temperature has a temperature range of 10°-50°C. The size is 7/8 x 5/8 x 3/8 in., and the weight is 4.5 g. The required receiving system consists of a standard broadcast AM receiver, a Model DT demodulator, and a chart recorder. Price is \$75, with battery replacements costing \$37.50 each.

The Model TE implantable transmitter for the measurement of core temperature and EKG has a range of 10°-50°C also. The EKG section has an input impedance of 500 K ohms, a frequency response of 0.3-100 Hz, and a common mode rejection infinite with respect to earth ground. Input noise is less than 50 microV p-p. Size of the unit is 15/16 x 11/16 x 3/8 in., and the weight is 5.5 g. Price is \$200, with a cost of \$100 for battery replacements.

The Model DT demodulator is used with the Model T transmitter and costs \$175. The Model DTE demodulator is used with the Model TE transmitter and is priced at \$250. An additional output (heart rate) can be supplied for the DTE at a cost of \$100.

Barrows Company
13876 Skyline Boulevard
Woodside, California 94062

Metrascope

The Metrascope M/S 20D is a multichannel data monitor and annunciator with analog and digital readout of individual channels and of individual alarm levels. The unit monitors up to 50 variables and provides selectable displays by a front panel switch with digital readout of parameters and high and low alarm setpoints. The channel being read is selected by rotating the knob at the left of the front panel to set a movable cursor under the required channel. The

alarm or signal level is read as determined by the setting of a switch.

The Metra approach permits variation of the number of channels being monitored by plugging in additional printed circuit cards. The cards contain five differential switches, such that each will permit the sampling of five new inputs. In this way, the display can be made to vary, in multiples of 5, up to a total of 50 channels in the standard installation. Every fifth channel is brightened up to aid in identification of the channel number. Forty channels is the maximum number displayed on the 12-in. Metrascope. Fifty channels are used on the 20-in. model.

Ranges vary from a few millivolts to several volts. The newest Metrascopes provide outputs in digital form for interfacing with other digital equipment. These outputs are in a binary-coded decimal format with 8421 coding.

An optional memory is used to store digital information in a format that can be used to refresh the display. A printer output of parameter values on each channel, in addition to channel and time identification, is available with the Metrascope for application where a permanent record is desirable.

Metra Instruments, Inc.
1340 Space Park Way
Mountain View, California 94040

Converters

Varadyne's DAC-29 digital-to-analog converter is priced at \$29 in single quantities. The DAC-29 is available in two versions, eight binary bits or two-digit BCD. Full-scale output can be either unipolar (0 to +10 V at 5 mA) or bipolar (± 5 V at ± 5 mA) by means of externally programming (jumper wire) the unit.

Output setting time is 20 microsec to $\pm 0.2\%$ of full scale. Overall linearity is $\pm 0.2\%$ with a voltage resolution of 40 mV for binary versions and 100 mV for BCD units. Input digital coding is straight binary or two-digit BCD for unipolar output and two's complement for bipolar outputs. Overall accuracy is $\pm 0.2\%$ of full scale, $\pm \frac{1}{2}$ LSB. Long-term stability is $\pm 0.5\%$ year. The self-contained plastic case measures 2 x 2 x 0.4 in.

Varadyne Systems
1020 Turnpike Street
Canton, Mass. 02021

Digital Logic Microlab

The Microlab makes it possible to understand a variety of digital circuits. The unit includes four flip-flops, four gates, two buffers, and three bounceless switch circuits that can be used to make hundreds of basic logic circuits. Each logic block has a light to indicate its state. Three types of input signals are available on the panel. Connections are made with simple clip-on leads that require no soldering and are easy to attach and remove. No possible combination of connections, no matter how wrong, can damage the circuits.

The kit is complete with ac power supply and vinyl-covered case at a price of \$29.95.

Southwest Technical Products
Corporation
219 West Rhapsody
San Antonio, Texas 78216

Graphical Display

The Canadian Westinghouse graphical display unit will accept either analog signals or digital information from a data logger, process control computer, magnetic tape, etc. Input signals are converted to video signals for presentation on standard television monitors. The resultant display provides a readout similar to that of a pen recorder. Four graphical records on a moving time base can be presented simultaneously. The time base for each trace can be set independently over a wide range, such that the record on the screen can simultaneously cover seconds for one trace, minutes for another, and so on, up to several days for the last trace. A memory ensures that each trace will remain permanently on the screen until it is erased or new data entered.

Model 100 handles four separate analog input signals with ± 2.5 V for full-scale deflection of the trace. Maximum deflection for each trace is approximately one-fifth of the CRT height. Input impedance is 50 k ohms. Resolution for each trace is 6 bits or 1.5% fsd. Trace speed (four traces) is variable by selection, with a minimum of 5 sec and a maximum of 25 h.

Model 200 has an 8-bit binary word input with 6 bits for data amplitude and 2 bits for trace address. Trace speed is dependent on input rate, which may be anywhere in the range of 0 to 120 points/sec.

Color, numerics, serial or parallel digital inputs, cascade ability, and

trace stop for instant analysis are some of the many available options.

Canadian Westinghouse Company,
Ltd.
Information Systems Marketing
P.O. Box 510
Hamilton, Ontario, Canada

Semiconductor Experimenter Kits

Semiconductor Kit No. 1 is priced at \$2.25 and contains an assortment of 30 items. These include: 3 PNP general-purpose TO5 cases, 3 NPN general-purpose TO5 cases, 2 power transistors, TO3; 3 stud-mounted silicon rectifiers, 2 A, 200 V; 3 1-W Zener diodes; 16 general-purpose germanium diodes.

Kit No. 2 is priced at \$2.35 and contains: 5 400-mW Zener diodes; 5 1N82A high-frequency germanium diodes, 30-400 mW; over 25 PIV silicon rectifiers; 3 NPN TO3 transistors, silicon mesa; 3 PNP TO3 transistors, germanium power; 2 SCRs, 2 A, low volt; and 2 3-A DAP transistors.

Semi-Conductor Supply, Inc.
20 Commerce Street
Springfield, New Jersey 07081

Portable Electroencephalograph

Model 1A48-8 is an eight-channel portable electroencephalograph featuring a "hum" suppressor circuit which supposedly permits high-quality EEG recordings in a nonshielded environment. Model 1A48-8 is lightweight (55 lbs), small (22 x 6 x 16 in.), and comes with a cart.

The amplifier circuit is fully solid state and input impedance is 5-megohm pushpull. Attenuator and sensitivity is 2 microV/mm (master gain control) $\frac{1}{4} \times \frac{1}{2} \times 1 \times 2 \times 4$ (five steps). Maximum pen amplitude and linearity is ± 10 mm, $\pm 2\%$ or better at ± 10 mm. Frequency response: dc, 60 Hz ($\pm 10\%$). Time constants are 1, .1 sec (other time constants available) simultaneously switch selected over all channels. Discrimination ratio is 20,000:1 (86 dB). Recording speeds are 1.5 and 3 cm/sec with paper size at 7-9/16 in. (19.5 cm) wide. Price of the eight-channel unit is \$4,700 including cart, electrode board, and remote-control switch.

San-Ei Instrument Company, Ltd.
223-2, Nish-Okubo 2-chome,
Shinjuku-ku,
Tokyo 160, Japan

Distributed by:

Medical Systems Corporation
230 Middle Neck Road
Great Neck, New York 11021

Two-Field Tachistoscope

Gerbrand's Model T-1C-3 two-field tachistoscope is priced at \$990. The electronic digital timer has an accuracy of $\pm 0.005\%$, a range of 1 msec to 9.9 sec, direct-reading thumbwheel switch, multiplier switch, and complementary 5-V TTL logic output. The lamp driver is solid state with continuous control for each field, providing a range of 1.3 log units of light intensity.

Ralph Gerbrands Company, Inc.
8 Beck Road
Arlington, Massachusetts 02174

Blood-Pressure Monitor

The Stentor blood-pressure monitor may be used for either arterial or venous pressure measurements, using a single pressure transducer (strain-gauge type). Pressure ranges are 0-250 mm Hg (arterial), pulsatile or mean, and 0-50 mm Hg (venous), pulsatile or mean. Frequency response is 100 Hz pulsatile and .25 Hz mean. Recorder output is 10 mV/mm Hg (2.5 V full scale on 0-250 range). Output impedance is 1,200 ohms. Maximum load is 1 mA. Bridge excitation voltage is 7.5 V dc.

Once a given transducer has been calibrated in the unit against a known pressure standard (manometer), a built-in calibration circuit permits easy substitution of transducers without the need to refer to a standard pressure source again. The monitor has a voltage output jack, suitable for driving most strip chart recorders. Price (less transducer) is \$295. The unit weighs 5 lbs and measures 8 in. high x 6 in. wide x 4 in. deep.

Sentor Engineering Corporation
5733 Kenwood
Kansas City, Missouri 64110

High-Speed Plotting System

FASLOT is a high-speed plotting system designed to operate at speeds of 10 in./sec when used in conjunction with computer terminals or the FASLOT paper-tape reader, which operates at 30 characters/sec. With a plotting speed of 10 cps, the unit is designed to interface with any Teletype or Teletype replacement terminal, operating at 10, 15, or 30 characters/sec. Additional features include a tiltable plotting bed, muting, off-line operations, paper-tape input, and an automatic axis segment mode. No software is required for operation, but convenience software is available for the major timeshare systems so that even faster plotting may be obtained.

Model 1030 has hardwired TTY and/or EIA interface, muting, 10, 15, or 30 cps speed selection, local or

on-line operation, and an interface for optional 30-cps tape reader at a unit price of \$3,500. The Model 1040 FASLOT comes with 30-cps tape reader for off-line operation at \$3,900.

Omega-t Systems, Inc.
300 Terrace Village
Richardson, Texas 75080

Tape Drive for Minicomputers

The Incor tape drive is IBM- and ASC11-compatible and is designed for use with data terminals and minicomputers, and for off-line operations. Data can be written at 200, 556, 800, or 1,600 bytes/in. in either seven- or nine-track formats. Modes: Incremental write to 1,000 bps, synchronous read and/or synchronous write 4 to 37½ ips, incremental write/synchronous read 1,000 cps/37½ ips.

Incor Corporation
P.O. Box 156
Feasterville, Pennsylvania 19047

Tape System

The Model 5091 system is designed for use with a variety of mini- and midcomputers. The system comprises a controller and up to four nine-channel 800-bit/in. magnetic tape recorders. Tape speed is 25 in./sec, with an input/output rate of 20,000 cps. Price: \$8,425.

Datum, Inc.
170 East Liberty Avenue
Anaheim, California 92801

Moving-Head Disk System

The XDC-100 moving-head disk system plugs directly into minicomputers and consists of a controller, coupler, disk drive, power supply, and software package. The controller makes a positive identification of desired data track/sector/cylinder before a read or write operation, and the user may select (for each disk drive) whether to write-protect all or part of the disk. This secures subroutines and executive programs from accidental damage. Controller can handle up to four disk drives of the four drive models available: single or double disk, each with either 1,100- or 2,200-bpi density. Prices start at \$9,950.

Xebec Systems, Inc.
918 North Rengstorff Avenue
Mountain View, California 94040

Printer for Minicomputers

Model 101 is designed to operate as a medium-speed batch terminal or hand-copy device for minicomputers and CRTs. The impact printer runs at 165 characters/sec or 60 132-character

lines/min. The unit prints on standard paper. Price: \$2,400.

Centronics Data Computer Corporation
One Wall Street
Hudson, New Hampshire 03051

Solid-State Light Emitters

For those wanting to try solid-state light in circuitry, Monsanto now offers two Answer Kits to help solve problems. The GaAs Lite Answer Kit consists of two MV50 and MV10B red, two MV1 amber, and one MV2 green GaAs Lites, along with data sheets and application notes. Price is \$9.95. The Optoisolator Answer Kit contains a MCD 2, MCT 2, and MCS 2 photocoupled pair with data and application information. The price of this kit is \$9.95 also. Order from your Monsanto distributor or write Monsanto Electronic Special Products, 10131 Bubb Road, Cupertino, California 95014.

Tape Cassette

The Digital Cassette Recorder allows the user to record computer output rates up to 1,200 baud and can replay the signals at any time without using additional computer time or storage space. The computer connection can be broken when required, and the data played back one frame at a time, a technique analogous to microfilm retrieval. Price: \$850.

Computer Displays, Inc.
223 Crescent Street
Waltham, Massachusetts 02154

Tape Loading Unit

Moel TP-1369 permits pushbutton loading of programs and data from magnetic tape for PDP-8 computers. Features of the instrument include 3.7-kHz transfer rate and the ability to simulate a four-track disk by a programmable track-select option. The drum is reprogrammable for programs up to 60 steps in length. A standard cartridge is used in the transport, with word storage to 265 k.

Tennecomp Systems, Inc.
795 Oak Ridge Turnpike
Oak Ridge, Tennessee 32830

Time Delay

The Artisan time-delay capsule is a solid-state two-lead device capable of delaying ac voltage to a load circuit of either resistive, inductive, or lamp. Time delays range from 0.1 to 300 sec. Recycling time is 100 msec maximum. Three models may be purchased: 18-30 V ac (24 V ac nominal), 36-60 V ac (48 V ac nominal), and 90-135 V ac (115 V ac nominal).

Artisan Electronics Corporation
5 Eastmans Road
Parsippany, New Jersey 07054

Digital Printer

Beckman's new digital printer, Model 1454, accepts inputs from all logic forms (MOS, IC, and transistor). The unit has expandable capability of 1-21 BCD columns and the ability to accept inputs from as many as three different data sources, with up to 16 characters/column. The instrument also prints out in red and black on the same line and accepts standard calculator or pressure-sensitive paper. The unit weighs 20 lbs and, with optional battery pack, can be taken into the field. Price: \$1,095.

Beckman Instruments, Inc.
Electronic Instruments Division
Schiller Park, Illinois 60176

Stroboscope

The new General Radio Model 1542 stroboscope uses a xenon lamp whose rep rate can be varied from 180 to 3,750 flashes/min. Image illumination is constant at any flash rate. Flash duration can be as short as 5 microsec. The reflector confines the light to a beam angle of 40 deg. The unit draws only 9 W from the ac power line. The Model 1542 is priced at \$95.

General Radio Company
300 Baker Avenue
Concord, Massachusetts 01760

Portable Electrocardiograph

The Toshiba Micro Electrocardiograph is a transistorized, alkaline battery powered unit that weighs 4.8 kg and measures 261 mm long, 98 mm wide, and 139 mm high. Pen deflection is 15 mm minimum for a reference input voltage of 1 mV. The time constant is 1.8 sec minimum, and the warmup duration is 10 sec maximum. Overall frequency characteristic: 65%, 0.1-60 Hz minimum. Discrimination ratio is 60 dB minimum. Recording paper is heat sensitive (50 mm wide and 20 mm long), and recording speed is 25 mm/sec. Lead selection: Standard, I, II, III, aVr, aVl, Vf, V. Price of the unit is \$650.

Tokyo Shibaura Electric Company,
Ltd.
Export Division
1-6, 1-chome, Uchisaiwai-cho
Chiyoda-ku, Tokyo, Japan

Distributed by:

Danatron
2021 East Fourth Street
Santa Ana, California 92705

Physiological Tape Recorder

The RP-31 magnetic cassette tape recorder was designed exclusively for recording physiological phenomena. Three channels of data and one channel of audio can be recorded simultaneously. The data to be recorded may extend from dc to 80 Hz on each of the three channels; the single channel of audio may include physiological parameters to 10,000 Hz or narrative descriptions. The Wolff Industries Unit (2485 Huntington Drive, San Marino, California 91108) has data channel input sensitivity of 700 mV/V (25 k ohms, SE). Limit lights indicate signals exceeding +7, +1, or -1 V. Full-scale signal output level is ± 1 V (100 ohms, SE). The recorder is priced at \$1,645.

Briefs

BRMI Subscription, Gratis

Lehigh Valley Electronics, Inc., is offering a 1-year subscription to *Behavior Research Methods and Instrumentation* to all customers who purchase \$500 or more of LVE equipment during the period February 15 through May 15, 1971.

Pocket-Size Minicomputer

The BR-1018 minicomputer has a plated-wire 8-k-word, 18-bit memory and is smaller than a desk telephone. Special packaging reduces mainframe, memory, and input/output units to solid blocks about the size of bars of soap. The computer is advertised as having a repertoire of 43 instructions, a multiply time of 33 microsec, and a divide time of 43 microsec. The present price of \$30,000 is expected to drop to less than \$5,000 when pilot production begins in 1971. The computer is made by Bunker-Ramo Corporation, Electronics Systems Division, Westlake, California 91361.

Decade Counter and Readout Kits

Environmental Products (P.O. Box 406, Lafayette, Indiana 47902) markets decade counter and readout kits. The NR-3 Numitron readout and decade counter, with all ICs DR 2010 readout, and PC board is priced at \$16.95. The N5000-C Nixie-type readout and decade counter is \$12.95.

The same company advertises ICs. A SN7400N quad 2 input NAND gate is listed at \$.66, a SN7402N NOR gate is \$.88. In transistor-transistor logic (TTL), a 9328 dual 8-bit shift register is priced at \$4.95. A 9033 16-bit high-speed memory is \$2.95.

New Surplus Digital Readouts

New digital readouts are available at