

This is the 7H17 Half Track Monaural Head . . . the last word in miniaturization . . . actually only this big

And what was sacrificed to achieve this smaller size? Absolutely nothing! In fact, the 7H17 actually offers better performance than any comparable head. It is a modification of the performance-proven design of today's most popular monaural half track head... but because of 100% functional flush-face shielding it actually achieves greater fidelity and reliability, and per-

mits easier tape starting.
And it's small enough to
have application in industrial
as well as home entertainment

equipment. Finally, Michigan Magnetics' unexcelled production and quality control system assures that every 7H17 delivered will have the same full reliability that has made heads the most popular among leading original equipment manufactur-

ers. Write today for complete specifications on the new 7H17 head!



THIS GUARANTEE TAG IS YOUR CUSTOMER'S ASSURANCE OF FIDELITY AND RELIABILITY



MICHIGAN MAGNETICS, INC.

VERMONTVILLE, MICHIGAN

CIRCLE 141 ON READER-SERVICE CARD

Index of Articles

July 5 through December 20

All articles are indexed under one of the basic categories listed below: Automatic Control, Servos Circuits, Mathematical Analysis Communications, Methods and Equipment.

Components (except microwave components, tubes and semiconductors)
Computers, Data Processing, Auxiliary
Devices

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Tubes, Electron

AUTOMATIC CONTROL, SERVOS

CIRCUITS. MATHEMATICAL ANALYSIS

The kind of article is identified by the following reference keys:

ART Article (bylined by an authority)

DD Design Decision

DIG Digest

DYF Designing Your Future

ED Engineering Data

EDN ELECTRONIC DESIGN News

GA German Abstract

IFD Idea for Design

PF Product Feature

RT Russian Translation

SR Staff Report

M-derived filters, curves help determine envelope .ART p52 Dec 6 Modified cathode follower dissipates IFD p121 Aug 30 Modified circuit for constant-width pulses IFD p162 July 19 Modified modulator yields wide-band fm transmitter .IFD p168 Oct 11 Potentiometer, single, adjusts range of simple Regenerative switch demodulates sinusoid.....IFD p205 Aug 2 "See-saw" multivibrator uses a single capacitor .. IFD p201 Aug 2 SCR relay flips, flops on consecutive commands .. IFD p142 Dec 6 Simple circuit halves 20-mc supply .IFD p158 July 5 oise signal generator ...IFD p198 Aug 2 Sine-cosine pots form white-noise Sine-wave modulator uses complementary transiste ..IFD p138 Aug 16 Slide rule converts angles to radians quickly .IFD p120 Aug 30 Trigger pulse generates two wo separate outpats

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Voltage changes transmitted as shifts in frequency
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COMMUNICATIONS, METHODS AND EQUIPMENT

COMPONENTS

(except microwave components, tubes and semiconductors)

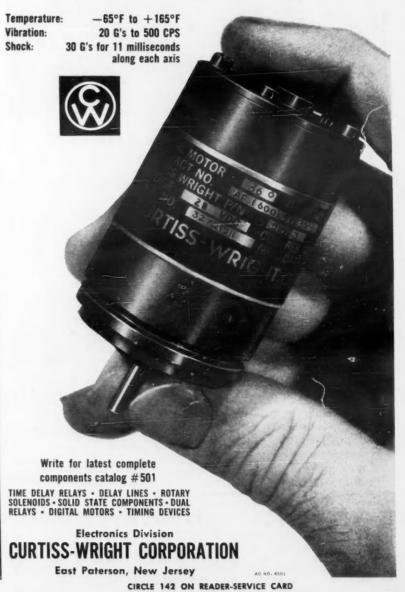
Stepping Motors...

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V POSITIVE LOCK

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This altitude chamber is used for environmental testing of airborne equipment. It simulates altitudes up to 80,000 ft with temperature control to -67° F.



HIGH-RELIABILITY ROTATING EQUIPMENT

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Transformer load impedance and dissipation nomograph...

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COMPUTERS, DATA PROCESSING, AUXILIARY DEVICES

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Photoelectric elements help analog circuits divide,

New! MINIATURE AXIAL FANS

up to 4 times





The PAMOTOR Model 1000 Miniature Fan is completely interchangeable with conventional units now in use (4½ " center-to-center mounting holes). But the similarity ends there.

check this comparison chart!

The Model 1000 Fan meets MIL-T-5422E, Class 2 Environmental specifications. Inside-outside rotating motor design gives flywheel effect, resulting in constant, quiet fan speed. Large surface sleeve bearings mean minimum maintenance, maximum reliability.

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CIRCLE 152 ON READER-SERVICE CARD

CONSUMER ELECTRONICS

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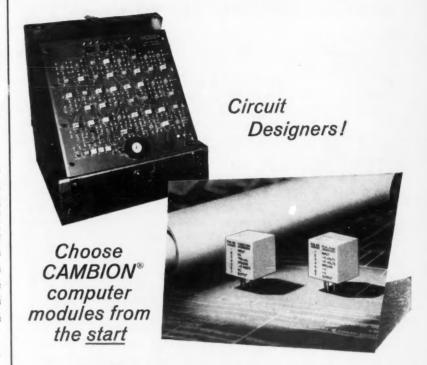
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MATERIALS

MEASUREMENTS, INSTRUMENTATION, TEST





... FOR EASIEST PROTOTYPE DESIGN

CAMBION modules are built to make a designer's life easier by eliminating guess work. That's why they all have these physical characteristics that save you time and money in early design and prototype work — and in production!

- Standard 7-pin miniature bases—use them for plug-in or printed circuits.
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- Compactness all modules require only 0.35 cu. in.
- Uniform size easier arrangement in circuits without juggling.
- Full range of types Flip-flops, And Gates, Or Gates, Inverters, Buffer Amplifiers, Level Triggers.
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 — change loads and connections with ease.

.. AND BEST PERFORMANCE

CAMBION modules have a unique combination of dynamic characteristics, too. All units are compatible, and operate at up to 10 MC. They are built with MIL approved components, and surpass MIL environmental standards. Every CAMBION module is tested and monitored for 500 hours under dynamic conditions. That's your assurance of reliable performance — in any circuit! Contact CAMBION for full details or for application assistance. Write Cambridge Thermionic Corporation, 457 Concord Avenue, Cambridge 38, Mass.

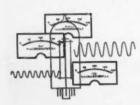


CIRCLE 154 ON READER-SERVICE CARD

FULL-SCALE RANGES AS LOW AS 2 µA OR MV; SPECIFIED LINEARITY OF ±0.5% OR BETTER

The new Series II Stylist panel meter is probably the most precisely linear production-model microammeter or millivolt-meter you can get. It can divide 2µa or mv into as many as 100 clearly legible. slices with virtually no tracking error at all. With proper adjustment of full-scale current, it can give you infinitely accurate indication.

Its ultra-linearity is the result of individual scale calibration, made



economically feasible by a newly-developed electronic calibrator. This calibrator, operating through a system of servo controls, automatically prints individually adjusted scales according to the actual measured tracking characteristics of each meter movement. Theoretically, each meter's full-scale linearity is infinite, with

no tracking error at any point. (We do, however, retain a maximum $\pm 0.5\%$ manufacturing tolerance).

Added to this, you get a taut-band suspension, which accounts for the meter's 2μa or mv full-scale sensitivity and its near-perfect (±0.2% f.s.) repeatability. No friction. No hysteresis. High resistance to shock and vibration in any plane. Nearly impossible to wear out.



For full details on the API Series II Stylist, including ranges and prices, write for Bulletin 28.

ASSEMBLY PRODUCTS INC. . CHESTERLAND 17, OHIO



NEW!

THE SERIES II STYLIST TAUT-BAND PANEL METER

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New, improved Rotolite Expeediter conveniently makes sepia reproducibles and diazo films in addition to low cost whiteprints.

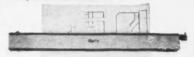
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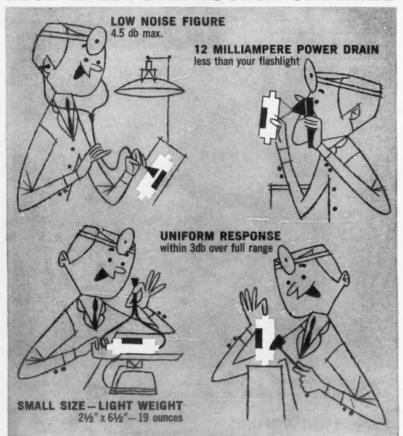
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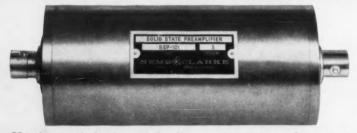


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JUST WHAT THE DOCTOR ORDERED | INDEX OF ARTICLES



THE NEMS-CLARKE SOLID STATE TELEMETRY PREAMPLIFIER



Here's your baby for outstanding performance and economy in the 225-260 megacycle telemetry range-the Nems Clarke SSP-101 completely solid state preamplifier. Featuring extremely low noise, flat response, and a hefty 25db minimum gain, it's at home in any environment . . . installed either in the antenna mount or the coax cable. Its own external 12 volt power supply is available for rack mounting. Baby sitting? Forget it! The SSP-101 operates for thousands of trouble free hours at unattended locations.

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Two outgassed solders. Left, standard solder. (Note degree of oxides present.) Right, ALPHA Vaculoy solder is bright.

ALPHA Vaculoy® bar solder cuts printed circuit joint rejects from 1-in-50 to 1-in-5,000. No other solder does this because no other is made this way!

Above is an unretouched photograph of two solder specimens—both outgassed. Left, is a standard printed circuit solder. Note presence of impurities on surface—a sure sign of undesirable oxides. Right, is ALPHA Vaculoy.* Its bright, clear surface indicates freedom from oxide-forming elements. Result? ALPHA Vaculoy bar solder cuts dross, improves wetting, produces brighter connections, increases bath life, reduces inherent inclusions and insures reliable electrical connections. Meets Fed. Specs. QQS-571C. Get all the facts. Write for data today! *Formerly called "ALPHA AAA"

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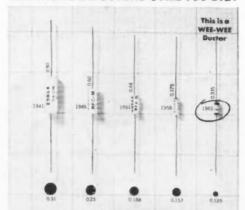
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SPACE ELECTRONICS

TUBES, ELECTRON

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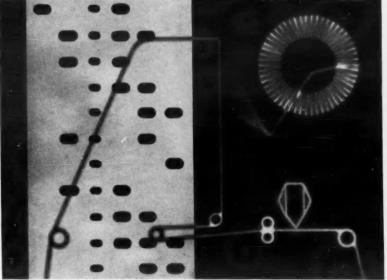
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omnidata

in paper-tape equipment



- High-speed electrostatic paper-tape recorder replaces mechanical punches
- Reflected-light reader accommodates all tapes punched or recorded, opaque or transparent

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