

WINTER EDITION

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1975
POPULAR
ELECTRONICS

ELECTRONIC EXPERIMENTER'S HANDBOOK

HOW TO BUILD:

- 1-Digit Electronic Clock
- Anti-Mildew Ventilator
- Antenna Tuner for SWL's
- Auto Dwell/Tachometer
- Direct-Reading Capacitance Meter
- Hi-Fi Automatic Switch
- Rechargeable Flashlight
- COSMOS Illuminated Die
- Keyless Vehicle Alarm
- Alpha Brain Wave Monitor
- Electronic Wind Chimes
- 3-Channel Color Organ

ALL WITH COMPLETE PLANS

PLUS...

- Fuses for Electronics
- Special Workbench Tools
- Model Rocketry for Experimenters

A SCIENCE FAIR PROJECT

Check your
Psi Quotient
with this

ESP TESTER!



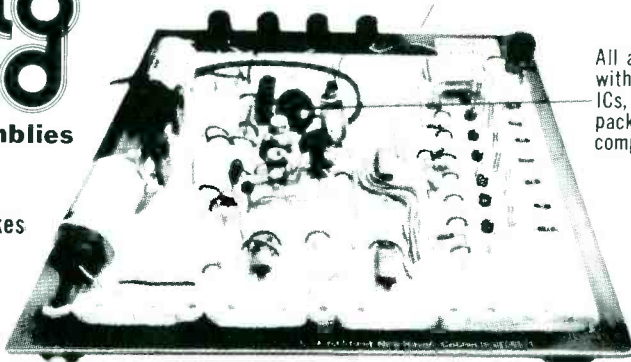
BUILD & TEST CIRCUITS AS FAST AS YOU THINK!

NEW Proto Board Breadboard Assemblies

Each has one or more
5-way binding posts

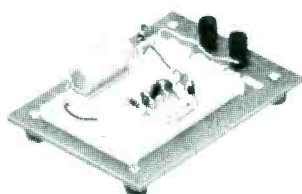
Aluminum base is perfect
ground plane and solid surface

All are compatible
with digital/linear
ICs, in TO5s, DIP
packs and discrete
components



Rubber feet prevent scratching

- Saves time
- Prevents expensive mistakes
- No soldering or patch cords
- Interconnect components with #22 solid hook-up wire
- 6 Models to choose from!



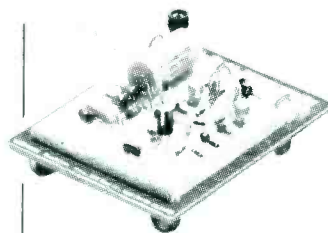
Proto Board 100. 10 IC capacity breadboard kit, includes all components, down to nuts, bolts, screws and instructions.

19⁹⁵



Proto Board 203. Built-in regulated short-proof 5V, 1-AMP power supply. 2 extra floating 5-way binding posts. 24-14 pin DIP capacity. 9 $\frac{3}{4}$ " long x 6 $\frac{1}{2}$ " wide x 2 $\frac{3}{4}$ " high. All metal construction.

75.



Proto Board 101. 10-14 pin DIP capacity. 5.8" long x 4.5" wide.

29⁹⁵



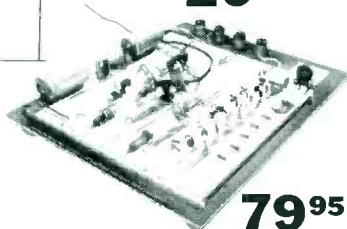
39⁹⁵

Proto Board 102. Compact 12-14 pin DIP capacity. 7" long x 4 $\frac{1}{2}$ " wide.



Proto Board 103. 2,250 solderless ground points. (4) 5-way binding posts. 24-14 pin DIP capacity. 9" long x 6" wide.

59⁹⁵



Proto Board 104. 3,060 solderless tie points. (4) 5-way binding posts. 32-14 pin DIP capacity. 9 $\frac{1}{2}$ " long x 8" wide.

79⁹⁵

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CIRCLE NO. 1 ON READER SERVICE CARD

BUILD THE MONODIGICHRON

This unique electronic clock uses only a one-digit readout and displays hours and minutes in sequential form.

BY MICHAEL S. ROBBINS

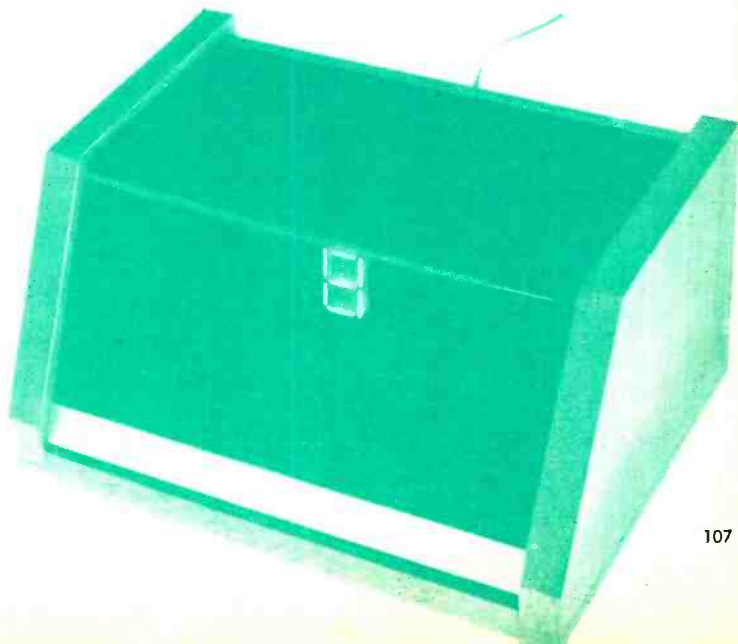
THE Monodigichron is a true electronic digital clock featuring sequential display of tens of hours, hours, tens of minutes and minutes on one seven-segment readout device. Instead of displaying all four digits continuously in a static presentation, the Monodigichron dynamically flashes the hours and minutes in sequence at a rate of about fifteen times per minute.

The circuit uses the latest LSI-MOS integrated circuit for positive synchronization to the 60-Hz power line frequency. Two pushbuttons (fast and slow) are provided for initial time setting.

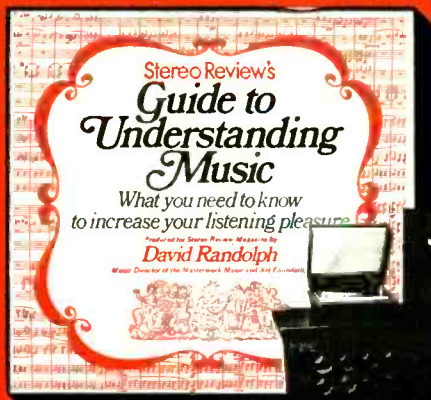
The large, bright, incandescent readout tube allows the Monodigichron to be read in total darkness as well as in brightly lit rooms. The display is all electronic and therefore completely silent. Because the readout is a bright filamentary type, any color filter may be used.

Power for the clock is supplied by a molded, plug-in transformer which is U. L. approved.

Circuit Design. A block diagram of the clock circuit is shown in Fig. 1, while the schematic is in Fig. 2. As in most ac digital clocks, the time base is the 60-Hz power-line frequency which is applied to a shaping circuit (*D10*, *D11*, *R9*, *R10*, and *C2*) for squaring and removal of transients. An array of flip-flops within *IC2* counts the 60-Hz input and provides one output pulse for every 60 input pulses (1 Hz). A binary coded decimal counter (BCD) totals the 1-Hz pulses and provides four output lines for display of the seconds count. (Though the seconds are not displayed in the clock described here, they are counted in the IC.) A fifth line provides one pulse every 10 seconds for the tens-of-seconds BCD count-



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rhythm melody harmony texture

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