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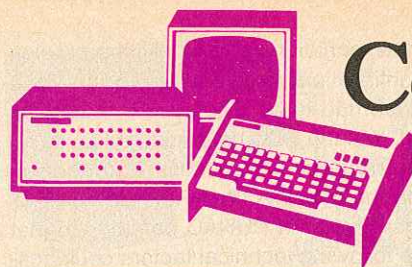
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CIRCLE NO. 38 ON FREE INFORMATION CARD



Computer Bits

By Leslie Solomon

POTPOURRI FROM HERE AND THERE

HERE ARE a number of interesting hardware and software items to titillate the computer hobbyist. Some were brought to our attention through the mail; others were spotted at the Personal Computing show in Atlantic City.

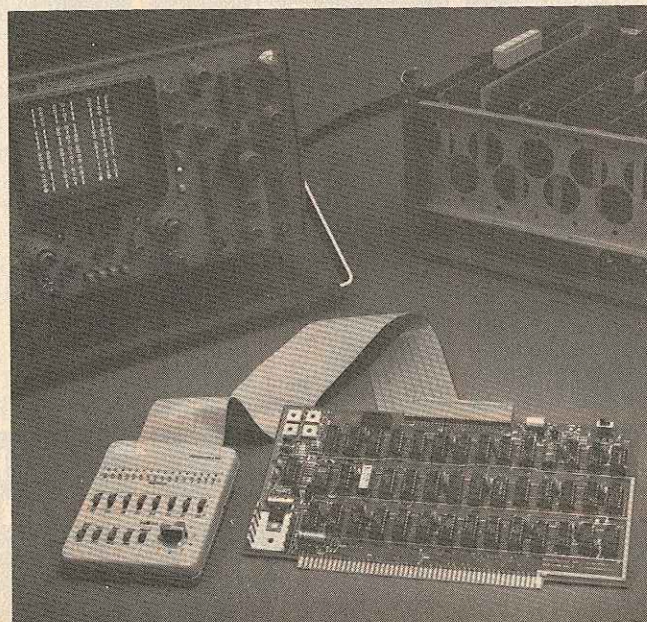
16K for SWTP Computers. Gimix Inc. (1337 W. 37th Pl., Chicago, IL 60609; Tel: 312-376-0440) has introduced a 16k static RAM board for the SS-50 (SWTPC) bus. Using TMS4044 4k-by-1 bit fully static RAM's, each 4k block is switch addressable at any 4k boundary, while memory write protect and memory disable are controllable in 4k switch-selectable blocks. Special features include each 4k block software programmable to any address at 4k boundaries, and software control of write protect and memory disable. This allows multi-tasking with just one 16k board and a little software overhead; it also permits memory beyond 65k.

New Logic Analyzer. In February 1977, POPULAR ELECTRONICS intro-

duced the first logic analyzer kit for the computer hobbyist. This electronic tool has since become a very popular instrument for debugging hardware and software. However, before the instrument can be used, several independent test leads must be connected to the micro-processor system—not an unusual requirement, but a chore nonetheless. Now, the designers of the original logic analyzer have developed a refined version that eliminates these steps, at least for Altair S-100 bus mainframes. It's called the Model 150 Bus Grabber (\$359 in kit form, \$449 assembled, and available from Paratronics, Inc., 800 Charcot Ave., San Jose, CA 95131; Tel: 408-262-2252).

Paratronics has crammed a complete logic analyzer on a single multilayered pc board that can be directly plugged into this popular bus. Working in conjunction with a hand-held "pod" that contains all the switching, the Bus Grabber monitors 64 signals—56 through the board edge connector, and 8 (user defined) through an 8-lead probe assem-

Paratronics' Bus Grabber is analyzer on a pc board.



POPULAR ELECTRONICS

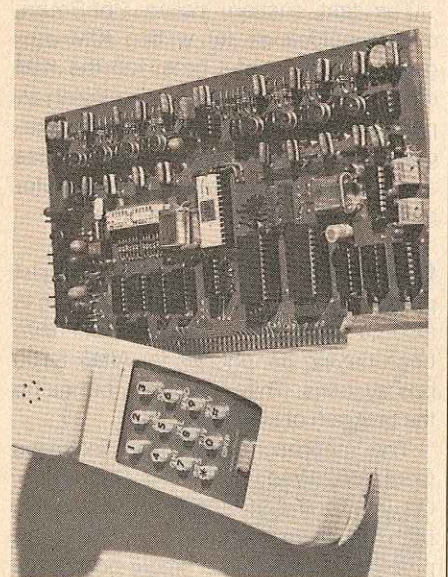
bly. Three connectors couple the board to the scope vertical, horizontal, and intensity inputs.

The display is data domain (1's and 0's truth table); size is 1 byte by 16 words deep; and display can be either octal or hex. Display modes are single or repetitive. Data collection is in either positive or negative time and memory size is 16 bits by 16 words. The trigger word can be 24 bits wide (16 bus address lines and 8 input data lines). The same flexible trigger is also featured, as is the scope trigger for "glitch" analysis. Data is collected at greater than 8 megabytes per second.

The hand-held pod makes operation very simple. Triggering, display formatting, and operational modes of the Model 150 are controlled from this pod, which is ribbon-cable connected to the main board. An 8-position switch on the pod enables looking at the external inputs, MPU control signals, MPU interrupts, MPU status, MPU data bus in, MPU data bus out, and the upper and lower address bytes. With this selection, and a simple program, it is easy to take a look at just about every important signal.

The Bus Grabber takes 700 mA from the -8-volt bus, and 50 mA from the +16-volt bus.

Telephone Interface. If you would like to interface your Altair S-100 bus computer to the Touch-Tone® telephone system, MK Enterprises (8911



MK Enterprises' MK-II DTMF transceiver board with phone.

Norwick Rd., Richmond, VA 23229; Tel: 804-285-2292) has just the device for the job. Its MK-II dual-tone, multi-frequency (DTMF) transceiver board con-

verts the DTMF (Bell Standard) into binary, and binary into DTMF, making this a fully operational transceiver. The board comes fully assembled and tested with application information and a manual for \$425.

On incoming calls, vectored interrupts allow for ring detection as well as detecting the presence of DTMF signals. This permits phoning into the computer and executing programs by punching the correct tone pad sequence on the remote phone. On outgoing calls, the dialed digits are loaded into a FIFO (first in

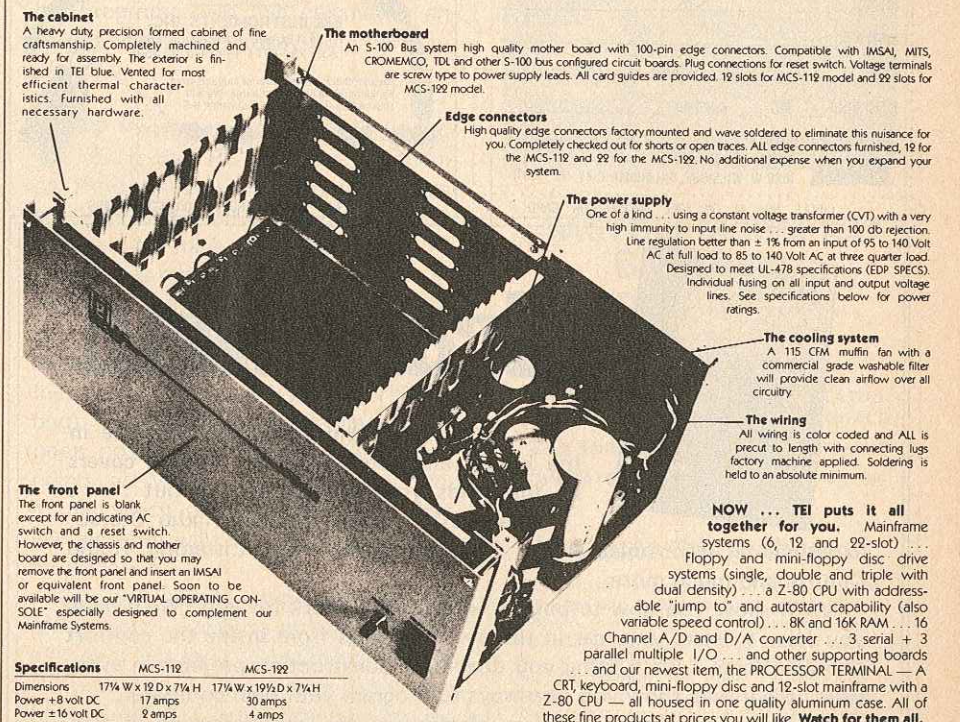
first out) buffer at processor speed, then unloading the data into a DTMF tone generator at a rate compatible with the Bell System's equipment. A 4-bit output port allows supervision of trunk interface equipment (DAA devices). Single tones can be generated instead of dual tones (under software control).

Applications of the MK-II include monitoring and tabulation of outgoing phone calls, home security "dialers," and PABX systems. Remote operation of appliances is also possible by 60-Hz modulation with DTMF signalling.

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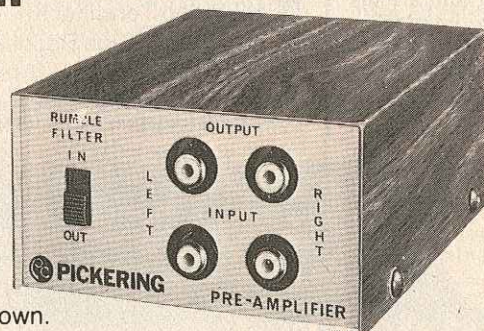
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CIRCLE NO. 46 ON FREE INFORMATION CARD

COMPUTER BITS (continued from page 121)

Swatbug also makes it possible for the user to set single-level breakpoints within user programming for debugging purposes. Furthermore, the monitor generates a "home" and "erase" command for the SWTP CT-1024. It also erases each CT-1024 line before writing a new one and vectors all software interrupt instruction to a location pointed to by a user-defined address located in scratchpad RAM. Moreover, Swatbug boots in the new SWRPC MF-68 Mini-floppy Disk by typing in a single character (D).

Other Swatbug commands include cassette or paper tape dumps and appends the now-famous "S9" to the end of the tape, and outputs all of the record/punch (on/off control commands as well).

All SWTPC 6800 Computer Systems with MIKBUG can use the SWTBUG by replacing the socketed MIKBUG with the new chip and making one minor change on the board. The SWTBUG sells for \$19.95 pp.

Video Monitors. If you are thinking about modifying a TV receiver for use as a monitor for your computing system, you should be aware that VAMP, Inc. (P.O. Box 29315, Hollywood, CA 90029) is making available its ADVM-1 at \$23.95. This is a universal conversion kit for either transformer-powered receivers or "hot" chassis types. According to VAMP, the kit can be used with any TV receiver. When installed, it provides the necessary isolation to ensure safety and protect the video source. It is said to produce up to 80 characters per line. The kit bypasses the tuner and i-f strip, and a bypass switch is provided for normal TV viewing.

VAMP also offers its RFVM-1 at \$8.95 for installation in the video source. It can be tuned from channel 2 to channel 6.

COSMAC Elf News. A Canadian electronics supplier, Tektron Equipment Corp. (Caistor Centre, Ontario, Canada LOR 1E0) has started a newsletter directed to some 300 1802-MPU-based computer owners in the area. They're trying to form a microprocessor club which will be heavily oriented toward the 1802 MPU's. Domestically, an Elf Users Group is being formed for all 1802 fans by Netronics Inc. (333 Litchfield Rd., New Milford, CT 06776). An exchange of hardware and software ideas is planned for the groups. ◇

POPULAR ELECTRONICS

Electronics Library

ADVANCED AND EXTRA CLASS AMATEUR LICENSE Q&A MANUAL

by Marvin Tepper

Based on the FCC syllabus-type study guides, this book covers the material appearing on the Advanced and Extra Class theory exams. Within the chapters dealing with each exam, the questions are arranged in such categories as Rules and Regulations, Radio Phenomena, Operating Procedures, Emission Characteristics, Electrical Principles, Practical Circuits, Circuit Components, Antennas and Transmission Lines, and Radio Communication Practices. Other chapters deal with general information and Morse code requirements. Three appendices include practice examinations and answers, excerpts from the Communications Act of 1934 and Part 97 of the FCC Rules and Regulations, and Docket No. 20282 (Proposed Restructuring of the Amateur Radio Service). Published by the Hayden Book Co., Inc., 50 Essex Street, Rochelle Park, NJ 07662. 160 pages. \$5.95 soft cover.

99 WAYS TO IMPROVE YOUR CB RADIO (SECOND EDITION)

by Len Buckwalter

Helpful hints for the CB'er are presented in this book. Section One covers antennas—installation, maintenance, reconditioning, adjustment, and antenna gain. Section Two covers interference suppression, and the following two sections discuss general maintenance and station accessories. Operational techniques and aids are presented in Section Five. The final section contains additional information on activities and programs of interest to the CB'er.

Published by Howard W. Sams & Co., 4300 W. 62nd St., Indianapolis, IN 46206. 128 pages. \$3.95, soft cover.

GETTING INVOLVED WITH YOUR OWN COMPUTER

by Leslie Solomon and Stanley Veit

Here is a solid, well-rounded introduction to home computer fundamentals for the neophyte. There are clear, concise explanations of computer anatomy, kit-building basics, and computer peripherals and I/O devices. Most of the major home computer systems are described in sufficient depth to help the beginner narrow down his search for a system. There is a chapter covering sources of more

(Continued on page 153)

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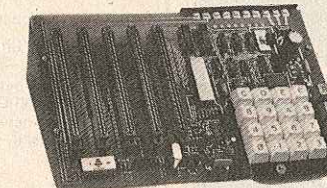
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