

The WORLD SCANNER REPORT

A Journal of VHF-UHF Scanner Technology & Engineering

ISSN 1061-9240

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SOMETHING NEW HAS BEEN ADDED

To ease the strain on your tired eyes

About time we got a printing press, huh? Actually, we went one step better: **laser printer!** Cindy (our Administrator) has the warmest hearted sister you could ever want, bless her heart! Lori PreFontaine, of Mesa, Arizona, won a laser printer in a sales promotion where she works and donated it to the cause of the *World Scanner Report*. You're feasting your eyes on the results of Lori's generosity. Thank you, Lori, from ALL of us up here at the *WSR* Headshed.

THE YEAR OF THE INTERFACE CONTINUES

HB-232 Has Been Released for Charley Testing

The now famous *HB-232 Scanner/Computer Interface* continues its development and progress through Charley testing. The first units were shipped on August 17, 1992, some two weeks ahead of schedule and about two weeks later than we were hoping for. If you ordered and have not received an HB-232 Kit yet, be sure to contact us so we can initiate a tracer. All standing orders have been filled as of press time and a backlog is not expected before Fall when the formal announcement is made to the rest of the world.

LAST CHANCE TO GET THE SPECIAL CHARLEY TEST DISCOUNT PRICE!

Effective October 1, 1992, the Public Release retail price of the HB-232 Kit will be \$169.95 + \$5 S&H. There's only a short time left to take advantage of the pre-announcement Charley Tester Discount at \$129.95 + \$5 S&H. All Charley Testers will receive the Release Version of the HB-232 Program and any changes to the documentation at no cost, if downloaded from the *Hertzian Intercept BBS* or at \$5 S&H if a disk and printed copies of document changes are desired. Please specify disk size when ordering. The HB-232 is the hottest thing to come to scanning since scanners came to radio! This is the time to get in on the ground floor of what has to be the wave of the future for serious scanning! Think about it: I confided an issue or two ago how shortwave listeners have a measly 30 MHz of RF

spectrum to manage. Scannists have 1275 MHz of spectrum to deal with, or 42.5 times as much! There really is no effective way to manage all that RF space without the aid of a computer. The HB-232 Scanner-Computer Interface is the best and the closest thing yet to the ideal way to pursue the Scanning Hobby.

If you are undecided because the HB-232 is still in a "testing" phase, then stay tuned because we'll publish the best of the favorable and unfavorable reports from the Charley Testers as they come in.

GIRL, 15, ASSEMBLES AN HB-232 BOARD

When I was writing the Assembly Instructions for the HB-232 Board, I gave my 15-yr old daughter, Ali, a draft copy of the instructions and pointed her to the parts bins with "orders from headquarters" to pull all the necessary parts from the Parts List and to assemble the Board according to the written instructions. I made her up a work-station on the opposite side of the shop where I work, out of sight and out of mind. Her work area consisted of bench space, a hobbyist-type soldering pencil and basic handtools. Nothing sophisticated. Furthermore, I have not had her do much of this kind of work in the past, though I have given her marginal opportunity to solder and work with electronic parts. Ali's experience level is certainly equal to or less than that of the typical hobbyist. Purposefully, I stayed away from her side of the shop during her work time. She came to me several times with questions about my written instructions, which I answered, short, sweet, direct and to the point. About three hours later, Ali returned with a completed Board that looked pretty darned good! We connected it between an XT/clone computer and my PRO-2004; fired things up and the danged thing worked perfectly the first time out!

While this is certainly credits Ali's attention to detail and her developing electronic assembly skills, this was really a test of the clarity and pertinence of written instructions. This and similar subsequent tests enabled me to "debug" my writing so that non-technical people can follow simple, bite-sized steps to successful assembly of the HB-232. There's more to the HB-232 Project than just assembling the Board, but this will give you an idea.

FIRST 3rd PARTY PROGRAM ALREADY AVAILABLE FOR HB-232 !

An early sign of a great product is the quantity and quality of 3rd-party support that emerges for it. Interesting that the HB-232 Scanner/Computer Interface hasn't been officially announced yet and already DataFile, Inc. rises to the challenge of setting standards of performance for those to follow. It is with great pleasure that we offer DataFile's press release:

DataFile proudly announces their newest software product:
SHERLOCK
A NEW ERA IN ADVANCED COMPUTER-AIDED SCANNING

- * High performance software for *Commtronics Engineering's B-232 Scanner/Computer Interface* system.
- * The "Intelligent Frequency Finder" capable of building a virtually unlimited file of up to 1 billion active frequencies, disk space permitting.
- * A fully automated and unattended process for searching frequency band widths for new frequency activity without having to stare at numbers, take notes or press buttons.
- * No degradation of the performance of the scanner.
- * An evolutionary approach to *search and store* but much easier!

NO more taking notes, NO more pressing buttons and NO more time limitations. Search for new frequency activity UNATTENDED, hands off, for UNLIMITED periods of time.

How Sherlock works: When a frequency is found by the scanner and is active for approximately a tenth of a second, *Sherlock* INSTANTLY looks through a list of frequencies to determine whether a record of the active frequency exists. If the active frequency is not found, *Sherlock* adds the new frequency, time and date to the file. If *Sherlock* has a record of the active frequency, the existing record is updated with the current time, date and total number of activities of the frequency. Once the file is updated, *Sherlock* automatically commands the scanner to continue searching for the next active frequency. The real news here is *Sherlock* does all of this IN A FRACTION OF A SECOND!

Prints summary report: Summary report provides complete session data and lists either all of the frequencies or just the newly found frequencies from the log file.

View the log file in a xBase editor: Reassign channel numbers and filter characters for use by the HB-232 software.

Auto-Convert log file to a compatible HB-232 auto-program file: Automatically load all of the frequencies or just the newly found frequencies into the scanner using the HB-232 software.

Reuse Sherlock's log file(s): Look for additional frequencies that may not have been present during a previous session.

Create "birdie" files: Create files of unwanted frequencies generated internally by the scanner. Using this file, *Sherlock* ignores any of these frequencies when it finds activity.

AND THERE'S MORE! Sherlock's On-Screen Display includes:

- * Current frequency
- * Search loop count
- * Low and high frequency search limits
- * Starting date, time, and elapsed time
- * Last new frequency, date, time and elapsed time
- * Last active frequency, date, time and elapsed time
- * Active window with the latest 15 frequencies, date, time, activity count (hit count) and whether or not the frequency is new.
- * Session count of: frequencies on file at start of session; new frequency records added to file; total frequency records on file; active frequencies already on file; with new and active frequencies found

SYSTEM REQUIREMENTS: PRO-2004, 2005 or 2006 scanner; COMMtronics Engineering's *HB-232 Scanner/Computer Interface* hardware & software; IBM or compatible computer using MS/PC-DOS ver 3.1 or higher; 640K RAM; hard disk; serial port (COM 1 or 2); IBM/Epson compatible printer (optional).

Sherlock can also be run in a demonstration mode for those not equipped with the scanner or a HB-232 Interface system. The demonstration mode "emulates" *Sherlock's* capabilities.

Sherlock sells for only \$39.95 plus \$3.50 for shipping and handling and is complete with documentation on disk. For printed documentation, add \$5.00. A demo-only version is available for \$7.50 which is applicable towards purchase. The demo version is fully functional except there's a ten (10) minute runtime limit and a log file limit of fifty (50) records. Documentation for the demo version is included on disk, but add \$5.00 for printed docs.

World Scanner Report readers who order by **October 1, 1992** may purchase *Sherlock* for only \$34.95 plus \$3.50 for shipping and handling. Documentation is included on disk. Add \$5.00 for printed documentation. See above for the demo-only version. Send check or money order with a mention of the *WSR* to DataFile, Inc., P.O. Box 20111, Dept. WSR, St. Louis, Missouri, 63123. **BE SURE TO SPECIFY DISK SIZE (3.5" or 5.25").**

EDITOR'S NOTE: The *Sherlock* demo & limited run-time programs including docs will be available on the *Hertzian Intercept BBS* in File Section #3, VHF/UHF & SCANNERS. You can download these files at no charge, in one of two ways: each individual program, one at a time, or both at one time which are ZIPPED into a compressed file archive for faster transfers. The names of the files are: SHDEMO.DOC.EXE and SHDEMO20.EXE and the ZIPPed archive, SHERLOCK.ZIP. Download either the first two or the third, but not all three. If you try and like *Sherlock*, drop a note mentioning the *WSR* and your payment to DataFile, Inc. for the unlimited, uninhibited version.

DO YOU WANT TO RENEW YET?

You might, especially since there's only two issues left in 1992. Check the expiration date on your mailing label and if it says "**NOV 92**", you might want to consider an early renewal before you forget and get caught up in the flow of the holiday season. Use the handy subscription blank on the inside of the back page of this issue and get *renewal* out of your hair if you're going to anyway.

MASTERCARD & VISA NOW ACCEPTED

We have received authorization to accept *MasterCard* and *Visa* for payment of merchandise and subscriptions. If you choose this method of payment, PLEASE give your name as it appears on the card; the expiration date of the card; the account number AND **your signature** authorizing the debit against your card. Many mail order firms are loose in some of these details, but we had to work hard and pay a lot of money to get this authorization, so we'll be doing things by the book. Please don't ask us to do otherwise.

PHONE LINE & TIMES FOR VOICE ORDERS

If we have your signature on file, we'll be happy to accept renewals and other *MasterCard/Visa* purchases by telephone during the weekday hours of 1:30pm - 5:30pm, PST at (619) 578-9247. Use this same number for FAX orders at ANY TIME other than the above hours. You can also make purchases via the *Hertzian Intercept BBS* at the same number at ANY TIME other than the Voice Hours given above. Again, for all credit card orders, we must have a signature on file. FAX is fine, but BBS and Voice require your advance signature, please. By the way, this voice line is **for orders ONLY**. We cannot and DO NOT provide hobby information and modification/hacking assistance by telephone.

HERTZIAN INTERCEPT BBS AVAILABILITY IMPROVED: PLEASE TRY AGAIN

The availability of the *Hertzian Intercept BBS* has been limited in the past because of our need to use the computer for production and to answer BBS inquiries. We've made some changes, by adding a dedicated computer for the BBS, a Cumulus 386SX/16 with an 85-Mb hard drive. Then, we installed an electronic mail transfer feature on one of the production computers to allow us to call the BBS, more or less like you do, and to download all the recent mail & traffic for sorting, reply and uploading back to the BBS without tying it up. The electronic transfers take place in seconds as opposed to the hours it used to take to have the BBS down for reply and response. Now, early-to-mid morning hours of 6:00am-11:00am and all the evening hours are available to you. **NOTE: The BBS is still down every day between 1:30pm-5:30pm, weekdays for voice orders and weekends for maintenance.** We're desperately trying to get a third phone line in here so the BBS can go full time. Unfortunately, the telephone company here is rather persnickety and it will be a while yet before we get that third line. In the interim, you'll find the BBS to be much more accessible than in the past. It's there for your use; feel invited.

The *Hertzian Intercept BBS* has added a file area for hams, SWLs and scannists alike; Area #14 (*Radio Mods/Hacks: Untested ??*), which contains 750+ files on a wide range of ham, shortwave and scanner radios. I have not reviewed most of these hacks, but you're welcome to check 'em out. The *Hertzian Intercept BBS* also sports a general interest message base called RADIO_TEK (Message Area #8) which is open to technical talk of all sorts, types and kinds about radio technology. One neat thing about this Conference is that it is networked to several other BBS's and is not limited to only my views of radio. The *HB-232 Scanner/Computer Interface* is backed by a technical support forum which is networked to the same BBS's as the RADIO_TEK conference. If you're building an HB-232 or thinking about it, this conference might be for you! The BBS's which are linked to the *Hertzian Intercept* with the RADIO_TEK & HB-232_C message areas are as follows: (You can reach me on any of them.)

The Feedhorn BBS	Los Angeles, CA (818) 907-1458
Tri-State Data Exchange	Dubuque, IA (319) 556-4536

This list is expected to grow, so stay tuned for updates. Meanwhile don't forget the FidoNet SHORTWAVE and SCANRADIO echoes (Message Conferences) where all serious radioists congregate to tell lies and spin yarns of great deeds in radio history. My offer still stands to provide a list of FidoNet BBS's for your Area Code for only the price of a SASE and a loose, extra stamp. Or, inquire on the *Hertzian Intercept BBS* for free!

THE COMPUTER CORNER

With the coming of the *HB-232 Scanner/Computer Interface*, we need a regular column just for the basics of computing. It won't be deeply involved, but I realize there's a lot of people who are not *computer-literate*, but who are ready to see the value of computers to radio. Jose of New Jersey expressed his notion that all IBM computers were made by IBM and priced out of reach! True, that all IBM computers are made by IBM and if new or nearly so, really are expensive. But, the buzz-words of interest here are "*IBM/compatible*" or "*IBM/clone*". An IBM/compatible or clone is NOT made by IBM and need not be expensive, especially one that's ideal for basic radio needs. My XT/clone cost all of \$200 with a 40-Mb hard drive. Granted that it's not ideal for a lot of today's high powered software, but it's adequate for the *HB-232* and for most of the record-keeping associated with Hobby Radio. But let's chat briefly about different kinds of computers so you can relate to the differences among them and avoid the royal shaft.

There are TWO major aspects of computers which distinguish one from others: (1) the Central Processor Unit (CPU) computer chip, (2) the disk operating system (DOS). Within these domains are many classes/types of personal computers: CP/M; Z-80, Apple II, III; MacIntosh & Lisa; Commodore VIC-20, 64 & 128; Amiga, Radio Shack's old TRS-80 & Color Computer series; Atari, TI-99, Adam, HeathKit, IBM-PC & compatibles, loosely including XT, AT, PS-1 & PS-2. The latter class, which we will refer to as *IBM/clones* comprises a huge spectrum of machines, ranging from the early PCjr & PC to the XT, AT and PS-series. Included in the PS-series are computers with the Intel 386SX, 386DX, 486SX & 486DX CPU chips. Don't worry if you are confused.

Here's the meat. Unless you have an emotional involvement with old and ancient computers, you will do very well to *avoid* the following: Commodores, TRS-80, Apple II, III & Lisa; all CP/M's, including the Z-80, Atari, Commodore and Amiga. Avoid like the plague, the Timex-Sinclair, TI-99 and Adam computers. In fact, you really should stay away from ALL but one general type of computer with possible exception of the Macintosh, and frankly, I don't recommend a Mac either. **Say what?**

Ok, ok, ok, so that old TRS-80 or maybe the HeathKit built by your Uncle-In-Law or even that venerable Timex-Sinclair may be among your prized memories. Great! Cherish them. And you think your Mac is the finest thing around since anchovies on pizza? Sure! But there is a wee little problem with all but one class or type of computer out there: **compatibility & standards!** Those Macs, Amigas, Apple II's, Ataris, etc, are potent and very powerful computers in their own right. But who, besides YOU, has one? Some, yes, but not many. This is not an intent to offend; rather to get across the point that it is not possible to cover everything; and there is one type of computer out there that has pretty much superseded all others in numbers and standardized operating procedures: **the IBM/clone!** So, you like your old Trash-80? Good! But we can't help you with it. Dunno anything about 'em and don't want to and don't have the time to learn.

It's true that the Macintosh, the Amiga and perhaps the Ataris can do certain things better than the IBM/clones. So what? It's a simple fact that there are more IBM/clones and compatible software out and around than all the rest of the field combined. This represents a singular value to the radio hobbyist. Your Mac just might have the best radio software in the world, but it does the rest of us no good, nor you, for that matter, when we can't share that of which we are so proud! The fact is that more people have IBM/clones than any other. We would waste space here to talk about the old TRS-DOS computers, but more eyes would brighten if we talked about IBM/clones. Simple market forces at work here.

Ok, so you're about to buy an IBM/clone computer, but what specific kind? There is just as much confusion in this single category as in all the rest combined, for in this class are contained the PCjr, PC, XT, AT, 386 and 486 machines, which range in price from nearly free to thousands of dollars. What to do? Fortunately, the confusion factor is less for the radio hobbyist. It's easy to suggest what to get and what not to get.

DON'T, whatever you do, get a PCjr, PC or PC/clone! These are too old and out of date like the CP/M machines of yesteryear. Instead, focus your attentions on the XT/AT/386/486 or **clone/compatibles**. And in the XT/AT class, it's almost impossible to get a new one, so that's all the better! My XT/clone with a 40-Mb hard drive cost me \$200. Just recently, we acquired a 386SX to dedicate full time to the BBS, but this was only after an extended search for an AT/286/clone. Used prices ranged from \$250 to \$700, but none had the full power needed by our dedicated BBS. Yet, all were more than ample for radio hobbying and miscellaneous household needs. We'll continue with this subject in future issues, but for the time being let me propose a minimum standard "system" for casual hobby use: *XT, AT or clone (8086 or 80286 microprocessors), with 640-k RAM, 20-40 Mb Hard Drive; dual floppy disk drives (3.5" & 5.25"), monochrome monitor;*

two serial or COM ports and one parallel or printer port. Expect prices to range between \$175 to \$400, depending on what comes with the unit. Sheesh, you can frequently find a printer included in used deals like these. As a benchmark for comparison, our **Cumulus 386SX/16** with 2-Mb RAM, 85-Mb Hard Drive; dual high density floppy disk drives; two serial ports/1-parallel port and SVGA color monitor (.28mm dot pitch), MS-DOS 5.0 & Windows 3.1 set us back \$950. The major share of that cost was the 85 Mb hard drive; SVGA color monitor & card and the 2 Mb RAM. A comparable system in monochrome with 640-K RAM and 20-Mb hard drive ought not to cost more than \$300-\$400. A decent Hard Drive and good color video cost as much or more than the computer these days! **Final advice:** if you're not computer literate but want to try your hand at computing to further your pleasure of radio, then set a budget of \$200-\$400 and go for an XT/AT/clone as described. You can hardly go wrong. Now let's have some **READER ADVICE & QUESTIONS** on this subject, whaddya say!

ROLL YOUR OWN SCANNER ANTENNA

a reprint from my article in Monitoring Times, Nov-91: /ED

I don't ordinarily encourage serious communicators to monkey around in the "roll your own antenna" department, but if you're an antenna engineer or if antennas are the focus of your Life then have at it. If you're a typical ham or CB'er, there are better ways to spend time and money than in conjuring antennas which can be more expensive and less effective than off-the-shelf market models. The ham and CB bands are so competitive that every decibel of gain is needed at times to get the signal "out there". State-of-the-art has come a long way for ham & CB radio and it makes no sense to compete with that mega-million \$\$ antenna industry which has all the angles and casual discoveries worked out to a science.

It's different for SWL and Scanning where antenna technology is not so avant-garde. Plenty of room is left for chance discovery and Saturday development. An industry is emerging for SWL & scanner antennas, but it doesn't approach the level of that for ham, CB and commercial radio. SWL'ing and scanning require broadband antennas though each differs from the other as snakes and toads. SWL's have it worse because of size requirements.

Thanks to the inverse relationship of dimension to frequency, scannists can have their cake and eat it, too, with a broadband antenna and GAIN. When a dipole is fed at some point *off-center*, its bandwidth widens appreciably, depending on the offset. Off-center-fed (OCF) dipoles can be made to cover most of the scanner bands of interest, from VHF-Lo through 900 MHz, and there will be a bit of GAIN, maybe 2 dB on some bands. An OCF-dipole is easy to make with minimal materials and cost, performance of which compares to market models.....maybe better!

Review Fig-2 for a schematic and simplistic approach to the concoction of an OCF-dipole. You can stop there if you like and get right to work with a few feet of wire, matching transformer and coax per Fig-2, or you can ponder the grand idea in Fig-1. Before you get started, let's briefly cover a little known tidbit about bandwidth of antennas. As the diameter of an antenna **increases** to an appreciable fraction of it's length, the bandwidth **increases!** This applies especially to VHF/UHF dipoles. So in Fig-1, we'll not

only offset the feed point from center to yield a wider band of operation, but we'll also use 3/4" copper water pipe to create substantial diameter for greater bandwidth without sacrificing GAIN or performance. One beauty of this project is that you can follow my directions exactly or you can deviate for possibly superior results. For example, you needn't stop at 3/4" copper; why not 1-inch? I saw fittings for 1-1/2" and 2" copper pipe at a hardware store, so go for the gusto if you can find the materials.

Why stop there? Several coffee cans soldered end-to-end or even stove pipes could be pressed into service for larger diameters! The endless possibilities can't be covered in the meager space here, so Figs 1 and 2 will suffice to convey the principles. You can let your imagination and ingenuity run amok from there. If you are not into "rolling your own", try the Grove Omni, a classic example of an OFC-dipole! **Thanks to Darwin Teague of Indiana**, for the idea of copper pipe for this month's project. Now here's what you need to know. Fig-2 shows the principles and basics of an OCF dipole. The two elements must not touch; the matching transformer maximizes energy transfer from antenna to coax. The length of (A) must NOT be an even multiple of (B). For example, (B) is 18"; so (A) cannot be 36", 54", 72" or 90". I selected 48" as a compromise between the no-no points and my preferences for VHF-hi and UHF. You could make (A) equal to 63" or even 81" if VHF-lo is your greater interest. Use low loss RG-6 coax, though RG-59 will do if you insist. These are the few rules for success with an OCF-dipole.

Now let's review Fig-1 for a practical application and a Class Act! Key notes of Fig-1 include 3/4" copper water pipe for the elements and support brace to the mast. PVC tee fitting (E1) is an insulated holder for the antenna (A & B) and a mount bracket for brace (C). Element (A) passes completely through (E1), and is permanently affixed to (E1) with epoxy, silicone rubber, hot glue or a screw. (E2) is primarily an insulator and a holder for the two elements, (A & B), but it also serves to accommodate a weatherproof housing (G) for the TV matching transformer (J). After the matching transformer is placed inside (G) and the 300 ohm wires are poked through the two holes (H), seal all openings with epoxy, silicone rubber or hot glue. Likewise, after (A, B & G) are inserted into (E2), fix them in place with an adhesive.

Placement of (E1) is not critical because it only holds the antenna. The closer to (E2), the better, but 8" to 12" spacing between (E1 & E2) is a good compromise for balance, appearance and function. Coax cable (L) is routed straight away from the antenna (A & B); NOT parallel, to a secure spot on the mast or tower at (F). NOTE that 3/4" PVC fittings do not exactly mate with 3/4" copper. The outer diameter of 3/4" copper pipe is between 13/16" and 7/8", so the PVC will have to be "reamed" a little for a good fit. A 7/8" flared-type wood boring bit works fine. For (E1), insert the bit, shaft first, through the PVC tee and then into a drill chuck. Ream the length of (E1) for (A) by pulling the rotating bit all the way through in lieu of normal pushing. You can also use the "pull" technique to partially ream (E2) at each end for (A & B), but obviously, the "push" technique is required at (E1) for (C). (E2) need not be reamed for (G) because PVC fits perfectly! Brace (C) need not be exactly 36" but if less, the antenna's performance can be affected by a metal tower or mast. Longer is better, but copper bends with weight and leverage, so 36" is a good compromise.

The 300 ohm output wires (H) must be solidly connected to (A & B); solder these leads to (A & B) or put spade lugs on the wire ends and use sheet metal screws to secure them to the copper with star washers between the copper and lug and between lug and screw head. Weather-seal all solder joints or screw heads with silicone rubber after connection. Weather-seal with silicone rubber all entry/exit openings of the copper and PVC. Prior to assembling the antenna, polish all surfaces of the copper with steel-wool to a bright shiny luster. Remove fingerprints and smears, and spray ALL exterior surfaces with several coats of acrylic or lacquer, clear if you want attention and admiration; white or baby-blue for a lesser invasion of the skyline; or red to infuriate neighbors. The OCF-dipole is shown with the long element on top. It's better that way but if you disagree then put the short side up. See if I care; just don't forget to reverse the relative positions of (E1 & E2), because the coax must be BELOW the support brace (C). Please let me know of your successes or failures with this project and about other innovative scanner antenna developments. 73/bc

MFGRS OF ANTENNAS FOR SCANNERS

ANTENNA SPECIALISTS COMPANY 30500 BRUCE INDUSTRIAL PKWY CLEVELAND, OH 44139.3996	216-349-8400
BARKER & WILLIAMSON 10 CANAL ST BRISTOL, PA 19007	215-788-5581
CENTURION INTERNATIONAL, INC. PO BOX 82846 LINCOLN, NE 68501.2846	402-467-4491
CHANNEL MASTER/DIV AVNET PO BOX 1416 SMITHFIELD, NC 27577	919-934-9711
DYNASCAN CORPORATION 6460 W. CORTLAND CHICAGO, IL 60635	312-889-8870 & 800-262-7222
FIRESTIK ANTENNA COMPANY 2614 E. ADAMS PHOENIX, AZ 85034	800-528-8113
GROVE ENTERPRISES, INC 140 DOG BRANCH RD BRASSTOWN, NC 28902	704-837-9200
ICI ACTIVE ANTENNA SYSTEMS 4521 CAMPUS DRIVE; #113 IRVINE, CA 92715	714-720-8159
ICOM AMERICA, INC. 2112 - 116th NE BELLVIEW, WA 98004	206-454-7619
ICOM CANADA, INC. 3071 - #5 ROAD RICHMOND, BC CANADA V6X 2T4	

Figure 1: HIGH PERFORMANCE OCF DIPOLE

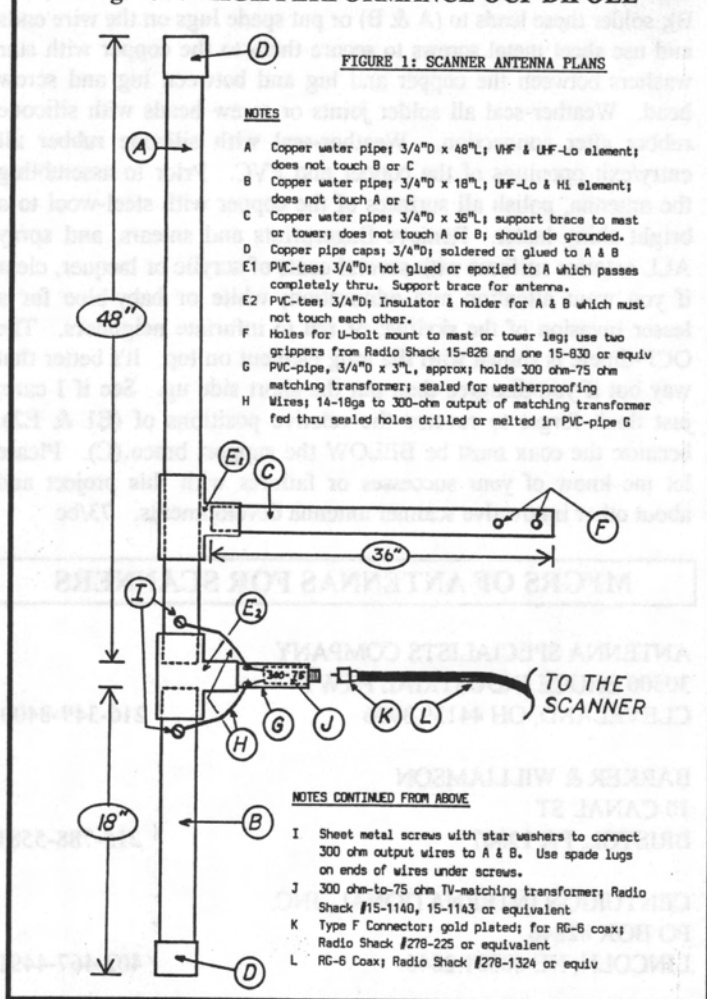
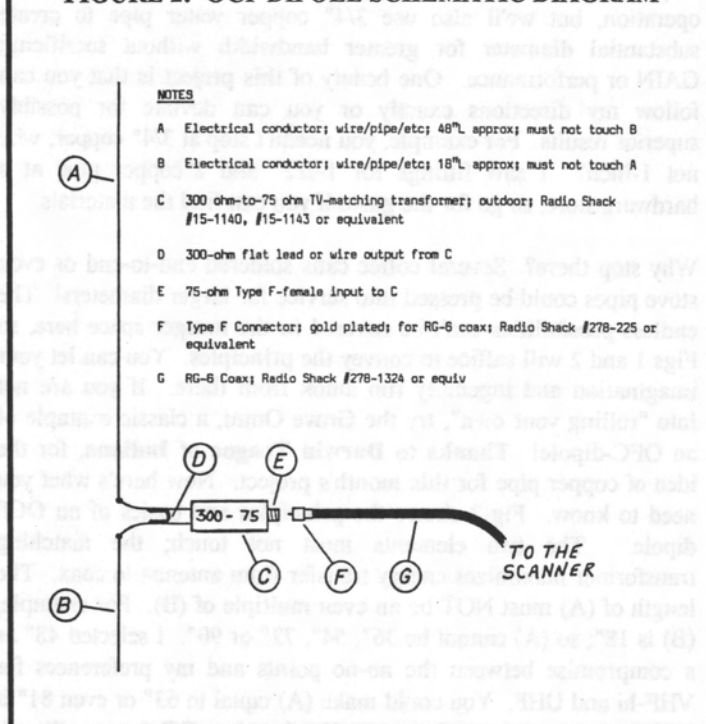


FIGURE 2: OCF DIPOLE SCHEMATIC DIAGRAM



CAN THE READERS HELP?

Billy Johnson, Reston, VA, needs a schematic diagram on an older 800 MHz converter, the **Critique 800**, that may have been popular a few years ago. That failing, he would appreciate information on the whereabouts of the manufacturer, a company called **Critique Electronics**, formerly of Downer's Grove, IL. Apparently they are no longer in that vicinity. Please respond to the "WSR". /ED

SCANNER ANTENNA MANUFACTURERS - continued

LARSON ANTENNAS
11611 NE 50th AVE / PO BOX 1799
VANCOUVER, WA 98668 800-426-1656 & 206-573-2722

NEW-TRONICS ANTENNA CORP
ONE NEW-TRONICS PL
MINERAL WELLS, TX 76067 817-325-1386

RF LIMITED
PO BOX 1124
ISSAQUAH, WA 98027 206-392-0399 & FAX: 206-392-0419

RUSSELL INDUSTRIES, INC.
PO BOX 508; 3000 LAWSON BLVD
OCEANSIDE, NY 11572 516-536-5000

WINEGARD COMPANY
3000 KIRKWOOD STREET/PO BOX 1007
BURLINGTON, IA 52601.1007 319-753-0121

WINTENNA, INC
911 AMITY RD
ANDERSON, SC 29621 803-261-3965

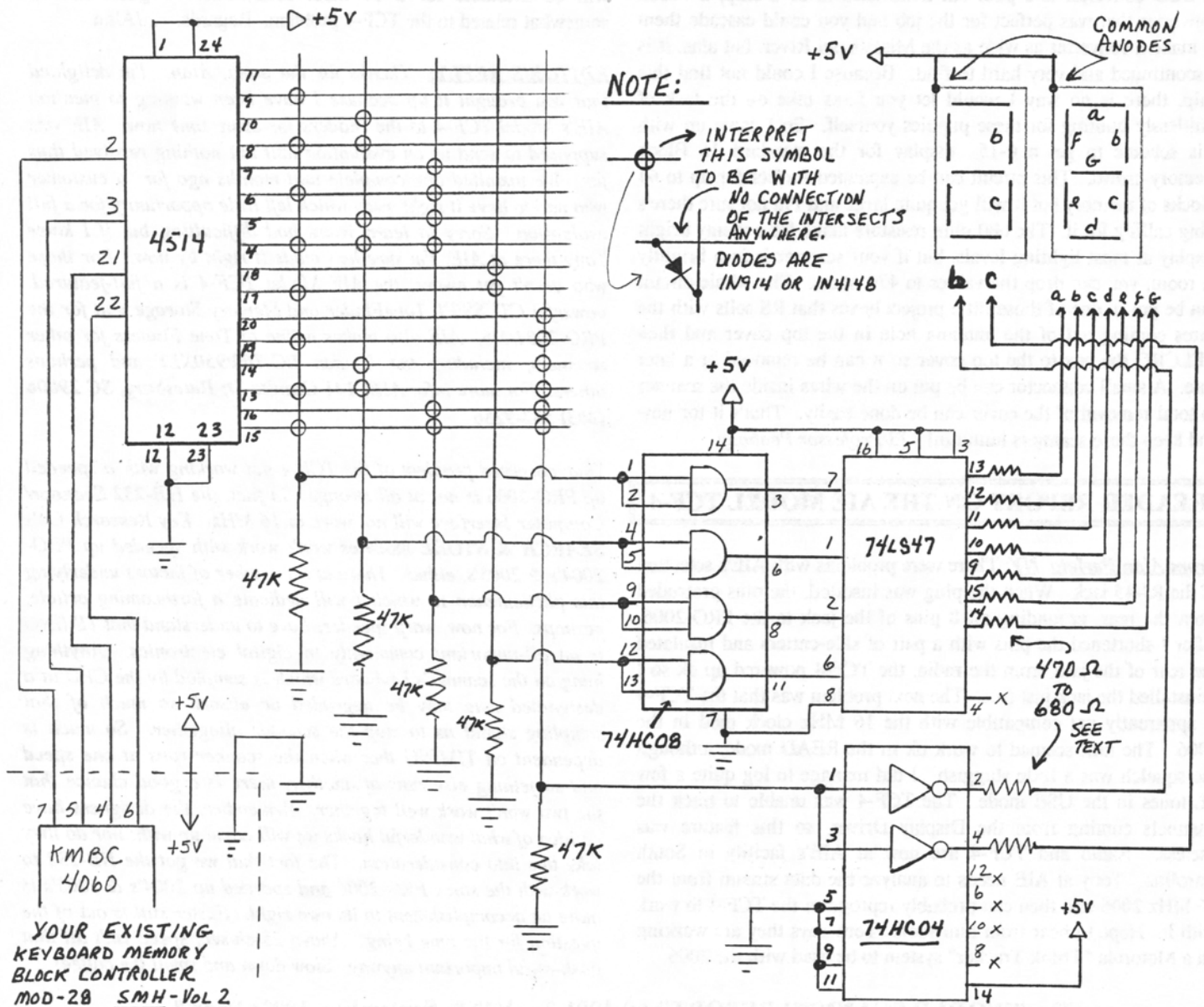
AN LED BLOCK INDICATOR FOR EXTENDED MEMORY MODIFICATIONS

By: Professor Peabody

Yo Scannerfans! I've received requests for a seven segment display for the KeyBoard Memory Block Controller circuit that appears in the **SCANNER MODIFICATION HANDBOOK, Vol-2**. So here is a simple display circuit that can best be described as a **binary to BCD decoder** that can count up to 19 but for our purposes will count from zero to fifteen. The non inverted outputs from the 4060 counter are connected to the 4514 decoder and will cause 1 output to go high depending on the binary number. The outputs then go to a diode matrix similar to the FATMAN'S to produce a code that is presented to a 74LS47 decoder driver. This guy makes the 7-seg unit display lite up with a 0-9 sequence with this input from the 4060 and then in combination with the tens digit will produce a 10-15 when this is inputted from the 4060. Of course, the tens digit is off for 0-9.

If you use two 7-seg displays, and you probably will, then use the *b* and *c* segments for the 10's digit. The 7-seg LED's are common anode types which are available at Radio Shaft. The two 74HC04 inverters used for the tens digit can be reclaimed from the 2 unused inverters from the original KMBC circuit. Yes, I agree with you

7-SEG LED BLOCK INDICATOR FOR KEYBOARD MEMORY BLOCK CONTROLLER (MOD-28)



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that using a 4514 decoder and a bunch of diodes to make a binary to BCD converter is a pain but there used to be a chip, a 74185 converter that was perfect for the job and you could cascade them to make a converter as wide as the Mississippi River, but alas, it is discontinued and very hard to find. Because I could not find this chip, there is no way I would let you folks take on the task of fruitlessly hunting for these puppies yourself. So I came up with this scheme to get a 0-15 display for the standard 16 Block memory crowd. This circuit can be expanded further for up to 64 Blocks of memory but it will get quite large and I'm not sure there's a big calling for it. The 680 ohm resistors make for a plenty bright display at most lighting levels. but if your scanner is in a brightly lit room, you can drop the values to 470 ohms. The whole circuit can be put in one of those little project boxes that RS sells with the wires coming out of the antenna hole in the top cover and then VELCRO the box to the top cover so it can be removed at a later date. A small connector can be put on the wires inside the scanner so total removal of the cover can be done easily. That's it for now and keep those scanners hummin! 73/Professor Peabody

The HB-232 will be a great addition indeed. I hope that a version will be available for a 16 MHz PRO-2006. I guess this is somewhat related to the TCF-4 problem. Regards. .../Alan

EDITOR'S REPLY: Thanks for the input, Alan. I'm delighted that you brought it up because I have been wanting to mention AIE's Model TCF-4 to the readers for some time now. AIE was supposed to send us an evaluation unit but nothing received thus far. We installed one complete unit months ago for a customer who had to have it right away which left little opportunity for a full evaluation. Sorry to learn yours had difficulties, but if I know Tony there at AIE, I'm sure he's made it right by now. For those who aren't yet aware, the AIE Model TCF-4 is a full-featured, powerful CTCSS/PL ToneFinder and Memory Storage unit for the PRO-2004/5/6. AIE also makes a line of Tone Finders for other scanners, including the Uniden BC-760/950XLT and perhaps others. For more info: AIE; 141 Granite St; Batesburg, SC 29006 (803) 532-9256

Your observed problem of the TCF-4 not working with a speeded up PRO-2006 is not at all strange. In fact, the **HB-232 Scanner/Computer Interface** will not work at 16 MHz. Key Research Co's **SEARCH & STORE** modules won't work with speeded up PRO-2004's & 2005's, either. There are a number of factors underlying this phenomenon to which I will dedicate a forthcoming article, perhaps. For now, warp speeders have to understand that **TIMING** is an all-important commodity in digital electronics. Anything hung on the scanner's keyboard which is sampled by the CPU at a designated rate may be degraded or absorb so much of that sampling signal as to stop the scanner altogether. So much is dependent on **TIMING** that when the scanner runs at one speed and something else runs at another, there is a good chance that the two won't work well together. Remember, the designers have no idea of what wonderful hacks we will come up with; nor do they take this into consideration. The fact that we got the HB-232 to work with the stock PRO-2006 and speeded up 2004's & 2005's is quite an accomplishment in its own right. Faster still is out of the question for the time being. Above 25-ch/sec, speed isn't all that gosh-awful important anyway. Slow down and smell the coffee!

READER REPORT ON THE AIE MODEL TCF-4

From Alan Parlato, NY: There were problems with AIE's selection of the RJ-45 jack. When the plug was inserted, the pins protruded from the rear, grounding all 8 pins of the jack to the PRO-2006. After I shortened the pins with a pair of side-cutters and insulated the rear of the jack from the radio, the TCF-4 powered up ok so I reinstalled the jack just fine. The next problem was that the TCF-4 is apparently not compatible with the 16 MHz clock mod in the 2006. The unit seemed to work ok in the READ mode, although the squelch was a little sluggish. I did manage to log quite a few PL tones in the USE mode. The TCF-4 was unable to track the channels coming from the Display Driver, so this feature was useless. Radio and TCF-4 are now at AIE's facility in South Carolina. Tony at AIE needs to analyze the data stream from the 16 MHz 2006 and then can probably reprogram the TCF-4 to work with it. Hope to hear from him soon. Tony says they are working on a Motorola "Trunk Tracker" system to be used with the 2006.

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920830V2N8P8

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