



COMMTRONICS ENGINEERING



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ANNOUNCING THE FABULOUS HB-232 SCANNER/COMPUTER INTERFACE

Available NOW, at long last, the most powerful VHF-UHF Monitoring tool ever devised! The *HB-232 Scanner/Computer Interface* turns your PRO-2004, PRO-2005 or PRO-2006 scanner into a **PROFESSIONAL MONITORING SYSTEM** with power & flexibility not available anywhere else! So many features and potent capabilities can now be at your fingertips that it is impossible to discuss them all here, but following is a brief outline, maybe enough to convince you that one magnificent performance package has just made its unprecedented debut!

The *HB-232 Scanner/Computer Interface* connects between a PC/XT/AT/386/486/clone computer (512k min) and the scanner. A standard serial cable connects the HB-232 to the computer's COM port. The HB-232 can be installed inside the scanner for a tidy self-contained package or it can be built in a small project box, with a short cable and plug to mate with a receptacle mounted on the scanner. A serial cable connects the computer to the box. External installation allows the HB-232 to be used with more than one scanner! The scanner is not appreciably modified in either method; rather, 20 wires (9-more, optional) go from the HB-232 to various points in the scanner. Absolutely no scanner features or performance are altered or lost. Unequivocally, there are no compromises for so much to be gained! Now here is just *some* of the *HB-232 Scanner/Computer Interface*'s power::

* Auto-magically download (*AutoProgram*) in less than 9-mins up to 400 frequencies of your choice into the scanner's memory channels, along with custom DELAY, MODE and LOCK-OUT settings. (Try to program 400 channels by hand in any time under an hour or two, and WHAT IF you find a mistake with the channels out of sequence back on Ch-30?) Heartbreaker, huh.

* *View and control* all standard scanner keyboard functions from the computer! The computer monitor displays a facsimile of the scanner's keyboard and the LCD Display. Whatever shows in the scanner's LCD Display at any given time is simultaneously displayed on the Monitor. Press M on the computer keyboard for MANUAL; press S for SCAN; or press P for PRGM. All 29 keys of the scanner's keyboard are active at your computer's keyboard! **Anything and everything** that shows in the scanner's Display is simultaneously displayed on the Monitor. The scanner is operated directly from the computer keyboard much like it is operated from front panel. In fact, you can operate from either location alternately or simultaneously at any time.

* *AutoLog* to a handy text file the details about every "event" that the scanner sees! For instance, in the *AutoLog* mode, whenever

the SQUELCH breaks (a signal comes in) the computer writes & appends a line to a text file that contains the channel number or SEARCH Bank; frequency; MODE setting (NFM, AM or WFM); DELAY status (On or Off); LOCKOUT status; SEARCH Mode & STEP increment (if applicable); Date; Start Time; and Duration of transmission! This file is "comma-delimited" to make it easy to load into a database manager for more processing & sorting as desired! A text editor (*HBTECHED*) is provided with the HB-232 Program to give a handy way to review your *AutoLogged Files*! The HB-232 *AutoLogger* files its data in the same format as needed for *AutoProgramming*. An *AutoLogged* SEARCH file can be programmed back into the scanner's memory channels for a potent *SEARCH & STORE* function. This process can be automated to eliminate duplicates and common frequencies!

* An *Anti-Birdie Function*, compares the frequency that the scanner stops on to a **"REJECT" FILE**, and instantly resumes SCANNing or SEARCHing, if that frequency is in the file! Neither will it *AutoLog* momentary "birdie" stops! This superb feature is not limited to just "birdies"; you can put any number of other undesired frequencies into the "REJECT" file, such as for pagers, computer data channels, continuous tones, encrypted signals, and other frequencies that you don't want the scanner to stop on or to *AutoLog*. There are ways to automate the collection of undesirable signals for adding to the "birdie file". The HB-232 makes annoying lockups on birdies & boring freqs a thing of the past!

* The HB-232 has a powerful *"Scripting" or macro* function to allow the automation of virtually any process that would normally be done by hand. A *Script* can generate a file of what's been programmed into the memory channels (*CHANNEL DUMP*); to set a *time limit for stops* on various frequencies or channels; to lockout every frequency found during a SEARCH session so that *duplicate log entries can be avoided*; and much, much more!

* The HB-232's *LOOKUP* function goes to work when the scanner stops on an active frequency, to check a reference data file and DISPLAY the line of text for that frequency on the Monitor for a quick ID of the transmission! This reference file can be the SAME file used to *AutoProgram* the scanner!

* The HB-232 includes *four user-definable switches* that can be controlled from the keyboard or through a script! These switches are useful for controlling any modifications that you may have added on your own, including extended memory blocks, automatic tape recorder switches; data/tone squelch; and you can even wire one of these switches to control the stock SOUND SQUELCH function, if you want. Another switch can be wired to give access to the scanner's back-panel RESTART function! Possibilities are nearly endless for the *User Switches*!

* The HB-232 has a *built-in text editor* to help edit your *AutoLog* and *AutoProgram* files and any other text files, for that matter! There's also capability to add a couple of your favorite *DOS user tools* such as LIST, PC TOOLS, XTGOLD, NORTON, etc. to make operating life in the HB-232's Program easier still!

* The microprocessor of the HB-232 is *programmed by your computer* every time you run the HB-232 Program! No expensive "hard programming" or firmware on this chip. Not only can *low cost Upgrades* be done to the HB-232 Program, but also the HB-232 will attract 3rd Party Developers for supporting programs and utilities.

Following is the Main Screen that shows a facsimile of the PRO-2004/5/6 Keyboard.

```

HB232 -SCANNER INTERFACE PROGRAM- Version C1A
Manual      Bank 1 2 3 4 5 6 7 8 9 10
STATUS      189 ch      165.8500 Mhz
+ 0101      Delay          nfm      INPUT STATUS
+00000

Manual      pri <I>      limt      1      2      3
Scan        speEd      srch up <-> 4      5      6
Delay       mOde      srch dn <-> 7      8      9
Lock-out    sTap      direct <*> 0      .      clr<bkap>
lockout reView  Reset      monitor<space> Program <enter>

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10
HELP MISC LOOKUP APRGM SCRIPT CONFIG REJECT TOOL ALOG PAGE
Logger On
  
```

Below is the *AutoLog* Screen showing a recent log entry for: Ch-58, 164.2000 MHz, NFM mode, Delay set; no LockOut, Scan Mode, Sept 03, 1992, 3:25:06 pm, and the transmission lasted for 27 seconds. Other pertinent data is shown in this screen, too

```

HB232 -SCANNER INTERFACE PROGRAM- Version C1A
Scan      Bank 1 2 3 4 5 6 7 8 9 10
STATUS      58 ch      164.2000 Mhz
+ 0000      Delay          nfm      INPUT STATUS
+00000

Last Log Entry
,CH FREQ MODE,DELAY,LK-OUT,OP MODE,STEP, DATE TIME DURATION
58 164.2000 nfm D Man 920903 152506 000027

AutoLogger Path: C:\SCANNERS\BETECH\CHARLEY\
Lookup File Name: FREQFREQ.LST
Reject File Name: -none specified-
Script File Name: -none-
Current Script Line

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10
HELP MISC LOOKUP APRGM SCRIPT CONFIG REJECT TOOL ALOG PAGE
Logger On
  
```

The screen below depicts the *LookUp* feature with a stop on Ch-345, 169.9250 MHz, followed by the descriptive text for that frequency from a reference data base.

```

HB232 -SCANNER INTERFACE PROGRAM- Version C1A
Scan      Bank 1 2 3 4 5 6 7 8 9 10
STATUS      345 ch      169.9250 Mhz
+ 0000      Delay          nfm      INPUT STATUS
+00000

----- LOOKUP SCREEN -----
342,168.7750,,D,,,,,FEDG,USFS,SDG,Emergency Inter-system,
343,169.1250,,D,,,,,FEDG,USFS,SDG,Cleveland Link to Angeles WF,
344,169.1500,,D,,,,,FEDG,USFS,SDG,Air Tac 2,
345,169.9250,,D,,,,,FEDG,USFS,SDG,Primary Emergency Channel,
346,170.0000,,D,,,,,FEDG,USFS,SDG,Cleveland F-5 (8) - Air Tac 4,
347,170.5000,,D,,,,,FEDG,USFS,SDG,Cleveland Input to 168.750 (R),
348,170.5250,,D,,,,,FEDG,USFS,SDG,Input to 169.925 (R),

Use Ctrl + Arrow Keys to Scroll Left and Right

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10
HELP MISC LOOKUP APRGM SCRIPT CONFIG REJECT TOOL ALOG PAGE
Lookup On
  
```

Note in the above screens how the scanner's display remains active in all "screen pages" of the HB-232 Program. Not shown are HELP, CONFIGURATION & other screens.

The HB-232 comes standard as a *Kit of Parts, Program Disk and detailed Instruction Manual*. You build & install the HB-232 or get someone (us?) to do it for you. The HB-232 Kit includes a printed circuit board, Motorola microprocessor & special socket, 6-IC's, 4-resistor networks (similar to an IC), a quartz crystal, 2-resistors, & 15-capacitors. *NOT supplied* are computer, scanner, serial cable; 5-common IC sockets; wiring; lugs, connectors; pin-line sockets, tools, solder, project box, etc. The HB-232 Kit is complete, functionally, however. Assembly/Installation aren't difficult requiring mostly basic soldering skills, patience & ability to read & follow directions and to match components with a parts location diagram. Installation, whether in a project box or inside the scanner, is a bit mechanical, though within the capability of most hobbyists. The finished HB-232 board measures 3-1/8"L x 2-5/8"W x 9/16"H.

Installation of the HB-232 in (or connection to) the PRO-2004/5/6 scanners is not difficult. Scanner circuits are not altered; only wires are connected to readily identifiable points. The HB-232 Project is mostly time consuming, but if you are patient and can handle a soldering pencil, read and follow written directions in English; and do a little mechanical work, then this project should be within your scope. The HB-232 has been Beta & Charley tested by more than 50 hobbyists, ranging from entry-level to expert. All have reported success and great satisfaction with the HB-232. The time required for construction/installation has been typically 6-12 hours.

The price of the HB-232 Kit is **US\$169.95 + \$5 S&H**; (Canada/Mexico & other surface-foreign, \$10 S&H) All foreign, add proportionally more for Air Mail. Payment in US Funds ONLY: cash, money order, certified check, personal check, MasterCard & Visa. Cash is risky and checks may delay shipment for bank clearance. Signature required for credit-card orders. Dealers & volume purchasers inquire for details.

Orders for HB-232 Kits are now being accepted. We'll confirm your order upon receipt by prompt shipment or a notice of when shipment is expected. Refund available any time before shipment after which, our formal Refund Policies take effect. Return within 5 days for 100% refund or within 6-30 days for an 80% refund (both less S&H). The Policies are contingent upon return of the clear plastic Bag of Parts with its unbroken & untampered, but you're free to examine the Manual and to run the Program. Great tech support available via Mail & *The Hertzian Intercept BBS*. (See below.)

For more info, contact us by Mail or on our Computer BBS, the *Hertzian Intercept*, after 6:00pm & before 1:00pm, PST, at (619) 578-9247. The BBS has a special Message Base (#32) for HB-232 Technical Support and related topics. File Areas #10 & #12 are applicable. The monthly "*WORLD SCANNER REPORT*" carries news of developments of the HB-232. Inquire about the "*WSR*" if you haven't heard about it. Edited & published by Bill Cheek, author of the *SCANNER MODIFICATION HANDBOOKS*, the "*WSR*" is dedicated to scanner technology & modifications!

ORDER NOW - BEAT THE RUSH - HB-232 IS HOT STUFF!

* **PRICE LIST - subject to change without notice.**

HB-232 Kit: Parts, Program Disk & Instruction Man:	\$169.95
HB-232: Assembled/Tested Board: +	\$219.95
HB-232: Assembled/Installed/Tested IN Scanner: +	\$319.95
HB-232: Assembled/Installed/Tested in Project Box: +	\$319.95
<i>with cable for scanner, you wire the scanner, or, see below:</i>	
1st Scanner wired/tested to accept the External Box:	\$ 79.95
2nd & add'l scanners wired/tested for Ext. Box: ea	\$ 54.95
Instruction Manual Only; discountable against order:	\$ 15.00
Calif addressees add 7.75% Sales Tax:	\$
Shipping & Handling: Kits, boards, boxes, Manual; ea:	\$ 5.00
Shipping & Handling: Scanners, ea:	\$ 15.00
C.O.D. orders acceptable; add	\$ 7.50
3rd Party Software Developer's Information	Inquire

NOTE: Specify floppy disk type when ordering. Computer, scanner & serial cable ARE NOT included in any of the above prices. + Manual & Disk Included.

The information on this sheet is a collection of what's appeared in magazine print about the HB-232 Scanner/Computer Interface so far.

The Year of the Interface—Continues

In February I said 1992 was the Year of the Interface; in March I reviewed two possible candidates. Now there's another new interface just announced: the HB-232 Scanner/Computer Interface, developed by Commtronics. It is designed to turn your PRO-2004, PRO-2005 or PRO-2006 scanner into a total monitoring system. The following is an overview of the HB-232's most prominent features.

The HB-232 Scanner/Computer Interface connects between a PC/XT/AT/386/486/clone computer (512-k min) and a PRO-2004/5/6 scanner. A standard serial cable connects the HB-232 to the computer's COM port. The HB-232 can be installed inside the scanner, or better still, in a small project box, with a short cable and plug to mate with a receptacle mounted on the scanner. This latter method allows the HB-232 to be used with two or more scanners! The scanner is not appreciably modified either way: just some point-to-point wiring. Features and performance of the scanner aren't sacrificed, altered or lost by the addition of the HB-232.

Here are some of the HB-232's capabilities:

- Autoprograms into the scanner's memory channels up to 400 frequencies in less than nine minutes, along with desired custom settings of DELAY, MODE and LOCK-OUT.
- Views and controls all 29 standard scanner keyboard functions from the computer. The monitor displays a facsimile of the scanner's keyboard and its LCD display. Whatever appears in the scanner's display at any given time is simultaneously displayed on the monitor. Press M on the computer keyboard for MANUAL; press S for SCAN; press P for PRGM, etc.
- AutoLogs details of every "event" seen by the scanner to a text file. When the AutoLog mode is set and SQUELCH breaks, the computer writes & appends a line to a text file that shows channel number or SEARCH Bank; frequency; MODE setting (NFM, AM or WFM); DELAY status (On or Off); LOCKOUT status; SEARCH increment (if applicable); Date; Start Time; and Duration of transmission. This text file is "comma-delimited" to make it exceptionally easy to load into almost any database manager for further processing & sorting as desired!
- When the scanner stops on an active frequency, an Anti-Birdie Function can compare that frequency to a file list of frequencies and instantly resume scanning or searching, if that frequency is on file. This feature is not limited to just "birdies"; any number of other undesired frequencies can go into the "birdie file," such as for pagers, computer data channels, continuous tones, encrypted signals, and other frequencies that you don't want the scanner to stop on or to AutoLog. There are even ways to automate the collection of undesired signals to add to the "birdie file."

The HB-232 also offers several ways to Search & Store, some without duplicating previously logged frequencies. A powerful, but easy to use, Script function provides the capability to customize and automate many otherwise laborious scanner operations. A special LookUp function displays a line of text to identify each scanner stop.

Four user-definable switches, controllable from the keyboard or through script, and five logic-status inputs are standard with the HB-232, to provide a variety of non-standard scanner operations and control. The user switches can control modifications and external circuits that may have been retrofitted to the scanner, such as extended memory blocks, automatic tape recorder switches, etc. The logic status inputs can trigger logical decision-making functions in the Script feature as well as test various processes or functions not otherwise visible or controllable by software.

A built-in text editor affords simple, easy editing of HB-232 data files. The HB-232 offers configurable menu positions for two user tools of choice, typically DOS utilities, to make interface life much easier.

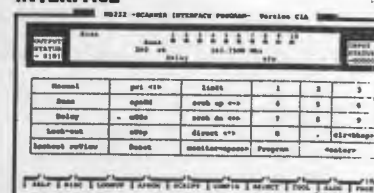
The heart of the HB-232 is a microprocessor chip that's programmed by the computer when the HB-232 program is booted. This means there's no expensive, impossible-to-replicate firmware on the circuit board; just generic or readily available parts. The program and the microprocessor are the sole controllers of the HB-232; easily and economically upgradable by periodic revisions on disk. The "architecture" of the HB-232 may become open to bona-fide developers to encourage third-party support.

OK, so what's the catch? None really, unless maybe it's that the HB-232 comes as a kit of parts with a printed circuit board and a program disk at a cost of \$169.95. Considering the detailed documentation and guided steps for the procedure, that's not much of a catch.

Smart Controller for VHF/UHF

Commtronics Engineering has designed a scanner-computer interface for the Tandy/Realistic PRO-2004, PRO-2005 and PRO-2006 programmable VHF/UHF scanners that allows you to control them by computer. A 640k IBM PC/XT/AT/386/486 or clone with 9600-baud COM (serial) port and MSDOS 3.3 and up is required.

The HB-232 SCANNER/COMPUTER INTERFACE



REVOLUTIONIZES THE ART, SCIENCE & PLEASURE OF SCANNING!

The HB-232 is the long awaited RS-232 scanner controller and data acquisition system brought to you by Bill Cheek, author of the *Scanner Modification Handbooks*.

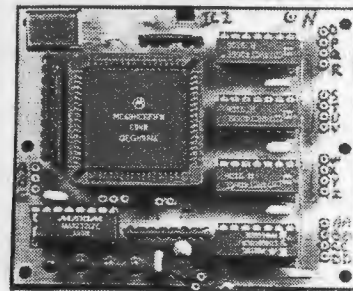
- The HB-232 Scanner/Computer Interface Kit + includes:
- printed circuit board and essential electronic parts
 - Control Program on Disk (specify disk size)
 - detailed documentation & photos on assembly, installation & operation
 - wide area network technical support

Requires PC/XT/clone with MS-DOS 3.1 or higher & 9600-Baud min; HD recommended.

Designed for the PRO-2004/5/6 scanner series, the HB-232 features AutoLog, AutoProgram, Data LookUp, Scripts & much more with nearly unlimited variations of computer control & data collection from the scanner. Facilitates maximum performance without compromise. Easy to install & use; minimal invasion to scanner! Discover a new dimension of radio scanning! Order today! \$169.95 + \$5 S&H, ck, mo, MC/MSA.

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Some of the features of the HB-232 include autoprogram, which can download to the scanner up to 400 memory channels at a time from a database; autologger, which records new frequencies discovered by the scanner; an anti-birdie device; pull-down menus and more.

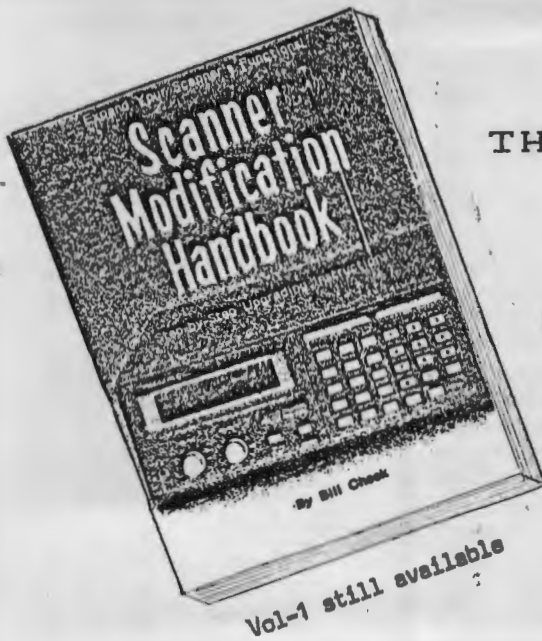
HB-232 is a kit including PC-board and essential parts, program disk and detailed instructions available for \$169.95, plus \$5 shipping and handling. Allow 2-4 weeks for delivery.

You can get more information or order one by writing to Commtronics Engineering, P.O. Box 262478-MT, San Diego, CA 92196-2478 or call 619-578-9247 from 1:30 pm to 5:30 pm Pacific time.

THEY'RE HERE!

THE SCANNER BOOKS
OF THE 90'S

PERSONALLY SIGNED BY THE AUTHOR!
(Autographed copies
available nowhere else!)



Vol-1 still available



Vol-2 avail April, 1991

Volume 1 of the Scanner Modification Handbook proved that the average hobbyist could easily perform some relatively simple changes in the equipment and emerge from the experience with a greatly enhanced scanner. The step-by-step instructions and photos left no questions unanswered and even totally non-technical people found that they could restore functions that had been locked out at the factory, or add anywhere from 100 to 6,000 more memory channels to popular scanners such as the Radio Shack Realistic PRO-2004, PRO-2005, PRO-2006, PRO-34 and others.

Now, in Volume 2, modification master Bill Cheek brings you more great enhancements for the PRO-2004; PRO-2005, PRO-2006, PRO-34, PRO-2022 and Uniden Bearcats BC-100XLT; BC-200/205XLT; and BC-760/950XLT. He shows how to adapt many of these modifications to other scanners as well. In Volume 2, you'll get new circuits and simpler but more effective approaches to adding signal strength meters, adjusting the scan delay time (0-12 sec), speeding up scan & search rates, decoding and using CTCSS tones, adding more memory channels, adding an event counter, shielding plastic cased equipment, reducing interference, restoring locked out bands, adding center tuning meters, and more. Vol-2 also contains updates to the modifications that appeared in Vol-1, plus more tips, hints, explanations, and tricks of the trade to make scanners more useful and versatile.

Learn how to realign your PRO-2004/5/6 scanner; how to use a VCR to record the action from your scanner; how to diagnose and repair some scanner problems; how to use Computer BBS's to improve your scanning knowledge. Find out about buying a used scanner; about collecting scanners; how to get a big boost in the audio output of your scanner; how to build a bench power supply and lots more. It's all there in Volume 2 of the Scanner Modification Handbook. You'll even learn about dealing with those new trunked 800 MHz systems that seem so difficult to monitor.

There are plenty of photos and the text is written so that the average hobbyist can follow the clear step-by-step instructions. And, you don't need exotic test equipment or extra special tools to do these modifications. Scanner owners will find Vol-2 to be a valuable and constantly useful reference in many ways. A few modifications suggest that the user be familiar with the information in Vol-1 first.

The Scanner Modification Handbooks are now available from the author with his autograph and a personal salutation, if desired, for \$17.95 ea plus \$3.00 shipping & handling. (Canada, \$4.00 S&H; other foreign, \$5.00 S & H. Add sufficient extra funds for air mail if desired.) Order from and make remittance payable to:

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