K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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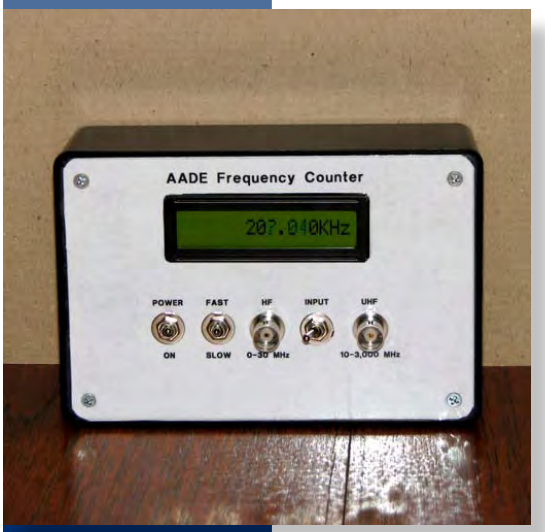

AADE DF4DA

Frequency Counter Kit

Philip Cala-Lazar, K9PL

The Almost All Digital Electronic frequency counter kit covers from 0 MHz to 3,000 MHz: HF 0-30 MHz and VHF 10-3,000 MHz.

From the AADE Web site

Four Operation Modes

MODE1 HF FAST: Max input frequency 40 MHz, resolution 10 Hz, gate time .1 sec

MODE2 HF SLOW: Max input frequency 40 MHz, resolution 1 Hz, gate time 1 sec

MODE3 UHF FAST: Max input more than 3 GHz, resolution 1,000 Hz, gate time .128 sec

MODE4 UHF SLOW: Max input more than 3 GHz, resolution 100 Hz, gate time 1.28 sec

My DF4DA kit arrived with its full complement of parts and an optional parts kit that included panel mount SPST switches and BNC fittings. With only a handful of parts in the box, assembly occupied less than one, hassle-free, hour. Unlike AADE's LC kit (*K9YA Telegraph*, February 2012) some component and lead locations are silk-screened on the PCB. As in the construction of that kit once a couple of components are mounted they make fine landmarks to position the rest. The LCD module mounts to the PCB with a 14-pin header.

The Enclosure

At the time of my order the optional box kit pictured on the AADE Web site was not available, so I substituted Radio Shack's (#270-1806) project enclosure; it is packaged with ABS and metal panels. The drilling template and panel label were created using Front Design (*K9YA Telegraph*, February 2013). Thanks to the template and a Dremel® drill press the switches' and BNC connectors' mounting holes were accurately positioned and symmetrical.

Cutting the opening for DF4DA's LCD required some elbow grease, a few Swiss files and an emery board. The enclosure's ABS plastic front panel provides molded-in recesses for two sizes of rectangular openings. As fate would have it neither of the recesses matched the counter's LCD, but offered a starting point and some placement symmetry. Four holes were drilled in the panel to mark the limits of the LCD's dimensions and a #11 blade-equipped hobby knife (very carefully!) connected the holes.

"one hassle-free hour"

For this plastic front panel I found that cutting (again, very carefully!) with the blunt, back side of the blade's tip was the best technique as the extremely thin and sharp blade tip tended to jam in its narrow incision. The tip's backside cut more quickly as it cleanly "plowed" through the relatively soft plastic. Once the rough opening was made it remained to sand, file and test fit until the meter face snapped in with a very satisfying click–no additional fasteners or adhesives needed. The panel label was laminated with Avery™

Continued - AADE DF4DA on Page 8

Inside This Issue...

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2004 - 2012

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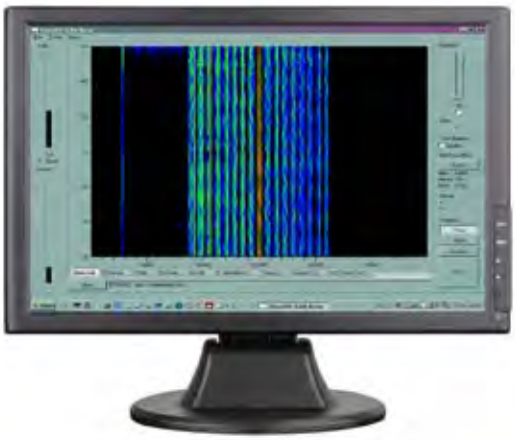
Digital Voice For the Rest of Us

Paul W. Ross, W3FIS



FreeDV Waterfall Showing Digitized Signal

I have been a big fan of digital transmission modes, such as PSK-31, Olivia, JT65-HF, Feld Hell, and anything else that has come down the pike. In fact, my choice of equipment has been focused more on something that would work well with digital modes, versus conventional voice modes, such as AM or SSB. Just a caveat, I started this game using AM on 6-meters more years ago than you want to know. I was not the favorite person in the neighborhood with a very unshielded 2E26, 6-meter AM and a dipole in our apartment. Oh well…

CODEC

Up to this point, amateur digital voice has been essentially limited to the proprietary D-Star system. While it appears to be a good idea, well developed and stable, there are some serious problems. First, it is implemented currently primarily on VHF and UHF equipment. Secondly, the technique is proprietary. This means, that to use it, or properly the CODEC (coder-decoder algorithm), you must be licensed as part of the process of owning the equipment. This means an additional hidden royalty cost, and a limit on the availability of equipment. Ham operators, being perhaps some of the most penurious people on earth, have not been enthused. I know that I'm not.

"Free Digital Voice"

Fast forward to the spring of 2013. I have been keeping track of the developments in amateur digital transmission techniques, and started hearing something about "Free Digital Voice." Well, cheap is good, free is better, and perhaps free and delivered is the best of all. The final straw, so to speak, to get me involved on a more serious vein was an article in *QST*, giving the Web site, and a brief synopsis of a program called "FreeDV." Just like Cinderella, waiting for her prince, it appeared that the answer to my hopes was at hand.

Digital voice techniques have been around for a long time. In fact, a lot of my time, many years ago in industrial research, was spent on various speech-oriented projects: better microphones and loudspeakers, recording systems and some incredibly primitive speech recognition systems with minuscule vocabularies. It is quite amazing how much bandwidth reductions and amplitude compression a voice signal can sustain and still be very understandable. This, among other things, appears to be at the heart of the FreeDV system.

Off to the Races

OK, off to the Web site: freedv.org/tiki-index.php. I quickly found the link for downloading the software. I have a somewhat well used Dell Optiplex DX280, with a modest upgraded memory and a Pentium 4 processor. This machine has been quite satisfactory for digital work thus far, so I had no reason to believe I would encounter any problems on this machine, which I did not.

Some hardware is needed:

- A computer—we have that. I am running Windows XP, though a Linux box would also do the trick, as the code for FreeDV is available for Linux.
- A sound card—one is built into most computers. That one will suffice for the microphone and headphone or speaker. If you just want to listen, this will be enough—connect the Line In jack to your receiver output. Tune up to 14.366 MHz USB, and go for it!
- A sound card interface for the radio signal to the microphone on my Alinco DX-SR8, and audio from its speaker jack. I use a SignaLink USB interface, which is the one I have used on the Alinco, as well as my Yaesu FT-817ND.
- A microphone and a headphone. In the interest of domestic tranquility, I dug out the inexpensive boom microphone/headset combination I had been using on EchoLink and Skype. Mine came from the local "big box" stationery store, though anything you can lay your hands on should work.

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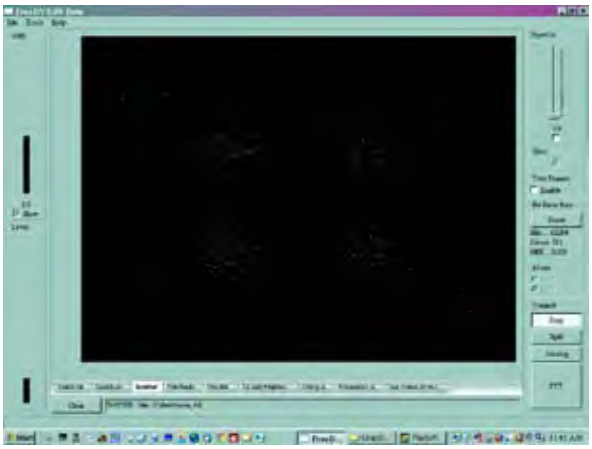
I simply un-zipped the software into a directory, set a desktop link to the executable program, and gave it a poke. Up comes the software without a whimper. At this point, it is useful to read the instructions! The "help" files for FreeDV are excellent. There is also a very active reflector on Google, which I have found most useful for answering some of my questions. Search for the "digitalvoice" newsgroup and sign up, free, of course. You need to establish the linkages between the sound card interface to the radio, and the other sound card interface to your microphone/headphone. This is all done through a "tools" screen and drop-down menus.



FreeDV Constellation Diagram Showing Phase-Amplitude Modulation

I tuned the receiver to USB, 14.366 MHz. Within a few moments—I was listening in the mid-afternoon—comes a voice, clear as the proverbial bell, as if the person was sitting next to me. This is a far cry from the pathetic conditions we have at times with SSB transmissions. With FreeDV, you either hear it, or you do not. View digital voice as comparable to the difference between an FM broadcast station and an AM broadcast station. You either "capture" the FM station, or you do not. The newer crop of cell phones are digital, and show similar operational characteristics.

Ferrite Choke

Only two minor difficulties were encountered, I had my microphone gain set up too high. This resulted in over-driving my transmitter, causing it to spew stray RF into every audio and control line in sight. I cut back the microphone level and fitted all audio and control cables with ferrite chokes, just to be on the safe side.

I am using version 0.96 Beta at this writing, but find that the program is quite usable in its current form. It should be noted that we owe a large vote of thanks to Dave Whitten, KDØEAG, and David Rowe, VK5DGR, for their FreeDV program development. ■

Amateur Radio At The Movies

By Bob Cashdollar, WR8U

The Glass Bottom Boat 1966 RATED NR, 1hr, 50min.

The Glass Bottom Boat is a real mishmash of a movie. It involves Doris Day in a spy plot about the NASA among other things.

Two things caught my attention in the movie. First is the boat of the title appears at the beginning of the movie and is never again seen.

Second is Paul Lynde in a Carmen Miranda drag scene late in the movie. Priceless!

Also, apparently the screenwriters didn't know the CIA was not allowed to do domestic spying, at least in 1966.

Amateur Radio In The Movie

Amateur radio equipment and QSL cards are used for set decorations in various scenes, but that's about the extent of any amateur radio involvement. The Day character talks to her dad, Arthur Godfrey, a real life ham (K4LIB), via what appears to be radiotelephone. They both are shown using telephone handsets when talking with each other.

Also

Quite a few of the Web sites that list amateur radio in movies and television list a *Frasier* episode called "Ham Radio." (Frasier, rated NR, 1996)

The ham in the title refers to the theatrical use of the word rather than amateur radio. With Frasier as the director, the gang at the radio station tries to put on an old-fashion radio drama over the air. The quirks and egos of the radio station people give meaning to the episode's title.

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Conan Wyatt Burtram Barger, W3CVE

Part XII - The Finale

Scott B. Laughlin, N7NET

Mae Burke, W3CUL

On September 27, 1951 a handsome and healthy baby boy was born. There was nothing else for me to do but to notify all of the TCRN members about the arrival of Conan Wyatt Bruce Barger. Many messages were received giving congratulations to the "young engineer and junior operator at W3CVE."

Throughout his formative years he was fascinated whenever he would hear CW signals. Many times while I was handling traffic Bruce came downstairs to the radio room, put on a pair of headphones and listened. When the stations came back to me I would say, "There is Dave, W2BO; Mae, W3CUL; Bill, KG6FAA; Joe, WØKA; and Peg, W9JUJ."

His interest was keen and by the time he was seven he knew the code and made a fair copy at 5 wpm. Soon, I thought, he would be ready for his license. However, when he started grade school and on to high school he became intensely interested in chemistry. I helped him build a lab opposite my radio room. He collected many precision instruments. I found him an oscilloscope, which he used for analyzing Lissajous figures. My hope was that maybe he would develop an interest in electronics and carry on when this old goat has made the trip to the big farm.

Mae Burke, W3CUL

On February 28, 1957, Mae Burke, W3CUL, my candidate, won the General Electric Edison Award. The commissioner, Mr. Hyde, said that Mae won the award unanimously, that no other contestant came close to her qualifications. Under-Secretary of State Herbert Hoover, Jr., one of the judges said, "…gentlemen, there is no question about it. Mae Burke, W3CUL, wins the award." Among those present were Rear Admiral Henry C. Bruton, W4IH; Edward Webster, FCC commissioner; and president of General Electric, John Lang.

While Chester Lang of General Electric was MC I gave a speech outlining the excellent public service Mae had performed. She averaged 3,000 to 4,000 each month.

Emergency Work

In January 1960 I was appointed Emergency Coordinator and on August 15 Tom Hodges, W3BKE, ARRL Section Manager, appointed me as Route Manager for the MDD Section Net (Maryland, Delaware, and Washington, D.C. Section Net). On December 21, 1961 Andrew Abraham, W3JYZ, appointed me to the position of Section Emergency Coordinator.

I enjoyed emergency work very much and especially CW operation. Several flood, earthquakes, explosions, and fires were simulated. Many of the TCRN members would QNI and provided excellent service.

"We had a wonderful time…"

One day I received a telephone call and the person who called asked, "Are you Conan Barger?" Then he asked, "Do you know who this is? Remember the fellow who lived in the Parkland section of Des Moines near your dad's college? You used to drive a Ford roadster over to pick me up and take me to your radio club?"

It was Bob Willits who had moved to the east coast. His call was W1PN. Bob was a merchant marine and had taken part in a lot of convoy duty during the war. We had a wonderful time recounting old times during the 1920s.

Time waits for no man. On December 1, 1961, I retired from the CIA. I shall always remember the wonderful times I had while with the agency. Most of the radio operators employed by the FCC, RID, FNIS, and the CIA were licensed radio amateurs. The most skilled technicians and communicators came from the radio amateur ranks. The majority of the radio operators employed by the above

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mentioned agencies could transcribe radio CW at speeds of 30 to 50 wpm.

I have worked with many skilled CW operators who could copy 60 wpm. An operator who can read CW in his head at 50 to 60 wpm, but is unable to transcribe it in legible form is only half-baked.

The first couple of years of my retirement were spent around the house repairing and painting. A good deal of time was spent in my radio room building radio gear—transmitters and test equipment.

Speakers Bureau

In 1963 I started a business called Speakers Bureau. I solicited folks who could speak on various subjects. My goal was to engage them to speak at clubs and conventions. A few were Dale Carnegie graduates. The Bureau was successful, but it didn't quite ring the bell for me. In 1965 I began making code tapes. At a surplus market I bought a couple of tape recorders, composed a tape that started the beginner on becoming a good CW operator. I called it Code Sound Language (CSL), which begins at 5 wpm minute and goes to 15. Several verbal training aids are announced throughout the recording. Then I composed a high-speed tape, which begins at 20 and goes to 60.

All recordings are done with a straight key. I used to train operators to copy rapid code using the Boehme. It worked fine, except for those wishing to go beyond 35 wpm. After listening to the perfect code it was difficult to copy a Vibroplex or straight key. Therefore, I used the straight key so the student would be able to copy CW with versatility. To obtain the higher speeds on my records I recorded 20 wpm at 7½ inches per minute to a record running at 3¾ inches per minutes. Doing so produced CW at 40 wpm.

I put my tapes on the market by visiting several ham fests with two tape recorders and a typewriter.

While at the Fort Belvoir ham fest the high-speed was running at mid volume. While I was talking to a lady who wanted to purchase a tape for her son, I could hear the tape going at 40 wpm and the typewriter was banging away. It was a boy of 14 and he was making perfect copy. He said, "This is a good tape. I am going to buy one." And added his dad could do 60.

Realizing my tapes were catching on, I ran ads in *QST*. You'll find my ads listed as Sound History Recording in the late 1960s issues. I sold hundreds of tapes. Many of my high-speed tapes went to the Signal Corps in Vietnam. I even had a dealer in Paris, France.

Herbert C. Hoover, Jr., W6ZH

I always wanted to start a school. In 1965 I approached the supervisor of the YMCA in Washington, D.C. with a plan. He was impressed. He gave me a room in which to set up my equipment and I called it The Institute of Radio Communications. I soon had a full class. Many wanted to earn their amateur radio license, while others wanted a commercial radiotelephone license. Still others wanted a commercial radiotelegraph license.

One student at the YMCA was Mrs. Sturgeon. She was 80 years young and determined to earn her license. After several months of intense training she passed the test for her General amateur radio license.

> *"She was 80 years young…"*

A close friend of Mrs. Sturgeon came to my school and told me that before she passed on she became paralyzed and could no longer speak. Someone gave her a code oscillator and key and that was how they conversed with her.

I trained hundreds of operators and many earned their commercial licenses and are now sailing the high seas as ship radio officers. ■

Great Caesar's Ghost!

Budding Jimmy Olsens and Lois Lanes needed.

The Daily Planet, aka, *K9YA Telegraph*, seeks articles. See your words and photos disseminated worldwide! Cub reporter? No problem, your copy will be emendated by the *K9YA Telegraph*'s team of professional editors.

Stop the presses!

http://k9ya.org/write_for_us.htm

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MediShare International

Dr. Robert "Smitty" Smithwick, W6CS (SK)

Smitty, W6CS (SK)

Many years ago I founded what turned out to be a very worthwhile humanitarian (501-3-c) program called "MediShare International." The name MediShare is a take-off on "Medicare." It occurred to me as I talked to my friends on the Sunday morning MARCO (Medical Amateur Radio Council) net (after the lecture), that surely many of these 'guys, if they were like me, must have used, but still good equipment in storage facilities, garages and the like. I did a little research and, of course, I was right. There was little incentive for them to sell such equipment, yet lots of it, judging from my own experience, was still safe to use, met factory specs, etc., although not the latest model.

For some time I was working with two or three national, well-known, highly experienced organizations, which accept donations of medical, dental, hospital equipment and instruments, repair it as required to meet *original factory specs* and place/donate it to these little, *pre-qualified*, "jungle" hospitals/clinics.

"…the Zambia of Victoria Falls…"

You may have heard or read of MARCO. It is a long-established group of hams, who are also licensed medical/dental/pharmaceutical professionals: MD, DDS, etc. MARCO operates a very successful on the air net every Sunday morning, which is so well recognized that it is accepted by the American Medical Association and the American Dental Association for continuing education credits needed to qualify for professional license renewals.

Every Sunday morning, on the 20-meter net, a MARCO member or an invited speaker, presents an hour-long lecture with Q & A, on a medical topic. Normal check-ins typically involve as many as 40-50 member/stations all over the U.S. If conditions are good, there may be check-ins from all over the world including Europe, Middle East and Far East–when the sunspots are favorable.

One morning, being a DX'er, I was in a casual QSO with a ham in Zambia, east Africa. Conditions were good (high sunspot numbers) and we had a great QSO and we decided to meet again a week later on 20-meters. On our second QSO, he mentioned he had a very special problem I just might be able to help him with. This is not the Zambia tourists know–the Zambia of Victoria Falls far to the south. He then told me he was on the medical staff of a little 'jungle' hospital in rural Zambia–St. Paul's Hospital. In fact, he was one of only three doctors on staff, one of whom was usually on vacation or traveling, often leaving two or even only one doctor on staff at times. I asked him to give me more details. Long story short: he did.

The hospital was small by our standards–about 85 beds as I recall. He went on to tell me the hospital served an area about the size of the northern half of California–some 90+ miles north to south and 75+ miles east to west. In this entire region there were thousands of people living in the rural areas surrounding a dozen little villages.

Back to the story: In follow-up QSOs, he told me there was no infrastructure in this entire area; no power lines, no telephones, no roads, only trails through the jungle/countryside. He went on to explain that a few of these villages had an OJT–on-the-job trained–'nurse' with no formal training, who provided what health care she could, trusting her common-sense and experience, such as it was. If she had a patient she felt was beyond her ability to treat and should see a doctor, she had to, first, get permission to have the patient transported to the little hospital. This required someone to ***walk*** to the hospital, explain to the doctor the nature of the illness, get his permission to bring the patient in to the hospital, then ***walk*** back to his village and arrange for two men to take the patient on a gurney or stretcher and ***walk*** her to the hospital. This process could take

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Byron Price & the Wartime Amateur Ban

Philip Cala-Lazar, K9PL

For the duration of both World Wars amateur radio operations were prohibited. On December 8, 1941 the majority of America's 65,000 amateur radio operators were directed to suspend their on-air activities. However, the Defense Communications board, "…acting at the request of federal, state, or local officials in connection with defense," granted special authorization to 1,000 hams to continue operating. On January 9, 1942 the FCC "acting at the request of the Defense Communications board," ordered "…the immediate cessation of all amateur radio operation" in that "national defense considerations require such complete cessation."

According to the book, *Secrets of Victory*, Byron Price (1891-1981), director of the Office of Censorship (OC), was integral to that decision. The OC, in addition to commercial radio services, policed "backyard 'ham' broadcasts." "Price decided to suppress ham radio for the rest of the war, and he used a variety of controls and requests to keep the next four categories on the air but subject to censors' scrutiny."

Those four categories were: "wireless communication across the oceans; international radiotelephone; a small number of network and government-sponsored shortwave broadcasts aimed at a global audience; a collection of government and private point-to-point message services used by airlines, taxis, and police cars; and the tiny radiotelegraph services that competed with companies using telegraph wires."

Byron Price

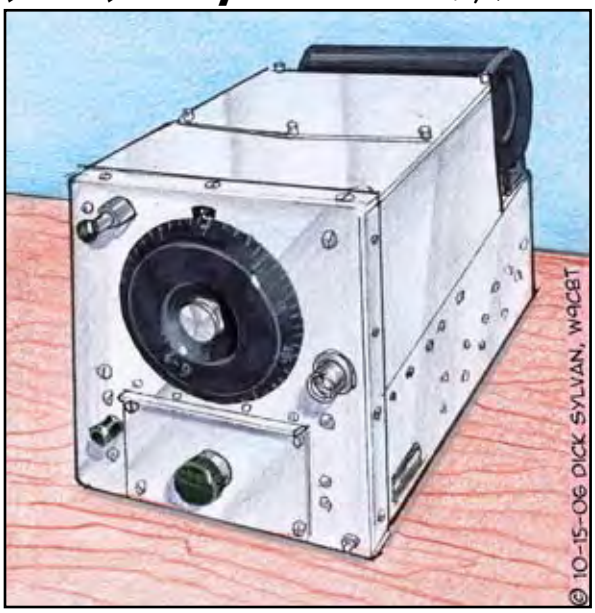
Concerned that personal radio messages could be used to send vital information to enemy agents, those radiotelegraph services, too, were suppressed starting June 30, 1942. Price, acting on Attorney General Francis Biddle's opinion that the First War Powers Act of December 1941 and a 1932 Supreme Court decision wherein Chief Justice Charles Evans Hughes stated, "No state lines divide the radio waves," Biddle extrapolated, "It is equally true that no national boundaries divide the radio waves…."

Citation accompanying Medal for Merit presented to Byron Price by President Harry S. Truman on January 15, 1946.
http://www.presidency.ucsb.edu/ws/index.php?pid=12412

Chicago Daily Tribune, January 10, 1942

Secrets of Victory: The Office of Censorship and the American Press and Radio in World War II, Michael S. Sweeney, The University of North Carolina Press, Chapel Hill & London, 2001, ISBN 0-8078-4914-6

Ham History DICK SYLVAN, W9CBT



BC-455 (6-9 MC) WWII SURPLUS RECEIVER

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a day, a week or two or even more, depending on the distance to the hospital, the weather and other factors assuming the doctor agreed to see the patient. Obviously many patients could not physically survive such a trip, and died. A high percentage of patients were OB/Gyn, as you would expect.

One Sunday morning on the MARCO net, I suggested that MARCO consider planning and financing a simple communications system, wherein a small, low-powered, two-way radio transceiver be installed in each village, giving the 'nurses' direct access to consult one of the two or three doctors in the hospital when required. The idea immediately 'caught on' and I was urged to proceed. I worked through the process of getting full government approval at several levels; the assigning of appropriate licenses, frequencies, etc. Finally, after about eighteen months, I was granted full approval, which resulted in a network of a simple, two-way radio transceivers installed in each village, not on the ham bands, but on appropriate government frequencies. In the beginning of the planning phase, I learned there was a small, 20-member, or so, Rotary Club in Mansa, the capital, and I arranged through several Rotary districts and finally, Rotary International HQ in Evanston, Illinois, to work directly with the Mansa Rotary Club. A Rotarian member of the Mansa Club agreed to work with me. Over a period of some eighteen months, we secured all the necessary government approvals and licenses and proceeded to have the system designed and implemented by a professional communications' system provider in Zambia. Various Rotary clubs and individual Rotary members provided financing with support from MediShare International.

Finally, on the completion of the project, I got an email from my Rotary friend in the Zambia Rotary Club, who told me the system was in place and working (Hurrah!) and that he had a question from a 'nurse' in one of the little villages.

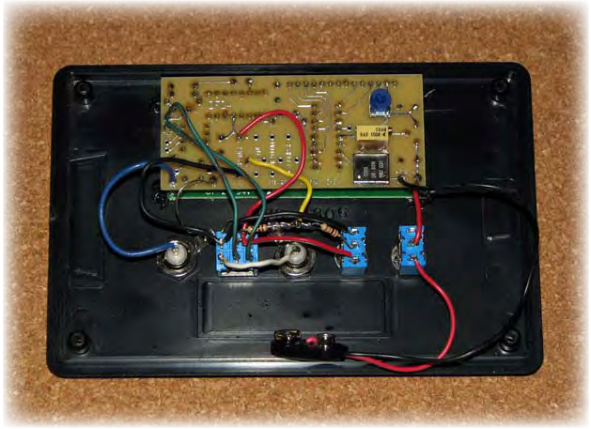
Her question: "What's a radio?" ■

Gustav "Gus" Undy, W8YNC (SK)

Gus Undy, founder of Multi-Products Co., later known as Multi-Elmac, passed away March 27, 2013, at the age of 93. Probably known best for their amateur radio mobile gear, Multi-Elmac also manufactured CB transceivers, commercial radios and garage door openers. Undy designed most of the gear in their catalog. In 1968, the company was acquired by Stanley.

Continued - AADE DF4DA from Page 1

film and mounted using 3M™ spray photo adhesive. All this filled the best part of two evenings' pleasant labor.



Final Assembly

Final assembly of the PCB to the control wiring was expedited using AADE's "Assembling DFD4A in the Frequency Counter Box Kit" construction pictorial. This step-by-step guide is indispensable in clarifying any final assembly riddles.

With the kit completed and a 9-volt battery installed, the meter's LCD came to life indicating that everything was working fine. With an 18-inch whip antenna connected to the HF and then the VHF ports the DFD4A sniffed the shack's transceivers' stray RF with the DFD4A matching the rigs' displays.

However, when connected to a homebrew BNC-terminated coax test lead the DFD4A's LCD read zero hertz no matter the input signal. Shunt capacitance was the culprit and substituting an oscilloscope probe proved the cure. Armed with this new frequency counter I was able match my NorCal 40A's Morse annunciation to its true frequency; it had been off one kHz. I look forward to using the DFD4A during kit builds, gear troubleshooting and for other frequency measuring tasks.

As with my AADE LC meter experience: construction of the DFD4A was quick, enjoyable and trouble free, it worked when first switched on and as specified, and the price is right. I am pleased to add the DFD4A to my shack's workbench. ■

Scale Generator

If you find Front Design useful, check out Scale Generator. Scale Generator can create "both round and linear dials." Scale Generator, its documentation and additional Tips & Tricks can be found here:

http://www.frontpanelexpress.com/support/tips-tricks/index.html

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