Product Review Column from *QST* Magazine

April 1983

Datong PC1 General Coverage Receiving Adaptor

Lance Johnson Engineering D-Lay-5

Logistics Corporation Fire-Fist 1000 CW System

RAK Electronics "VIC-Morse" Morse Software

Yaesu FT-708R 450-MHz FM Transceiver

Product Review

Conducted By Paul K. Pagel,* N1FB

Yaesu FT-708R 450-MHz FM Transceiver

Yaesu FT-708R 450-MHz FM Transceiver Serial No. 2F100398

Manufacturer's Claimed Specifications	*Measured in ARRL Lab*
Frequency range: 440.000-449.975 MHz with direct programming.	As specified.
Rf output power: 1 W HI; 200 mW LOW.	1.6 W HI; 400 mW LOW.
Spurious emissions: – 50 dB or better.	2nd harmonic: – 64 dB.
Power requirements: 10.8-V dc battery pack (max. 13 V).	
Current drain: rx 150 mA (20 mA squelched); tx 500 mA (HI) 300 mA (LOW).	Not measured.
Receiver type: Double-conversion superhet 1st i-f — 46.255 MHz. 2nd i-f — 455 kHz.	
Sensitivity: Better than 0.4 μV for 12 dB SINAD. Better than 1 μV for 30 dB S/N.	0.28 μV/20 dB quieting.
Audio power output: (8-ohm load): 500 mW at 10% THD.	600 mW.
Size (HWD): 6.6 × 2.4 × 1.9 in. (168 × 61 × 49 mm).	
Weight: Approx. 25 oz (720 g).	
Color: Brushed aluminum, medium gray.	
Price class: $320	

Available from: Yaesu Electronics Corp., 6851 Walthall Way, Paramount, CA 90723.

Looking for respite from the madding crowds on 2-meter repeaters? Try the 450-MHz band. I did, and found peace, solitude and a few new friends to boot. During the review period for Yaesu's FT-708R 70-cm fm hand-held, I enjoyed relatively long chats with other 450 denizens free from hustle and bustle. I wxs able to converse without the feeling that countless other users were ready to pounce once I said my final "73." It was a nice feeling!

The 450-MHz band repeaters appear to be more popular in the West, but are also found in numbers throughout the rest of the country. The repeater subbands are from 420.0 to 431.0 MHz, 433.0 to 435 MHz, and from 438.0 to 450.0 MHz. In this country, the most popular repeater channels are in the region 440.0 to 450.0 MHz. The national simplex frequency is 446.0. The repeater band plan includes a transmit/receive offset of 5 MHz, with 50-kHz spacing between repeater channels. With Yaesu's new rig in hand, I felt a welcome breath of fresh air on the 70-cm band.

The FT-708R is a durable, easy-to-use, microprocessor-controlled hand-held rig. It's built around an aluminum frame with a heavy-duty plastic case, and is pleasing to the eye. It features 1 watt of rf output, and provides 10-MHz coverage (440.0 to 449.975 MHz) in 25- or 50-kHz steps. Ten memories allow for storage of your favorite repeater frequencies.

Scanning is a nice feature of the radio. Because the 450-MHz band is generally quiet on the repeater subbands, the user can scan for a busy (or clear) channel — over the entire band, certain segments or just the memory channels. Abnormal splits may also be programmed. Frequency choices are made by the front-panel 16-digit matrix keyboard pad, and the last four digits (9.050, for example) are displayed on the large liquid-crystal display. A lamp is provided for nighttime use. Controls include OFF/VOL, SQL and TONE (for silent monitoring of busy channels), SHIFT (for transmit offset), HI/LOW power switch (200 mW, low; 1 watt, high), KEY-LOCK switch, CLEAR-MAN-BUSY scan switch (to select scanning for a clear, or busy channel) and frequency STEP switch for scanning in increments of 25 or 50 kHz. The antenna is a 1/4-wavelength flexible whip equipped with a BNC connector. The 16-digit pad also offers DTMF capability for autopatch and repeater control functions. Jacks provide for a remote speaker/mike (optional), earphone (supplied), and battery charger. The PTT thumb switch is well placed on the left side. Power is supplied by an internal NiCd battery (10.8 V, 450 mAh). A small switch in the battery compartment allows power to be applied to the microprocessor for retention of the memory channels even when the rig is turned off. Accessories included are a wall charger, and sturdy belt clip.

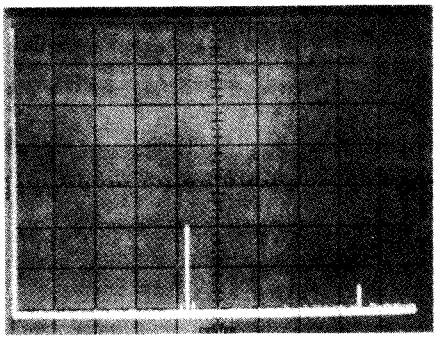


Fig. 1 — Spectral display of the FT-708R. Vertical divisions are each 10 dB; horizontal divisions are each 100 MHz. Output power is approximately 1.6 W at a frequency of 452.65 MHz. The fundamental has been reduced in amplitude approximately 50 dB by means of notch cavities; this prevents analyzer overload.

Operation

Using the FT-708R is a pleasure. Frequencies are entered from the keyboard, and must be divisible by 25 kHz. Once the four last digits of the desired frequency are entered, the DIAL key is depressed to put the decimal point in place, and ready the rig for use at that frequency. To store a frequency in one of the 10 memory channels, simply enter the frequency as described, press the desired memory channel number, and finally press M. To recall a memory channel, the memory channel number is depressed, followed by pressing MR. To return to the dial frequency, the DIAL button should be pressed.

For priority channel operation, first enter all desired memory channels for priority use. Then, enter another frequency onto the dial and recall any of the stored memory channels. Hit #. Now, the display will indicate dial frequency and every few seconds will switch to the memory frequency. If checking for a busy signal (with the CLEAR-MAN-BUSY switch in the BUSY position), the rig will lock onto the memory channel if busy. Similarly, if the switch is in the CLEAR position, the rig will lock onto the memory channel if no signal is

present. To use different memory channels, with priority channels, enter the priority frequency and press DIAL, then the number of the desired memory channel and MR. Finally, press # for transceiver search of the memory channel every few seconds from the DIAL frequency.

Repeater operation is simple. Repeater shifts of +5 MHz and −5 MHz are built into the system. Nonstandard splits may be programmed easily.

Scanning is effected with the CLEAR-MAN-BUSY switch and the UP and DOWN buttons on the keyboard. Unconditional scanning is permitted in the MAN (manual) position. To scan for a clear or busy channel, slide the CLEAR-MAN-BUSY switch into the appropriate position. Limited band segments may also be scanned, a nifty feature that saves the operator from having to wade through the entire band. Memory scan is also possible when the UP or DOWN key is pressed with a memory channel on the display. This provides for selectively monitoring one's favorite repeaters.

Performance

I am an avid mountain climber who enjoys lugging varous and sundry fm, ssb and cw vhf rigs up the slopes of mountains in New England. The FT-708R proved itself to be a worthy rig because of its ruggedness and ease-of-operation. It performed well in the cold, and endured bumps and jolts in my backpack. It weighs a little more than some comparable rigs, but the "quality-feel" tips the scale in its favor. The receiver performs well and exhibits no overloading problems. The internal speaker provides full and loud audio even in high ambient noise situations, as in my pick-up truck. The transmitter works well, too. Yaesu's specs are 1 watt for the HI power position, and 200 mW in LOW. In the lab, we observed 1.6 W HI and 400 mW LOW power.

Reports showed the transmitted audio quality to be excellent, although in high-wind situations (on mountain peaks, for example) some wind noise was reported — not altogether unexpectedly! Generally, contacts reported full, deep and crisp audio quality.

The FT-708R flexible whip is small, and a *full* 1/4 wavelength, unlike many 2-meter rubber duckies. Because the band allows the use of inherently small antennas, a 450-MHz fm beam was also easy to pack-in to the mountains.

The battery lasted through many trips, and was easily replaced in the field when it was depleted. A complete battery charge was achieved in about 15 hours by means of the wall charger provided. An optional accessory, the NC-8 ac power supply and quick charger, was a decided advantage, though, allowing the battery to be quick-charged in four hours. The ac power supply allowed constant "home base" use without draining the battery. And with a special adaptor, the spare battery can be charged while the rig uses the primary battery. So whether you're at home or mountain climbing, you can enjoy constant uninterrupted use of the rig.

The manual is complete with information on operating, specifications, accessories and battery operation, and there is a maintenance and alignment section for the more technically minded. (I'm better at mountain climbing than troubleshooting.)

In summary, I would recommend this rig to anyone looking for a state-of-the-art 450-MHz fm transceiver with all of the "bells and whistles." I found no glitches, and will likely purchase one for my own fm arsenal. If you're into mellow fm operation, try 450 MHz. You'll enjoy it. — *Rick Palm, K1CE*

LANCE JOHNSON ENGINEERING D-LAY-5

☐ Before the snow started to fly in the winter of '82-'83 I decided to purchase a new rotator and get it installed. My intent was to get a rugged rotator in place that would easily turn any antenna I'd ever want to install on my tower. After some consideration, I decided on a Telex Hy-Gain T_2X (Tailtwister). Not only is it a rugged "beast," but it's good looking, too. I especially reveled at the appearance of the metered directional indicator — a welcome addition to the shack.

With the T^2X (and some other rotators) the operator must depress the BRAKE switch to retract the brake before energizing the rotator and release the BRAKE switch *a few seconds after* the rotational directional switch is released. It is a precaution that is emphasized in the rotator instruction manual. This allows the rotator/antenna combination to coast to a stop prior to brake insertion and prevents rotator damage. I imagined the awful noise and possibility of rotator damage that might occur should I forget to allow for the delay or if my finger should slip from the BRAKE RELEASE lever. That I could not allow!

Some years ago these circumstances were addressed by other owners of similar rotators. Their solutions to the problem were outlined in past issues of *QST*.[1-4] I recalled seeing a commercially available rotator brake delay unit advertised in *QST*. A letter of request to Lance Johnson Engineering for a D-Lay-5 unit was quickly answered by the delivery of same.

Installation

A glance at the installation instructions promised the job would be quick and easy. This contrasted greatly with the instructions I'd seen for the installation of another commercial rotator delay unit that involved not only rewiring of the rotator control box, but mechanical switch modifications as well!

The D-Lay-5 is neatly constructed on a rugged, single-sided pc board. A 4pdt relay, two electrolytic capacitors and two steering diodes are mounted on the top of the board. Beneath the board are three spacers secured by machine screws. Two of these screws pass through the threaded spacers. They are used to fasten the board to the rotator control box chassis.

No holes need to be drilled in the rotator control box and the existing wiring remains unchanged. Some rotator control boxes may require the physical relocation of an electrolytic capacitor, but this is not required with the T^2X control box. The D-Lay-5 is simply mounted on the underside of the control box chassis using two existing transformer mounting holes, from which the mounting screws have previously been removed. Four color-coded wires are attached to the appropriate switch connections and you're done! Within 15 to 20 minutes after installation has begun, you should have the D-Lay-5 in place and everything up and running in perfect order. You may remove the D-Lay-5 easily should you wish to restore the control box to its original condition at a future date.

It Works!

Control box operation remains unchanged except that now you may release the chosen CW or CCW directional switch and the BRAKE RELEASE simultaneously once the antenna is pointed in the desired direction. You'll note that the BRAKE RELEASE LED remains illuminated for approximately four to five seconds and then extinguishes, accompanied by application of the rotator brake. No more worries about awful noises and rotator damage! Isn't that nice?

The D-Lay-5 is available wired and tested from Lance Johnson Engineering, P.O. Box 7363, Kansas City, MO 64116. Price class: $20. — *Paul K. Pagel, N1FB*

RAK ELECTRONICS "VIC-MORSE" MORSE SOFTWARE

☐ Every month hundreds of pieces of mail, including everything from new-product announcements to reports on the economy, pass through the Hq. offices. One day a new-product release caught my interest. I had just purchased a Commodore VIC-20® personal computer, and had been looking for some Amateur Radio related software.

The new-product release was from a company called RAK Electronics, and the product is a Morse code send/receive program for the VIC-20. I arranged to have a copy sent to Hq. for review.

VIC-Morse is designed to run with the standard 5K VIC-20. The program is written in BASIC, and features a send/receive speed range of 5 to 25 wpm. In the transmit mode, the special characters $\overline{AS}$, $\overline{BK}$ and $\overline{SK}$ are available, along with 4 programmable message memories. Each message may be up to 80 characters long when you're using the 5K version of the VIC-20.

Inside the Program

The program uses BASIC FOR-NEXT loops to set the cw timing sequence. A 1:3:1 dot-dash-space ratio is generated by two loops, one of length X (for dot generation), the other of length 3X (for dash generation), where X is a seed for the speed desired. While transmitting, the program uses the BASIC keyboard-buffer instruction, INKEY$, to get data from the keyboard. This data can be control signals (to set the speed, toggle from transmit to receive, or to run the message memories), or character data. Characters are displayed on the screen *after* the data has been sent. Keyboard data are buffered to 10 characters, after which the program loses data. The receive portion of the program uses an adaptive algorithm to decode the cw. It is also written in BASIC.

Performance of the transmit section of the program can only be described as mediocre at best. The programmer did not include a sidetone function (a simple addition of two POKE statements); therefore, the user must modify the program or hook up an external oscillator or transmitter to test the program. The FOR-NEXT loops used for timing *do not* give the proper 1:3:1 ratio. At 10 wpm, the code sounds somewhat natural, but above that the dashes are much too short. This is because the execution time of a FOR-NEXT loop is not directly proportional to its length (number of loops). Since characters are displayed on the

[1] R. Myers, "Delayed Action Braking for Antenna Rotors," *QST*, May 1971.
[2] "Ham-M Rotator Brake Modification," Hints and Kinks, *QST*, February 1976, p. 45.
[3] "Upgrade Your Ham-M With Delayed Braking," Hints and Kinks, *QST*, September 1976, p. 40.
[4] A. White, "A Delayed Brake Release for the Ham II," *QST*, August 1977.

screen *after* they are sent, the user has no way of knowing if he has made a mistake until the mistake is sent. Because BASIC has a slow execution time (compared to machine-code), the maximum speed, buffer space and versatility of the VIC-Morse program is limited. The receive portion of the program was not tested because the transmit section gave overwhelming evidence of the quality of the software.

Conclusions

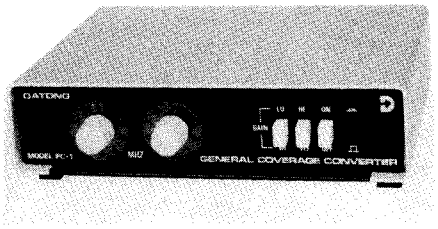
The performance of the RAK program does not justify the price tag. Anyone who has a clear understanding of the BASIC language could write and debug a program as good as VIC-Morse in a few evenings. If you're a ham who is looking for cw software — *caveat emptor!* VIC-Morse is available on cassette tape, and comes with a 9-page instruction manual and an edge connector for TU interface. Receive and transmit signals to and from the VIC-20 are TTL levels. For more information contact RAK Electronics, P.O. Box 1585, Orange Park, FL 32073. Price is $19.95, plus $2 shipping. — *Gerald B. Hull, AK4L*

DATONG PC1

Manufacturer's Claimed Specifications	*Measured in ARRL Lab*
Frequency range: 30 kHz to 30 MHz.	Confirmed.
Overall gain: −3 dB.	−4.5 dB.
Rejection of 144-145 MHz feedthrough: 60 dB.	56 dB (at 144.525 MHz, converter at 15.525 MHz).
Third-order input intercept point: 10 dBm.	18 dBm at 20 and 50-kHz spacings.
Output impedance: 50 ohms nominal. Input impedance: 50 ohms, but usable with short, high-impedance antennas.	
Power requirements: 10- to 13-V dc at 140 mA.	Confirmed.
Size (HWD): 1.7 × 7.2 × 6.0 inches.†	Confirmed.
Weight: 35 oz (1 kg).	Confirmed.
Finish: Anodized aluminum wrap-around case. Panels printed white on black.	
Digital dials back-illuminated with green LEDs.	Confirmed.

Optional accessories: Model MPU: Mains power unit (ac-to-dc power supply).
Lead D: Coaxial jumper fitted with a PL-259 coaxial plug at each end.
Model 270: Indoor active antenna.
Model 370: Outdoor active antenna.
Available from AR Technical Products Corp., P.O. Box 62, Birmingham, MI 48012, tel. 313-588-2288.

†mm = in. × 25.4



DATONG PC1 GENERAL COVERAGE RECEIVING ADAPTER

☐ The DATONG PC1 is a receiving converter that accepts the frequencies from 30 kHz to 30 MHz and converts them in 1-MHz bands to a receiver that is tunable from 144 to 145 MHz. Without any modification, your 2-meter receiver tuning range can be modified to include coverage of 30 kHz to 30 MHz! If you have only an hf receiver, a conventional 2-meter converter with output at 28 to 29 MHz may be used.

All that is required for hookup to the PC1 is a 12-V 140-mA dc power supply, a short length of coaxial cable with PL-259s at each end for connection between the PC1 and your receiver, and a shortwave antenna. Good signal reception is possible using an indoor antenna, but use of an outdoor antenna is recommended.

Shortwave listening probably captivates more people than anyone could imagine. After a little time searching for signals from all parts of the world, it was easy to see how interesting it was to explore the "other wavelengths." Amateur Radio operating is great, but to enjoy it fully, you have to become a good listener. This is probably why many SWLs (shortwave listeners) become hams. Having a general-coverage converter for a ham receiver provides the listener the "best of both worlds" — Amateur Radio operating and SWLing.

The PC1 is limited in performance only by the equipment you use with it. Most of the present-day 2-meter multi-mode transceivers will suffice. An ICOM 211 and a Yaesu FT-101ZD with an ARR 144VD vhf converter having a 28-MHz output were used with the PC1. The FT-101ZD has an AM position which gives better reception of a-m broadcasts, than the SSB position of the ICOM 211. If you are going to use a multi-mode 2-meter receiver, having a-m mode selection is important.

Circuit

Construction and quality of the PC1 are top rate. Components are mounted on a single fiberglass, double-sided pc board. The PC1 uses nine ICs, six transistors and 27 diodes. The rf input signal passes through one of the seven band-pass filters and on to the mixer. The mixer output is routed through a 144- to 145-MHz band-pass filter to the 2-meter receiver. If overload is caused by strong local signals, a 12-dB attenuator can be switched in. Two additional filters are used below 1 MHz, one covering 30 to 500 kHz and the other 500 kHz to 1 MHz, both switched in from the front panel.

A single crystal oscillator and LSI frequency synthesizer techniques are used to produce the required LO signals. The circuit has an adjustable trimmer that may be used to set the crystal to the exact frequency. The PC1 as shipped from the factory was found to be within a few hertz of exact received-frequency readout.

Operation

The PC1 frequency coverage is divided into 30 separate 1-MHz bands. Two front panel switches with LED-illuminated windows are all that is needed to select the first two digits of the megahertz segment you wish to tune. If you want to listen at 15.016 MHz, you set the two PC1 switches to read 15 and your 2-meter radio to 144.016 MHz. With the PC1 set to 15 MHz, you can tune to 16 MHz, corresponding to a reading of 145 MHz on your 2-meter radio. No PC1 tuning is required: The diode-switched band-pass filters covering 1-30 MHz are selected automatically when the corresponding frequency is selected. Large frequency excursions can be made with a flip of the two front panel switches. Once the favorite listening spots are found, it is easy to return to them with little effort just by dialing the appropriate frequency.

Once the "new world" of shortwave signals has been sampled, it becomes necessary to find a directory that lists information about the stations being heard. One such directory is the *World Radio TV Handbook,* which contains just about everything you would want to know about shortwave listening.[1]

Many hours of listening were devoted to this review and they were enjoyable as well as informative. Tuning the wavelengths not associated with Amateur Radio could cause a scheduling problem with my spare time. I found that using the PC1 for monitoring Amateur Radio signals on other bands (or on the same band while operating and using it as a backup receiver) made the scheduling less difficult.

Being able to use the PC1 as a ham receiver makes it more attractive. The PC1 is manufactured by DATONG Electronics Ltd., Spence Mills, Mill Lane, Bramely, Leeds LS13 3HE, England. Price class: $260. — *Bernie Glassmeyer, W9KDR*

LOGISTICS CORPORATION FIRE-FIST 1000 CW SYSTEM

☐ If you've grown weary of the relentless "sameness" of cw signals in our amateur bands, brought on by the emergence of keyboards and other computer-generated and -controlled cw transmissions, take heart. No one is required to have a perfect fist: It can be an adventure to break with tradition and send imperfect code when the mood strikes. No doubt you have become obedient to the pressure of peers who claim "everyone should use a buffered keyboard (KB)." Balderdash! How in the world will your friends know who you are if you don't have a distinctive fist? There's no challenge to copying perfect code. It's much more fun to work a station operator who has a bum fist: It keeps you on your toes!

A new manufacturer, Logistics Corporation, Inc., has recognized the need for nonconformity and free style with its Fire-Fist 1000 cw system. The keyer is computerized, which makes it possible to generate a variety of sending styles. Each cw format is selectable by actuating the appropriate push-button switch on the front panel of the keyer box. Some interesting variations are possible by punching up two or more switches simultaneously, but we don't recommend that until you've mastered the basic operating technique. The '1000 also permits sending conventional, error-free cw at speeds up to 100 wpm.

[1]Available from Watson Guptill, 1515 Broadway, New York, NY 10036. Price: $16.50.

Logistics sells a mating paddle. It contains a layered base made from four sections of iron plate. With all four base plates in position the paddle weighs 10 pounds. In this mode the operator with the legendary "kW fist" should have no problems with the paddle wandering about on the operating desk. The less aggressive operator can remove base plates until the paddle-assembly bulk is reduced to his or her liking. By using only one weight-down plate the paddle will slip about at the slightest provocation. This feature was intended for operators who frequently excuse themselves for their bad cw by saying, "this darned key won't stay put on my table." No need to fib with the Feather-Fist 100 paddle.

The "FF-100" paddle has another unique feature of worth to those who tend to become confused during the heat of a cw QSO. There is a digital display (0.5-inch blue flashing letters) located on each side of the paddle arm. One of the readouts says "dashes," and the other says "dots." The designer realized the difficulty that some cw ops have in telling which way to move the paddle for the sending of dots or dashes. (Mensa members will not need this feature.) An extra set of paddle contacts has been included. This can be used to switch the antenna for full QSK (rubber gloves are required during high-power operation to avoid rf burns). Alternatively, the spare contacts can be used by the "personality operator" who has a ham-shack ON THE AIR light above the rig.[6] This can be especially useful for impressing the visitors: The light blinks on and off in unison with the keying! This kind of razzle-dazzle lends itself nicely to some of the high-power amateur stations.

Programming Features

Switch position no. 1 is for the STUTTERING mode. Normal cw can be sent with the paddle, stored briefly in a memory, then processed and sent by a random-error generator within the keyer. The error rate can be increased or decreased by means of a panel-mounted potentiometer. This mode simulates what many operators call "rf getting into the keyer." It can also be used to create a fist characteristic that is frequently blamed on "a long, hard day at the office," or "I think I had one too many before dinner." We hear a lot of these fists on the bands these days, so this should be a popular feature for the nonconformist.

Position no. 2 is labeled BANANA BOAT. It is not too unlike position no. 3, which is called LAKE ERIE.[7] In either mode CQ comes out as NN MA, NN MA or NN GT. We've all heard this one a great many times while tuning the bands. Some refer to this as a "distinctive fist," and take considerable pride in developing this type of swing.

The tag on mode position 4 reads DXPEDITION. In this mode the station call letters are always erased from the memories, but the RST 599 and operator name remain intact. This will enable the user to confound the pileup operators as they try to learn the call letters of the station they just worked. You can keep them waiting for this vital information for hours! I like to think of position no. 4 as the "fun mode."

Next is no. 5 — the DRAG position. This enables one to send dots at several times the baud rate of the dashes. The resultant CQ sounds something like, "drah-di drah-di drah-drah di drah." Some interesting results can be had by slowing the dashes to 10 wpm and running the dots at, say, 30 wpm. We hear a lot of people doing this with bug keys these days. Trimmer potentiometers are available for changing the baud rates of the dots and dashes.

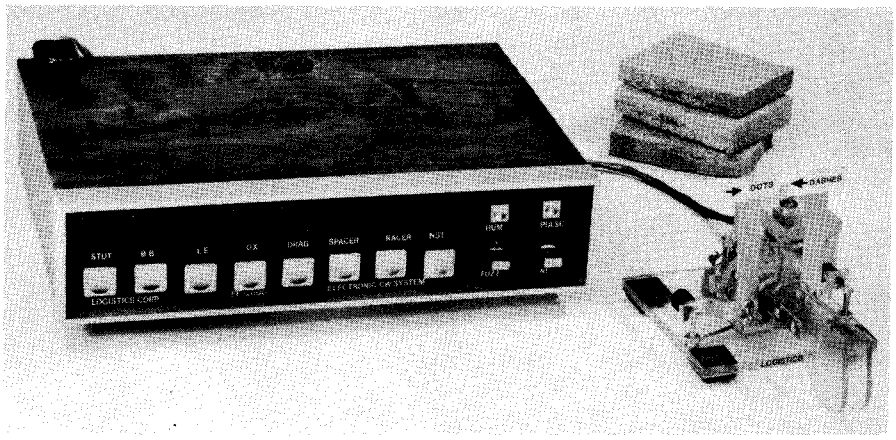
No. 6 position is called SPACER. Here is where you can duplicate much of the cw you find on the bands. Again, two trimmer potentiometers are available. One controls the gaps between letters and the other puts considerable distance between the words. It is possible to send up to 100 wpm in this mode, but to have 10 to 20 wpm spacing between letters and 5 to 10 wpm spacing between words. This technique gives the operator at the other end of the QSO a chance to fill in his log, file his nails or daydream about some new circuit while you're sending. Of course the coherence of your message may never be realized, but why worry!

No. 7 mode is entitled RACER. Irrespective of what you program into your keyer with the paddle, out comes cw that has no spaces between letters and words. By advancing the potentiometer called "race increase," you can actually start piling one character atop the next one to make things even more interesting. There must be a number of Fire-Fist 1000s in service already, for I've been hearing a lot of this type of cw lately.

Mode no. 8 is labeled NST. In this position the computerized keyer enables the operator to test his rig endlessly without identifying his station. Instead of the conventional word "test" going out over the air, the more common NST NST NST is heard. Although this style of operating is illegal (no call letters included), it does seem to be a popular technique in some circles.

Other Features

The foregoing eight program modes represent the main features of the Logistics Corp. system keyer. However, some additional switches are available. (1) Introducing hum on the cw carrier. This provides notes ranging from T3 to T8, depending upon the setting of the "fuzz" pot. (2) There is a switch that controls chirp (requires a coaxial cable to the local oscillator or synthesizer VCO in your transmitter). A varactor diode in the keyer pulls the transmitter oscillator each time the key is closed. The degree of chirp can be regulated by adjustment of still another internal trimmer potentiometer. Finally, there is a PULSE mode switch that can be used to superimpose pulses on the leading and trailing edges of the cw waveform. This will cause key clicks that are difficult to equal by normal means. This is actually a center-off switch. In its opposite function position it creates the effect of excessive shaping, thereby rendering a bell-like tone to the cw note. This type of soft keying imparts a cw note that sounds as if it were coming from the bottom of a deep well. This is great in a pileup, for no one can figure out what your call is!



Logistics Corporation Fire-Fist 1000 CW System

Manufacturer's Specifications

Dimensions (HWD): Keyer unit, 8 × 12 × 16 inches (203 × 304 × 406 mm).
Weight: 8 pounds.
Color: Two-tone gray and black.
Power requirements: 117-V ac at 35 watts.
Output voltage at key-line jack: 5-V dc (negative).
Price class: $290. Dealer inquiries invited.
Manufacturer: Logistics Corporation, Ltd., 70 Braeburn Rd., Bristol, CT 06010.

Electronics Features

Apart from the usual massive collection of OR gates, AND gates, NAND gates, ROMs, PROMs and what have you, the FF-1000 contains 17 go-no-go ICs. These are essential in generating erratic cw. There are also six kant-read ICs in the system — a totally new concept in the LSI technology. These are used to generate cw that can't be deciphered by the most skilled of high-speed operators. Code readers with visual displays or video terminals can't handle this type of cw either.

Summary Comments

I highly recommend this system to those who have jaded cw appetites, or wish to do their own thing on the cw bands. The manufacturer is offering a 30% discount for quantities greater than 10 units. This should be especially appealing to the instructors of Amateur Radio classes. The discount deal should be popular also with DXpedition groups. After two months of home use with this system I have finally broken the habit of conforming. No longer do I have that boring fist that puts people to sleep. Now they have to pay attention to what I'm sending, and at last I have a captive audience. — *Zender Bawdrite, YØOP* QST

[6]See the product review of the Gargler Corp. Profundo 10X Microphone in April 1981 *QST*, p. 49.
[7]a.k.a. "Missouri Valley Swing."