

## Classic Radio

# Hallicrafters FPM-300: The Last SSB-CW Transceiver

In 1971, Hallicrafters introduced the FPM-300 single-sideband (SSB)-CW transceiver for 80/75 to 10 meters (see Figure 1). They did a minor update to it in 1972 and continued to sell it until they closed in 1974.

This radio was unlike earlier Hallicrafters products because it came complete with a power supply (ac and dc), a speaker, built-in voice-operated transmit (VOX), and a crystal calibrator (see Figure 2).

For a long time, Hallicrafters was the leader of the option sellers, but not with the FPM-300. The only options were the crystals for complete 10-meter coverage, an optional cooling fan for the two vacuum tubes, the power cord, and the mounting bracket for a mobile installation (see Figure 3).

### Design

The FPM-300 was solid state, except for two vacuum tubes, the driver stage, and the final amplifier — a

12BY7 and a 6KD6. It was designed so the radio tuned in the same direction on all bands, unlike the Drake TR-3 and TR-4, the Galaxy III and V, the NCX-5, and many other rigs of the era. The sideband created and received changes, depending on the band, but the transceiver accommodated with switches on the band-switch, so the selected sideband remained unchanged in the operator's view when the band in use changed. The radio was factory equipped with the 28.50 to 29.00 MHz segment of

10 meters. When the radio was originally sold, all the phone operation took place in this segment of 10 meters. Now, the phone part of the band begins at 28.30 MHz, but many other radios have 10-meter coverage beginning at 28.50 MHz. Heathkit radios came with the full 10-meter coverage, as did the vacuum-tube Swan radios.

The FPM-300 had an opening top that is pivoted at the rear and latched shut on each side. The controls for operation of the VOX were internal; the opening lid needed to be opened to reach them. The radio used a sine wave tone fed into the SSB input to create a CW signal. The VOX put the radio in the transmit mode for CW transmission. The settings for pleasant VOX operation were different for CW and SSB, and the adjustments could only be optimized for SSB or CW. The controls had no means to be optimized differently for each. The tone used on CW was about 1750 Hz, which was higher than most operators prefer or were used to. This made it difficult to keep the FPM-300 on the exact frequency



Figure 2 — The front panel of the FPM-300.

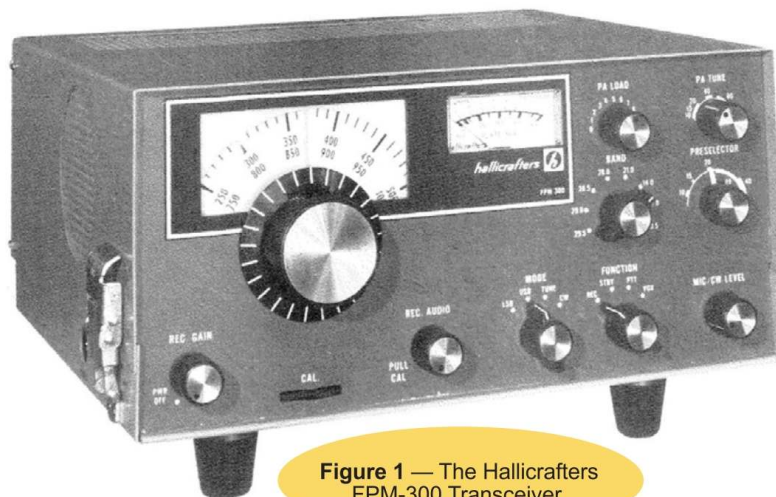


Figure 1 — The Hallicrafters FPM-300 Transceiver.



as the CW station being worked. I assume the high tone frequency was chosen for best performance with the method used to generate the CW signal.

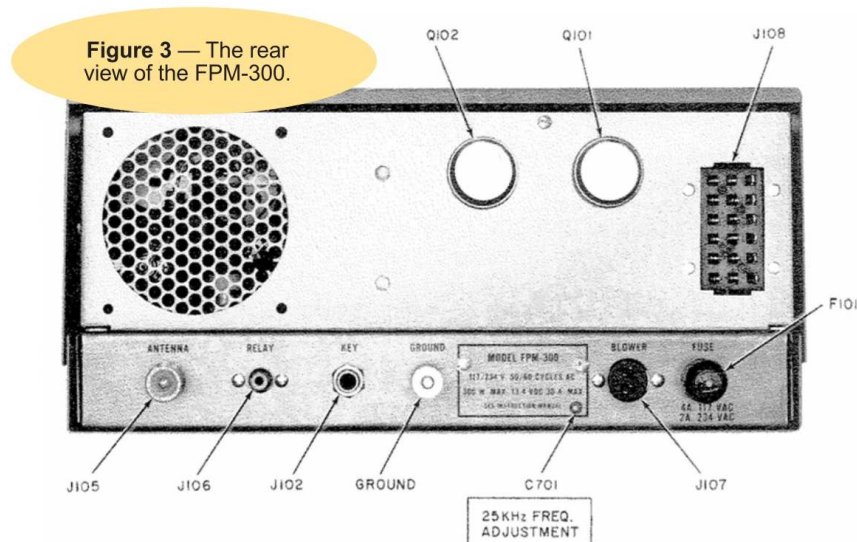
The ac/dc power supply was a conventional design using a single power transformer with two primary windings for 120 V ac each. They were wired inside the FPM-300 in parallel for 120 V ac input or in series for 240 V ac input. The power cord wiring was the same for either voltage. The only change was internally in the FPM-300. When using 13.8 V dc power, a small feedback transformer was used to provide feedback to sustain oscillation of the two inverter transistors. The dc power supply only operated with a negative ground dc power source. The only US-made 12 V automobile with positive ground was the 1955 Packard. For 1956, Packard changed the car to the universal 12 V negative ground configuration.

## Using New Components

The FPM-300 employed a number of new devices in the design and construction of the transceiver. The device used as the product detector was the Motorola MC1496G double-balanced mixer. This is now a rare vintage part that worked very well, but it was new when the FPM-300 was designed. A packaged double-balanced four-diode mixer was used to mix the VFO with the crystal oscillator to generate the injection needed to define the bands covered.

Analog integrated circuits (ICs) were used in the IF amplifier stages. A divide-by-four IC (actually, two divide-by-two IC segments) was used to turn the 100 kHz calibrator into a 25 kHz calibrator. Both junction field-effect transistors (FETs) and dual-gate metal-oxide silicon FETs (MOSFETs) were used as oscillators, amplifiers, and mixers in the design of the FPM-300.

The FPM-300 had a meter that served as a signal strength meter on



receive and as a cathode current meter for the final amplifier on transmit. The marks on the frequency dial were 10 kHz apart. The knob had divisions that did not actually help calibrate the frequency readout much better. The tuning was smooth. Some FPM-300s were quite stable, and some were not. The one I own drifts very little.

## Errors in the Manual

In some versions of the operation manual from Hallicrafters, such as the one that came with my radio, there were several places where an "8" was typed when a "6" was intended. The receiver product detector was identified as a Motorola MC1498G, when the proper part number was MC1496G. The vacuum tube used in the final amplifier stage was identified as a type 8KD8, when in fact it is a 6KD6 tube. The "8 for 6" issue appeared again in the section that discussed the optional cooling fan kit, identifying it as the HA-80 when in reality it is part number HA-60. Not all versions of the manual have this issue. For instance, the online version does not have this issue.

## Overall Impression

If you get a Hallicrafters FPM-300 with good frequency stability, the only issues you may have are the 10 kHz

divisions on the frequency readout dial and the cumbersome setting of the VOX controls for both SSB and CW. The 1750 Hz tone used to generate the CW signal may be a negative for some CW operators, as the tone frequency is about double what most CW operators are used to. I find the FPM-300 to be a nice rig to use, with its built-in crystal calibrator, VOX, and easy-to-open top cover.

Photos from the Hallicrafters *Operating and Service Instructions for Communications Transceiver Model FPM-300*.

## Strays

### QST Congratulates...

■ George J. Whalen, NY9A, on the publication of his book, *The Story of Radio: To 5G Wireless*, which recounts the history of radio technology and how it evolved to the present day.

■ Peg Nichols, KD0VQO, on the publication of her new book, *Sidewalk Sale Across America*. It's a snapshot of the history of the COVID-19 pandemic that also gives readers a glimpse into the world of amateur radio. *Sidewalk Sale Across America* is available on **Amazon.com** as an eBook or in paperback. For more information, email [kd0vqo@arri.net](mailto:kd0vqo@arri.net).