

Classic Radio

The Collins KWM-380 Pro-Mark Transceiver

The Collins Radio Company established the concept of an SSB/CW transceiver with the creation of the KWM-1 in 1957. They produced the KWM-380 Pro-Mark SSB/CW transceiver — their final ham radio product — in 1978 (see the lead photo). The KWM-380 was an all solid-state radio with a built-in ac power supply and speaker. The 380 weighed about 50 pounds. It was 15.5 × 6.5 × 18 inches in size and was finished in two-tone brown and tan with brown knobs and buttons. In addition to an output to control an external linear amplifier, provisions for a transverter were included, but Collins did not market either unit specifically to match the KWM-380.

The transceiver had a general-coverage receiver that worked from 0.5 – 30 MHz and covered all ham bands from 160 – 10 meters, including the WARC bands. It did not transmit outside of the ham bands. Collins registered the trademark “Pro-Mark” for use with the KWM-380 and its general-coverage transmitter version, the HF-380, which was intended for government service.

Circuit Features

The KWM-380 was a high-performance transceiver with a digital readout that showed the frequency to the nearest 10 Hz. It used red, seven-segment LED digital readout devices and was modern enough to avoid the use of Nixie tubes.

It had two built-in digital synthesized VFOs that could provide the ability to transmit and receive on two different frequencies with instant selection



The Collins KWM-380. [Raymond Shatzel, W2XC, photo]

between them. Only one tuning control was provided; the knob to the left of the tuning knob selected which VFO was in use for receive and transmit. Each synthesized VFO could control the transceiver, or either could be used for transmitter or receiver control for operation on split frequencies to facilitate working DX stations. The operator could select the frequency steps for each step of the optically encoded tuning control, from 10 Hz per step up to 1 MHz per step. The KWM-380 had no bandswitch, largely due to the continuous-coverage receiver. The correct low- and high-pass filters were automatically selected via relays when the desired MHz was selected via the VFO tuning controls.

The RF power amplifier stage was protected against damage due to a high voltage standing wave ratio (VSWR) on the antenna or excessive duty cycle in transmit. The radio auto-

matically cut back power when a high VSWR was present to prevent damage to the RF output transistors or any other parts in the RF output and filter stages. The KWM-380 also monitored the temperature of the output transistors to provide protection of them. In addition to service as a receive S-meter, the front panel meter could read the transmit automatic level control, RF forward power, reflected power, and the dc power supply voltage.

The passband tuning worked with any IF bandwidth and was used to select reception of lower or upper sideband. The KWM-380 allowed the user to select any filter bandwidth installed for any mode. The optional noise blander did not use a second antenna, although the earlier KWM-1 and KWM-2 did. The KWM-380 could be set up to transmit on lower sideband and receive on upper sideband or vice versa. A first IF frequency of

39.145 MHz was used and a second IF of 455 kHz was employed both on receive and transmit.

AM Operation

The KWM-380 did not provide AM transmit operation; neither did the KWM-1, KWM-2, and S-line transmitters. No Collins ham transmitter or transceiver after the 32V-3 from 1951 – 1955 had AM transmit capability. Collins believed in the benefits of SSB over the simpler AM means for phone operation. Along with the S-line and A-line receivers, the KWM-380 provided AM receive operation, with available filters for a narrower IF passband for AM, CW, or RTTY. The KWM-380 had a diode detector for good AM quality and a product detector for SSB, CW, and RTTY.

Options and Accessories

The options available for the KWM-380 were an assortment of additional IF filters, a noise blanker, and a speech processor circuit board add-on. The KWM-380 did not need extender plug-in cards to work on the radio with it in operation; the circuit cards were able to be moved for service access while in operation due to the use of ribbon cable connections to the balance of the transceiver.

IF filters were available with a 6 dB bandwidth of 250 and 500 Hz for CW use, 1.7 kHz for RTTY operation, and 6 kHz for AM receive use. The KWM-380 came with a filter designed for SSB use that was 2.2 kHz wide and another filter suitable for AM reception at 8 kHz.

Collins offered four microphones to match the KWM-380 (see Figure 1). Two were desk-type microphones and two were handhelds, plus a foot switch for transmit/receive control. Headphones, a speaker, a CW key, and a rack mount were available. A power cord for dc operation from a 12 – 15 V dc source was also offered. I doubt if it was ever used for



Figure 1 — The Collins KWM-380 and a companion microphone, as seen in a 1982 QST Product Review. [QST, October 1982, page 36]

mobile operation in a car due to its size, but use in a recreational vehicle or a boat was reasonable and more efficient if done directly from a 13.8 V dc nominal source.

The KWM-380 had excellent pass-band tuning, similar in operation but very different in implementation to that on the much earlier Collins 75A-4 receiver. The ac power supply and speaker were built into the KWM-380. Collins did not offer a linear amplifier to go with the KWM-380, but did offer an optional keypad to enter the desired operating frequency.

Operation could be set up for an input voltage of 105, 115, 125, 210, 220, 230, 240, or 250 V ac at 50 or 60 Hz with an input tolerance of $\pm 5\%$. This made it suitable for operation essentially anywhere in the world. Collins also offered an optional cooling fan for the KWM-380, which allowed for increased duty cycles, especially in RTTY service modes.

Performance

I own a Collins KWM-380 and it performs very well. The radio is easy to use after a bit of practice. The operation and efficient use of the dual VFOs takes a bit of getting used to, but quickly spoiled me for operating

more conventional tuning methods. The general-coverage receiver works as well as my National HRO-500 and my Galaxy R-530, both of which are excellent general-coverage receivers. The KWM-380 works well with late-model linear amplifiers, like the Alpha series with high-speed switching. On SSB, it is fine with amplifiers with conventional relay switching; the internal circuitry protecting the power amplifier from bad loads will protect the radio while the relays in the linear switch.

Strays

QST Congratulates...

- The Southern Ohio Amateur Radio Association on being honored by the Ohio State Senate for receiving an ARRL Special Service Club award. The State Senate recognition certificate was presented to the club by ARRL Ohio Section Manager Scott Yonally, N8SY, in November 2018.

- D.M. Barrett, N4ECW, on the publication of his new science-fiction novel, *Equinox*. The plot concerns an alien invasion of Earth and weaves Amateur Radio into the story. *Equinox* is available in paperback and electronic media from Amazon and Barnes & Noble.