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Yaesu VR-120 Portable Scanner

The Yaesu VR-120 is a palm-size wide coverage scanner. Its size, frequency coverage, and $200 price place it in direct competition with the ICOM IC-R2 (April 1999 *MT*). Two simple AA batteries power each model. The IC-R2 is furnished with two NiCd cells and a charger, but none are supplied with the VR-120. Neither radio has a charging jack so batteries must be removed for recharging.

❖ General Features

The VR-120 is made in Japan. It tunes the spectrum from 100 kHz to almost 1300 MHz, but the US version has several undocumented frequency gaps which permit it to pass muster with the FCC's rules on rejection of cellular telephone signals (See table below). ICOM introduced its IC-R2 before the FCC crackdown and has gaps only at the cell input and output frequencies.

Users may choose AM, NFM, and WFM reception modes and 11 selectable tuning step sizes, ranging from 5 to 100 kHz. The IC-R2 provides CTCSS decoding and CTCSS search, but the VR-120 does not.

Battery life can be extended when not scanning or searching by enabling the power saver. A sleep timer function is configurable to turn the radio off after 30, 60, or 90 minutes.

Both the VR-120 and IC-R2 use a detent control knob for tuning and navigating through menus of options. The VR-120 is fitted with conventional volume and squelch knobs that are easier to adjust than the IC-R2. Pushbutton keys control the IC-R2's volume and its squelch is set using a knob and button in tandem.

A 1/8" side mounted jack is used for earphone or cloning connection. When not in use, the jack is protected from dust by a captive rubber plug.

VR-120 Frequency Gaps

339 - 340	542 - 549
351 - 352	558 - 572
372 - 373	605 - 615
384 - 385	620 - 630
396 - 397	784 - 798
482 - 483	807 - 820
496 - 497	824 - 849
504 - 505	869 - 894
511 - 512	

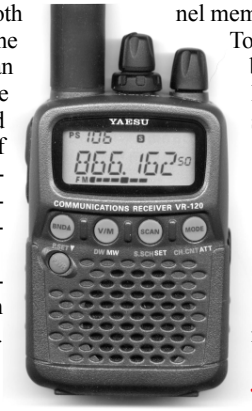
❖ Memory and VFOs

Both the VR-120 and IC-R2 have one VFO, but different memory channel arrangements. The VR-120 sports 640 channels organized into 10 banks. The IC-R2 has 400 channels spread among eight banks.

Neither radio has a numeric keypad. The two models are programmed using a similar technique. Frequencies are entered into the VFO using a combination of the Band key and the top mounted tuning knob.

To program a memory channel, you first tune the VFO to the right frequency and use menus to select other parameters. Both radios can store the information in the next empty memory channel or you can choose a specific channel instead. Mode and tuning step size can be programmed for each memory channel. Several of the VR-120's memory channels are factory programmed to shortwave broadcast frequencies, but may be overwritten.

The VR-120 permits you to program an 8-character label for each channel, an advantage over the IC-R2.



❖ Scanning and Searching

The VR-120 can scan combinations of memory banks, in contrast to the IC-R2's single bank arrangement. You can scan all channels in the designated banks or only those channels you mark as "preferential." The upscale VR-500 uses the same arrangement. Yaesu's Preferential Scan is merely an alternative to the more familiar approach of locking out channels in other brand scanners and both schemes accomplish the same mission.

There are three choices for when to continue scanning (or searching) in the presence of a signal: Busy, Pause, and Hold. A global rescan delay waits for the signal to drop and is set to 2 seconds.

Instead of a rescan delay, you can choose to pause the scan for 1 to 12 seconds and restart the scan after that interval even if the station is still transmitting. The Hold setting halts the scan the first time the VR-120 detects a signal.

The VR-120 provides eight limit search ranges and the IC-R2 provides 25 pairs of search limits. The VR-120 can skip up to 64 frequencies during limit and VFO searches. Special memory channels are used to store the locked out frequencies, and you can inspect or restore them.

The VR-120 includes a Smart Search (a.k.a. auto memory write), another advantage over the IC-R2. You can program upper and lower frequency limits and a starting frequency. After commencing Smart Search, the VR-120 will look for signals in that range and store active frequencies in a special 21-channel memory bank.

Too bad that the Smart Search capabilities are so limited. The VR-120, like the VR-500, will make only one sweep through the search range before stopping. You get one chance to inspect the search results because you cannot look at them after exiting the Smart Search mode.

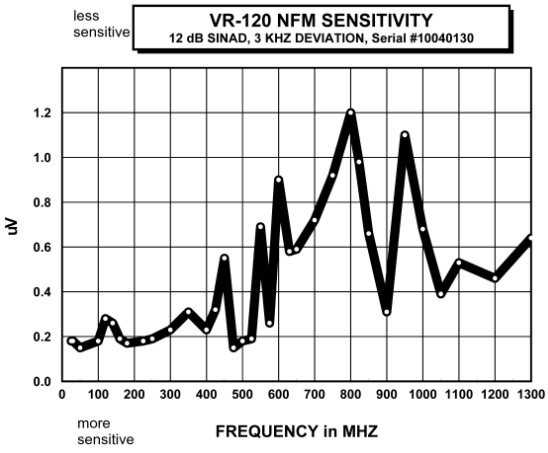
There are 10 pairs of Dual Watch frequencies. These behave like 10 miniature, non-linkable memory banks of 2 channels each.

❖ Other Features

The VR-120 contains an internal bar antenna for AM broadcast band listening. A menu item lets you select this bar or an external antenna. Another menu item permits an optional earphone to serve as an antenna for stealthy VHF/UHF monitoring, an innovation also found in the Alinco DJ-X2T (December 2000 *MT*).

The VR-120's Channel Counter feature permits the radio to act as a simple frequency counter. The antenna is disabled while using the counter mode, so you must be located near the transmitter. By default, the counter is limited to a 50 MHz wide frequency range centered on the display frequency, though you can narrow it 5 MHz or widen it to 100 MHz. The results are delayed, sometimes for several seconds; we find our DJ-X2000T Flash Tune's search results are faster and more repeatable.

The memory and operating parameters of a VR-120 may be cloned from another VR-120



by using the optional CT-35 cable. The user manual does not document the interface protocol nor mention cloning by personal computer. Yaesu should make the interface public and let the marketplace provide a variety of computer cloning programs. The IC-R2 is more attractive in this regard because you can obtain both free and low-cost computer software for it.

❖ Performance

After using the VR-120 at home and on a dozen trips, we concluded that the VR-120 and IC-R2 are about evenly matched. Both radios perform comparably, though the IC-R2's sensitivity is more consistent. The VR-120's display is much easier to read and its classic squelch and volume knobs are better suited than the IC-R2's pushbutton arrangement.

This VR-120's audio and intermod immunity are superior to our VR-500. The IC-R2's audio is a bit crisper and the CTCSS squelch keeps more unwanted signals out.

We prefer the VR-120's BNC antenna connector to the IC-R2's SMA style. The VR-120's rubberized antenna is a fair performer on VHF/UHF, though not as good as a wire-thin Pryme RD-9. Our VR-500's antenna has a performance notch near 159 MHz but the VR-120's antenna does not. The stock antenna excels, believe it or not, in shortwave reception. We can receive dozens of foreign shortwave broadcast stations using the stock antenna while sitting in the basement at night.

❖ Wrap-up

If you require a tiny scanner with good performance, the VR-120 and IC-R2 should be tops on your list. They are loud enough to hear comfortably and can be powered by ordinary AA batteries. Both scan memory at about the same speed.

The IC-R2 provides CTCSS squelch and there are several free and low cost computer programs available for loading frequencies. Its duplex facility lets you monitor repeater inputs with a simple key press.

The VR-120's larger display and conventional knobs make it easier to use. It draws less battery current, which implies longer battery life. The alpha labels and multibank scanning are advantages. The internal bar antenna affords better AM BCB reception than our IC-R2.

Check the table of frequency gaps to make sure the VR-120 covers the frequencies you want to monitor.

Measurements

Yaesu VR-120 Scanner
S/N 1C040130

List price $249
Yaesu USA, 17210 Edwards Rd., Cerritos, CA 90703

Frequency coverage (MHz):
0.1 - 1299.995 except gaps (see table)

Frequency steps (kHz):
5, 6.25, 9, 10, 12.5 15, 20, 25, 30, 50, 100

Sensitivity: see graphs

RF attenuator:
29 dB @ 10 MHz
28 dB @ 40 MHz
15 dB @ 155 MHz
10 dB @ 460 MHz
14 dB @ 860 MHz

FM modulation acceptance:
10 kHz

Intermediate Frequencies: (MHz)
248.45, 15.0, 0.450

Image rejection due to 1st IF:
54 dB @ 40 MHz
51 dB @ 155 MHz
33 dB @ 460 MHz
58 dB @ 860 MHz

Audio output power at earphone jack:
40 mW @ 10% distortion into 8 ohms

Practical memory scan speed:
11 ch/sec.

Current consumption at 3.0 VDC:
off - 0.17 mA
manual - 27 mA avg (w/battery saver)
scan - 60 mA
full volume - 132 mA
lamps - 30 mA additional
Battery saver: after 5 sec. in Manual
Low battery warning: 2.24 VDC
Shutdown: 2.08 VDC