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## DRAKE Model SPR-4



## Communications Receiver



SHIPPING • FISHING FLEET • GROUND BASE AIR • SWL • AMATEUR • CB • CIVIL DEFENSE • NATIONAL GUARD • FORESTRY • PRESS • TELETYPE • ETC.

## DRAKE Model SPR-4 COMMUNICATIONS RECEIVER

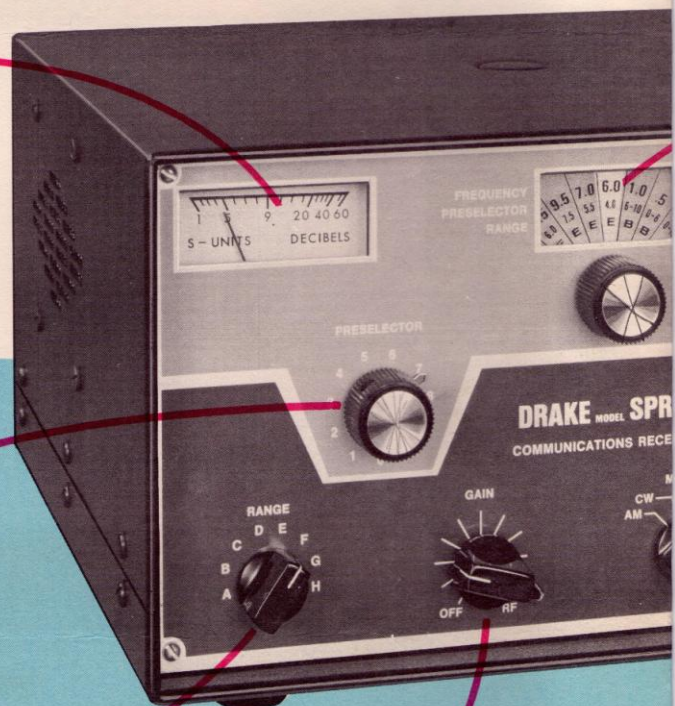
*...may be programmed to suit  
your present and future interests...*

**Sensitivity is excellent.** It takes less than  $\frac{1}{4}$  microvolt signal to give 10 dB signal-to-noise ratio. The dynamic range in reception of weak signals to undistorted reception of strong signals is greater than 100 dB. Very strong signals do not overload or cross-modulate a desired adjacent weak signal.

**Preselector** is to be set to the position indicated in band dial sector then fine tuned for peak signal. This control tunes antenna and RF circuits and tracks the pre-mixed injection for the first mixer.

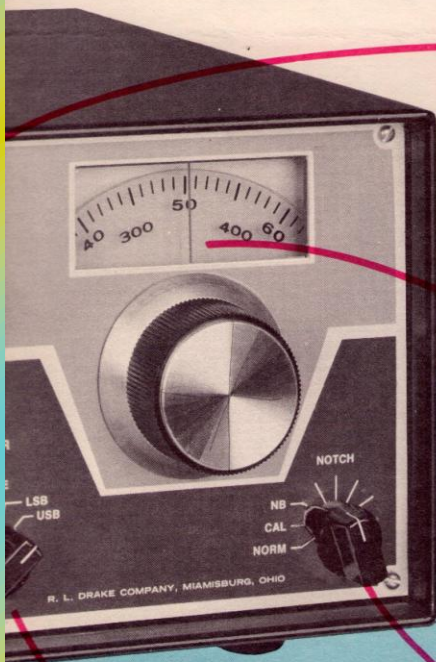
**Range switch position** is indicated in band dial sector. This switch sets up all the tuned circuits to cover the desired band of frequencies.

**Three watts of audio power** is available to the internal speaker (or an external speaker). Automatic volume control works on SSB, AM, and CW with time constants selected for optimum effectiveness on each mode. Audio level is held constant within 3 dB over a 100 dB range of input signals.



**ALL SOLID STATE**—Drake engineering and the recent development of the dual gate FET make possible the first nocompromise solid state receiver. Unlike receivers with bipolar transistors which have poor cross-modulation, inter-modulation, AGC, and overload performance; the SPR-4 has signal handling capabilities superior to the best tube receivers. In addition, the SPR-4 has all of the advantages of a solid-state design such as low power consumption, mechanical and thermal stability, reliability, etc.

**Ideal for** short wave listening or monitoring, aircraft radio and weather, marine ship and shore stations, HF communications, WWV standard time signals, citizens band, standard broadcast monitoring or DXing, amateur radio, civil defense, government, use as a laboratory instrument.



**This switch selects the band determining crystals.** The dial sector top line reads the lowest frequency of each band, the middle line indicates the approximate position for tuning the Preselector, and the bottom line tells the proper setting of the Range switch.

The SPR-4 comes with ten bands installed which cover long wave, standard broadcast, and seven shortwave broadcast bands. Other bands, each with 500 kHz tuning range, can be added by purchasing a crystal which comes with a "stick-on" dial sector for that range. A total of 24 bands are possible from 150 kHz to 30 MHz.

**Main tuning dial** reads 0 to 500 kHz with 1 kHz graduation marks. When added to the top line of the band switch sector, the actual received frequency is indicated directly to 1 kHz.

The dial consists of two concentric transparent discs that rotate at different speeds. 0 to 100 kHz is indicated on one disc and hundreds of kHz are indicated on the other disc. Calibration adjustment is by rotation of the skirt with respect to the knob.

**Mode selector** switches in a product detector for CW and SSB or a diode detector for AM. It also selects proper bandwidths of selectivity; .4, 2.4, or 4.8 kHz for CW, SSB, or AM. Upper/lower sideband selection is made without retuning.

**A tuneable notch** is included to take out an adjacent carrier or whistle. The switch lever provides for the plug-in accessory noise blanker and 100 kHz calibrator.

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## SPECIFICATIONS

**Frequency Coverage:** Can be programmed with accessory crystals for 23 ranges (each tuning a 500 kHz band) from .5 to 30 MHz plus 150 to 500 kHz. Crystals supplied with the receiver allow coverage on these ranges; 150-500 kHz, .5-1.0 MHz, 1.0-1.6 MHz, 6.0-6.5 MHz\*, 7.0-7.5 MHz, 9.5-10 MHz, 11.5-12 MHz, 15-15.5 MHz, 17.5-18 MHz, 21.5-22 MHz.

**Modes of Operation:** AM, CW, SSB (upper and lower)

**Selectivity:** AM — 4.8 kHz @ 6 dB, 10 kHz @ 60 dB  
SSB — 2.4 kHz @ 6 dB, 7.2 kHz @ 60 dB  
CW — .4 kHz @ 6 dB, 2.7 kHz @ 60 dB

**Intermediate Frequencies:** 1st IF 5645 kHz four pole crystal lattice filter, 2nd IF 50 kHz four pole Hi-Q Ferrite LC filter.

**Frequency Stability:** At room temperature, drift for all causes (including  $\pm 10\%$  change in supply voltage) is less than  $\pm 100$  Hz.

**Sensitivity:** SSB and CW: .25 microvolt gives 10 dB  $\frac{S+N}{N}$ , AM: .5 microvolt with 30% Mod gives 10 dB  $\frac{S+N}{N}$ .

**Automatic Volume Control:** AVC is used on AM, CW, and SSB. Time constants are selected for the optimum effectiveness on each mode. Audio output is held constant to 6 dB over a 100 dB range of input signals.

**Input Impedance:** 50 ohms approximately (higher impedance 150 kHz to 1500 kHz)

**Output Power:** 3 watts into 4 ohm load (less into higher impedance loads)

**Power Consumption:** 18 watts on 120 VAC or 5 $\frac{1}{4}$  watts on 12 VDC, 2.5 watts on 12 VDC with dial lights turned off.

**Calibration:** Dial is accurate to better than  $\pm 1$  kHz when calibrated at nearest 100 kHz calibration point.

**Hum and Noise:** More than 60 dB below rated output.

**Size and Weight:** 5 $\frac{1}{2}$ " H. x 10 $\frac{3}{4}$ " W. x 12 $\frac{1}{4}$ " D. Weight: 18 pounds.



## ACCESSORIES

**Matching Speaker**—Same size as SPR-4, has 5 x 7 speaker. Model MS-4

**Calibrator**—Plug-in 100 kHz crystal oscillator with harmonics that occur at 100 kHz intervals throughout the range of SPR-4. Model SCC-4

**Noise Blanker**—Plug-in IF Type noise blanker mutes receiver for duration of each noise pulse. 16 transistors, 2 diodes. Model 5-NB

**Loop Antenna**—Directional antenna nulls out undesired stations, plugs into receptacle through top of the cabinet, operates from 150 kHz to 1600 kHz only. Model AL-4

**Antenna Kit**—consists of wire, insulators, lead-in, and instructions. Model AN-5

**DC Power Cord**—Plugs into cigar lighter in an automobile, allows SPR-4 to be used on 12 volts DC supply. Model DC-PC

**Teletype Adapter**—Allows reception of standard teletype tones 2125/2975 Hz and 2125/2295 Hz by remote shifting BFO. Model RY-4

**Transceiver Adaptor**—Allows SPR-4 to transceive with T-4B or T-4XB Transmitters. Consists of printed circuit board and connectors. Must be wired into SPR-4 by technician. Model TA-4

**Battery Pack**—Fits on bottom of SPR-4 in place of original cabinet base. Uses ten Ni-cad "D" size cells, includes battery charger with shaped current characteristics to protect cells from overcharge. Model BP-4

## CRYSTAL KITS

**Amateur Bands**—160 M, 80 M, 20 M, 15 M, and 10 M ranges. Six crystals cover 1.5-2, 3.5-4, 14-14.5, 21-21.5, 28-28.5, 28.5-29 MHz.

**Marine Bands**—2-2.5, 2.5-3, 4-4.5, 8-8.5, 8.5-9, 12-12.5, 13-13.5, 16.5-17, 17-17.5, 22-22.5, 22.5-23. Eleven Crystals.

**Aeronautical Overseas**—2.5-3, 3-3.5, 4.5-5, 5.5-6, 6.5-7, 8.5-9, 13-13.5. Seven Crystals

**Time and Frequency Standard, WWV**—2.5-3, 5-5.5, 10-10.5, (15-15.5 original equipment), 20-20.5, 25-25.5. Five Crystals

**CB**—27-27.5 MHz\*. One Crystal

**Tropical Broadcast**—2.0-2.5, 3.0-3.5, 4.5-5 MHz. Three Crystals

**Mars**—2.0-2.5, 3-3.5, 4-4.5, 5-5.5, 18-18.5. Five Crystals

**Teletype Commercial**—UPI, AP, Stock Market, Weather, etc. 7.5-8, 9-9.5, 13.5-14, 15.5-16. Four Crystals

**Individual Bands**—Crystals may be ordered for any 500 kHz tuning range. Specify Range in MHz.

\*Generous overtravel gives additional 50 kHz or more off each end of range.

R. L. DRAKE COMPANY



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