

Modern as this minute!



The New **PRO-310**

communications receivers

by **HAMMARLUND**

The last word in communications

Receivers

the PRO-310

by

HAMMARLUND

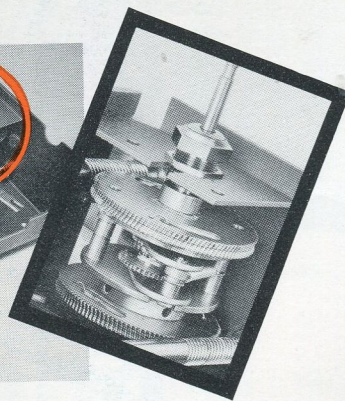
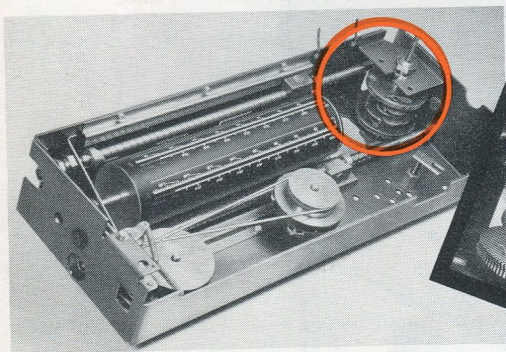
The Hammarlund PRO-310 Series Communications Receiver fulfills the long-existing need for a *modern* communications receiver design incorporating precision components which provide the ultimate in performance — whether the user is an amateur, commercial operator, or merely one who appreciates the finest in short-wave listening.

Hammarlund — the manufacturer whose reputation for the highest quality in electronics and communications equipment is long established — spent three years in engineering and design time to develop this outstanding communications receiver. As a result, the PRO-310 contains the latest in technical achievements and the highest quality components available.

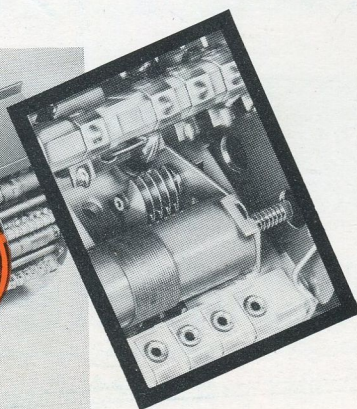
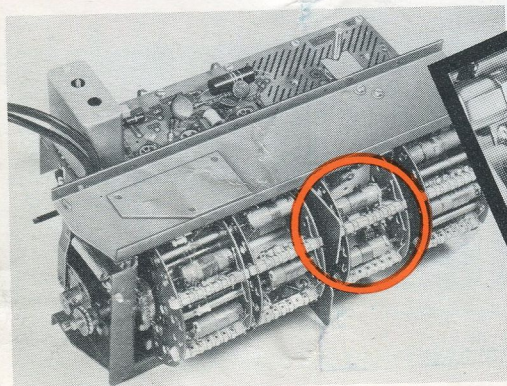
It is patterned to meet, and in some cases exceeds, military requirements.

Among the features of the PRO-310 are clear, readable scales on the tuning dial, with rotary presentation of one scale at a time to eliminate confusion; a signal strength meter; a precision-gear differential transmission which provides direct reading bandspread at all points on every scale; spinner-type knobs for ease in searching and retuning the full length of the scale; built-in 100 KCS crystal calibrator; and coil turret-type bandswitching.

The PRO-310 is one of a series of top-performing communications receivers designed for the *modern* communications equipment user.



Dial drive assembly showing precision gears, differential, and worm-gear dial indicator drive mechanism. The differential drive mechanism (see inset) provides mechanical bandspread which allows the use of one capacitor gang instead of the two normally employed for electrical bandspread. This results in vastly improved overall performance.



Front-end printed wiring board and the associated coil turret. Four tuned circuits are employed, with two ahead of the tuned RF stage for improved selectivity and improved signal-to-noise ratio. Inset shows ceramic coil support and contact assembly and the air trimmer. All components are of the highest quality for maximum stability.

features

- Exceptionally high stability
- Dual conversion with second conversion oscillator crystal-controlled
- Ruggedized-sectionalized construction
- Instrument-type tuning with SCANSREAD*
- Uniformly high sensitivity and ultra-high signal-to-noise ratio
- Extremely high image rejection on all six bands
- Continuously calibrated bandspread over the entire frequency range†
- Dial readability better than 0.05%
- Built-in crystal calibrator
- Coil turret band switching
- Low frequency IF system (52 KCS) with sharp skirt selectivity and adjustable bandwidth of 500 cps, 2 KCS, and 4 KCS
- Highly effective series-type noise limiter

*Completely new concept in precision electro-mechanical bandspread.

†Except broadcast band

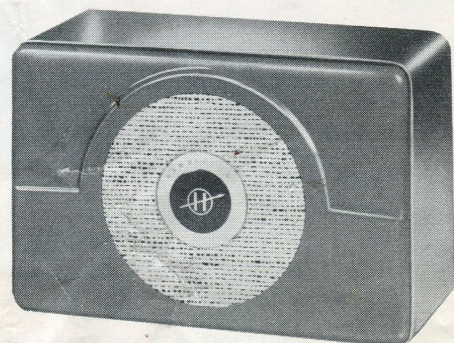


Top view showing front-end unit with shield removed (right), the IF strip (center), and the audio, BFO, crystal calibrator, and power supply unit shown together (left). Chimney-type shield on rectifier provides means of exhausting heat through rear of cabinet.

Built-in crystal calibrator provides check points every 100 KCS on all six bands. Calibrator employs stable, low-drift 100 KCS quartz crystal and 6BZ6 pentode. Trimmer capacitor provides adjustment for zero beat against primary frequency standard (WWV).



PRO-310 styled, 6-ohm voice coil permanent magnet 6½" speaker with power rating of 3 watts. Speaker cabinet available in either gray or black to match corresponding model receiver. Acoustically-treated loaded baffle provides optimum performance.



PRO-310 *specifications*

Tuning Range

Calibrated Bandsread Bandsread Range

Tube Complement

Antenna Input Antenna Compensator S-Meter

Variable Selectivity Sensitivity IF Stages Second Conversion Oscillator

Image Rejection

Spurious Response

Single Sideband Delayed AGC Noise Limiter Audio Output Power Consumption Power Supply

Front Panel Controls

Rear Panel Connections and Fuses

Dimensions and Color

Rack Model

Built-in Crystal Calibrator Matching Speaker

6 B A N D S

Band 1.....0.55 — 1.11 MCS	Band 4.....4.40 — 8.88 MCS
Band 2.....1.10 — 2.22 MCS	Band 5.....8.80 — 17.76 MCS
Band 3.....2.20 — 4.44 MCS	Band 6.....17.60 — 35.52 MCS

Continuous throughout the short-wave range.

Band	Bandsread Range	Band	Bandsread Range	Band	Bandsread Range
1	—	3	0.22 MC	5	0.88 MC
2	0.11 MC	4	0.44 MC	6	1.76 MCS

6BA6 RF amplifier
6BE6 1st mixer
6C4 oscillator
6BE6 2nd mixer
6C4 2nd crystal controlled oscillator

6BZ6 1st IF amplifier
6BZ6 2nd IF amplifier
6AL5 detector, limiter
12AX7 1st AF amplifier and AGC

6AN8 BFO and buffer
6V6GT/G audio power output
5U4GB full-wave rectifier
6AL5 bias rectifier
0B2 voltage regulator

75-300 ohms impedance — provides for use of coaxial transmission line.
Permits compensation for loading effects of various types of antennas and improves image ratio.
Calibrated 1 to 9 in steps of approximately 6 db — also includes db scale above S-9.

Three positions, two for phone reception and one for cw reception: 500 cps, 2.0 KCS and 4.0 KCS.
Maximum of 1 μ v cw signal produces a 10-to-1 signal-to-noise ratio.
Double conversion — IF frequencies at 1802 KCS and 52 KCS.
Crystal-controlled at 1750 KCS.

For the range 2.2 — 17.6 MCS, better than 70 db below signal.
For broadcast band and above 17.6 MCS, better than 50 db below signal.
Equal to or better than Image Rejection.

Stability excellent — ideal for SSB.
Operates on RF and IF stages — provides smooth, fast action.
Series-type to provide improved limiting and less effect on modulation.
2 watts undistorted; 6 ohms output impedance.
110 watts.
Filtered to provide hum-free reception — standard model 105-125 V, 50-60 cps ac.

Band Selector	Selectivity	AM-CW/SSB Switch
Main Tuning	Antenna Compensator	Noise Limiter Switch
Bandsread Tuning	CW Tone (BFO Pitch)	AGC Switch
Audio Gain, On-Off Switch	Stand-by — Receive Switch	"S" Meter
Sensitivity (RF Gain)	Crystal Calibrator Switch	Phone Jack
Speaker Connection		Phono Input
Antenna and Ground Connection by means of twinax connector — Plug PL-284 supplied		IF Output
Terminals Provided for external relay, Send-Receive Control		Power Line and B+ Fuses
Standard Cabinet Model — 8 15/16" H x 17 7/8" W x 15 1/2" D		
Net Weight (less speaker) — 65 lbs.		
Cabinet finish — black with gold trim gray with silver trim		

Kit, including two angle brackets and new solid-bottom plate and hardware, converts cabinet model for rack-mounting in standard 19" rack. Height — 8 3/4".
100 KCS calibrator provides usable range to 35.5 MCS with check points every 100 KCS.
6 1/2" PM speaker handles up to 3 watts. Available as an accessory. Dimensions —
7 1/4" H x 11" W x 7 1/4" D.

Specifications subject to change without notice.



HAMMARLUND

ESTABLISHED 1910

HAMMARLUND MANUFACTURING COMPANY, INC., 460 West 34th Street, New York 1, New York

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International Division: 13 East 40th Street, New York 16, New York

Bulletin APD-189



Beauty...

More Than Skin Deep!

A beauty — all around!

But — that's only a *small* part of these two beautiful Model PRO-310 Communications Receivers by Hammarlund.

Lift the top of the cabinet and look inside. The PRO-310 has clean, sectionalized construction using specially designed components — no make-shift broadcast components of other flimsy assemblies. Take a good look at that turret tuner! It's the heart of the PRO-310.

Now switch it on. You've never operated anything like it! It's the clearest, sharpest, and most sensitive reception you've ever heard on a communications receiver anywhere.

And the Price? Only \$595 at your Hammarlund distributor today! Matching speaker available.

Write for descriptive literature.

HAMMARLUND MANUFACTURING CO., INC.

460 W. 34th ST., NEW YORK 1, N. Y.