



DESIGNED
WITH THE
AMATEUR
IN MIND!

HAMMARLUND

HQ-110

Dual Conversion . . . 12 tube, dual-conversion superheterodyne circuit.

Frequency Range . . . Full dial coverage of the 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

Single Sideband . . . Separate linear detector for optimum reception of SSB and CW signals.

Q-Multiplier . . . Permits continuously variable selectivity to meet all operating conditions.

Beat Frequency Oscillator . . . Separate stabilized beat-frequency oscillator for SSB and CW reception.

Stable . . . Voltage-regulated and temperature-compensated high-frequency oscillator for extra stability.

Crystal Control . . . 2nd conversion oscillator crystal controlled.

Crystal Calibrator . . . Built-in 100 KC crystal calibrator.

Dial Scale Reset . . . Adjustable calibration of dials on front panel for precise settings.

Auto-Response . . . Automatically adjusts audio response to fit receiving conditions.

Automatic Noise Limiter . . . Minimizes static bursts and ignition interference.

Cabinet . . . Modern design and construction with "humanized" control arrangements.

Construction . . . Rugged die-cast aluminum front panel and heavy-gauge chassis and cabinet.

Warm-up Timer . . . Automatically turns on receiver at any pre-determined time.

A Hammarlund-quality receiver designed all the way through for the *amateur*! A smart, modern receiver packed with all the features an *amateur* wants at the right price—that's Hammarlund HQ-110 in a nutshell!

The HQ-110 represents the exclusive Hammarlund design philosophy that puts the cost in the components, where it counts, engineered to reduce production-line labor costs to a minimum.

The HQ-110 is a twelve-tube superheterodyne receiver with dual conversion, resulting in excellent image response rejection. An additional feature of this circuit is better selectivity of the desired signal.

A new dial reset feature permits accurate calibration of the dual dials from the front panel. Dual dials have been incorporated in this new receiver to provide greater degrees of rotation in the crowded bands for more accurate and easier signal seeking and logging.

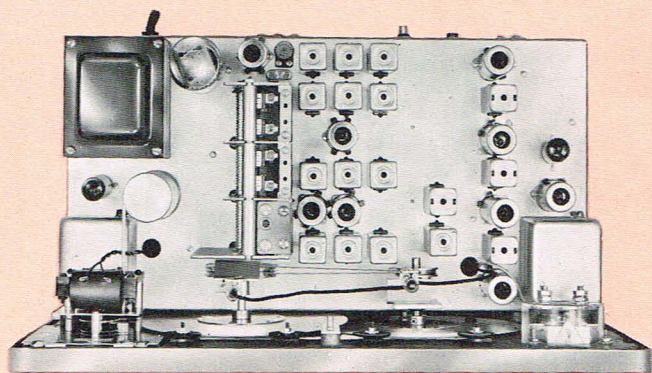
When it comes to sensitivity, the HQ-110 offers 1.5 μ volts for a signal-to-noise ratio of 10:1. This places it among the most sensitive receivers available for amateur use.

The audio system incorporates the well-known Hammarlund Auto-Response feature that automatically narrows the audio passband as the audio gain is increased. Stronger signals, requiring less audio gain are automatically broadened in their audio passband resulting in audio quality approaching high-fidelity.

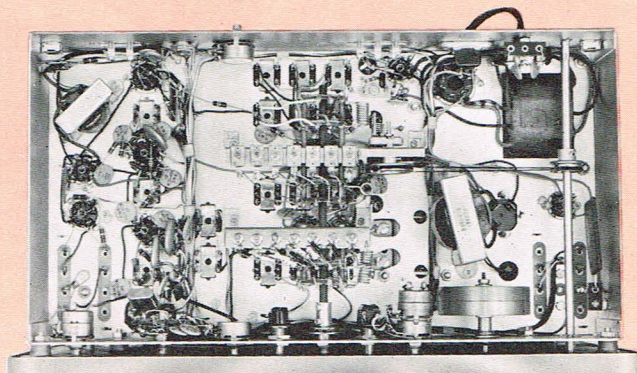
And there's the automatic warmup feature which is optional when you purchase the set, or can be added later on. This feature was first introduced on the famous HQ-100 and proved to be such an aid to operation and logging, that it is offered on the HQ-110. Just set the timer for the hour you want the receiver



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TOP VIEW



BOTTOM VIEW

to turn on, with the volume turned down, and when you get ready to "work," the receiver is at operating temperatures for optimum performance.

The HQ-110 hits a high in stability with voltage-regulated and temperature-compensated high-frequency oscillator, plus a crystal-controlled second-conversion oscillator. Among the many features you would expect in an amateur receiver, and you get in the HQ-110, are the Q-Multiplier, BFO, crystal calibrator, and separate linear detector for SSB.

The HQ-110 will write a new chapter in amateur history. It is the first quality-designed and built amateur receiver incorporating so many features at anywhere near its price. Even the most critical amateur will nod his approval for the HQ-110. See it, try it, and then compare it with any receiver for real value.

The HQ-110 Amateur Band Communications Receiver is a table-top model, completely self-contained, with a regulated power supply for operation on 105-125 volts, 50-60 cps, 80 watts. The power supply is completely filtered to eliminate AC ripple. The receiver cabinet is a modern design with a die-cast aluminum front panel and overall perforated steel top, sides and bottom for maximum ventilation.

Front panel control knobs have been molded to a "natural grip" shape and are located in functional groups for easier operation. Calibrations and markings on front panel are complete, and extremely legible.

The HQ-110 receives all signals in the 6, 10, 15, 20, 40, 80 and 160 meter amateur bands with adequate overlap for complete coverage. Desired band is selected by use of a Tuning Range switch on the front panel. The HQ-110 is designed for use with either a single wire flat-top, a folded dipole or doublet antenna. An antenna trimming capacitor, controlled from the front panel, is provided for optimum antenna-to-receiver matching.

CIRCUIT DESIGN

The HQ-110 is an authentic communications receiver in both circuit design and component selection. Basically, it is a twelve-tube superheterodyne with dual conversion, a noise limiter and separate second detectors.

The use of a separate mixer (6BE6) and oscillator (6C4) provides a high degree of stability. High gain with low noise in the RF amplifier and the two IF amplifier stages is achieved through the use of advanced circuit design and modern tube types. One section of the (6BJ7) is used as a self-adjusting noise limiter to minimize impulse noises such as automobile ignition. This circuit has no appreciable effect on the desired signal. Another section of the (6BJ7) is employed as a second detector and as an AVC system, while the third section functions as a delayed AVC system for the RF amplifier.

Frequency drift of the HQ-110 is less than 0.01% after warmup. Low-loss sockets, coil forms and band-switch wafers, temperature-compensating capacitors, application of regulated power to the oscillator circuit and the rugged construction of the entire high-frequency oscillator section assembly contribute to this high degree of stability.

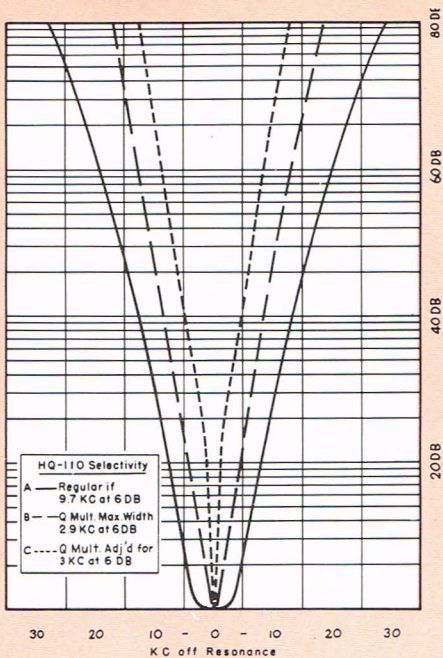
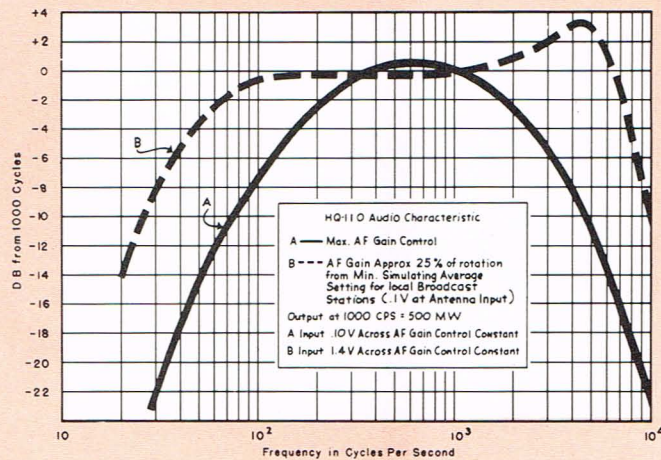
BANDSPREAD

Electrical bandspread tuning with direct dial calibration is provided for all seven amateur bands: 160, 80, 40, 20, 15, 10 and 6 meters. Through the use of two dials, optimum bandspread has been attained as a result of greater dial scale length. The HQ-110 dial also incorporates a 0-100 arbitrary logging scale.

RF SECTION

Outstanding antenna coupling and the high signal-to-noise ratio of the RF amplifier provide pre-selection

AUTO-RESPONSE CURVE



HQ-110 SELECTIVITY CURVES

and high signal level for optimum performance. The antenna compensating capacitor is a front panel control and provides antenna matching for maximum transfer of energy from transmission line to front end.

DUAL CONVERSION

Dual conversion is provided in the HQ-110 on the 6, 10, 15, 20 and 40 meter bands. The first conversion produces an intermediate frequency of 3045 KCS and is heterodyned with a crystal-controlled oscillator to the second intermediate frequency of 455 KCS. This system provides excellent rejection of image response.

Q-MULTIPLIER

The Q-Multiplier circuit permits the operator to continuously vary the degree of selectivity. This feature is very important in today's crowded ham bands. It permits on-the-peak tuning without the need for detuning the RF section to reject unwanted signals. A section of the (12AX7) is used in the Q-Multiplier.

IF AMPLIFIER

Nine tuned-circuits in three stages of IF amplification contribute to the selectivity and sensitivity of the HQ-110. Iron core permeability-tuned transformers improve performance and retain accuracy of alignment.

Fading and signal strength variations are overcome by a very fast-response Automatic Volume Control circuit which controls the gain of the RF stage and the first IF stage.

S METER

A high-response S meter circuit permits on-the-peak tuning and readings of signal strength. The easy-to-read scale is calibrated to 40 db over S-9. The meter is factory-calibrated so a signal of approximately 50



microvolts reads S-9. Each S unit indicates approximately a 6 db increase, equivalent to doubling the signal strength.

AUDIO

The HQ-110 has the Hammarlund Auto-Response feature which automatically adjusts the audio pass-band for the greatest tone clarity and sound realism. The audio output stage uses a (6AQ5). The Auto-Response circuit employs controlled feedback in the audio circuit. As the audio gain is reduced, the feedback broadens the frequency response of the audio amplifier. When receiving a strong signal, the frequency response of the receiver is approximately 50 to 7500 cps, or approaching high-fidelity standards; however, when the signal is extremely weak, it is desirable to subdue everything but the intelligence of the communication. The Auto-Response performs this function by narrowing the audio bandwidth down to an effective 175 to 2500 cycles, if desired.

GENERAL

The HQ-110 is an ideal amateur receiver. It may be used with either earphones or loudspeaker. The phone plug automatically silences the speaker upon insertion. The Auto-Response feature permits real listening pleasure of AM, SSB and CW reception.

HQ-110

SPECIFICATIONS

The policy of the Hammarlund Manufacturing Company, Inc. is one of continued improvement in design and manufacture wherever and whenever possible, to provide the highest attainable quality and performance. Hence, specifications, finishes, etc. are subject to change without notice and without assumption by Hammarlund of any obligation or responsibility to provide such features as may be changed, added or dropped from previous production runs of this equipment.

FREQUENCY RANGE CALIBRATION

6, 10, 15, 20, 40, 80 and 160 meter bands.

MAXIMUM AUDIO OUTPUT OUTPUT IMPEDANCE AVC ACTION

Dial markings every 5 KCS on 20, 40, 80 and 160 meter bands; every 10 KCS on 15 meter band; every 20 KCS on 10 meter band; every 50 KCS on 6 meter band. Plus 0-100 arbitrary logging scale.

VARIABLE SELECTIVITY

1.0 Watt (Undistorted).

3.2 ohms (RETMA standard).

Operates on RF and IF stages. Provides fast, smooth action. Separate, delayed AVC for RF stage.

SENSITIVITY ANTENNA INPUT ANTENNA COMPENSATOR

One position for high quality AM, 6 KCS. Q-Multiplier continuously variable from 100 cps to 3 KCS.

An average of 1:5 uvolt produces 10:1 signal-to-noise ratio.

100 ohms nominal.

Permits compensation for loading effects of various type antennas, or balanced transmission line.

BEAT FREQUENCY OSCILLATOR TUBE COMPLEMENT

Variable from zero beat to ± 4 KCS.

RF Amplifier	6BZ6	First AF Amplifier	
Mixer	6BE6	Q-Multiplier	12AX7
Converter	6BE6		
HF Oscillator	6C4	Audio Power Output	6AQ5
1st IF Amplifier	6BA6	Voltage Regulator	OB2
BFO-2nd IF Amplifier, Linear Detector	6AZ8	Rectifier	5U4-GB
Diode Detector, Series Noise Limiter	6BJ7	Calibrator	6BZ6

POWER SUPPLY "S" METER

105-125 volts, 50-60 cps, 80 watts.

Calibrated 1 to 9 in steps approximately 6 db. Also includes db scale above S-9 to + 40 db.

NOISE LIMITER

New series type which provides better limiting action with minimum effect on modulation.

FRONT PANEL EQUIPMENT

Tuning
Sensitivity (RF Gain)—ON/OFF Switch
Audio Gain
Antenna (Compensator)
Tuning Range (Band Selector)
Function Switch: Send-Receive—CW, SSB—Calibrate
Q-Multiplier, Frequency and Selectivity
CW Tone (BFO Pitch)
Limiter On-Off Switch
"S" Meter
MAN/AVC Switch

REAR PANEL EQUIPMENT

Terminals for speaker connections.
Terminals for antenna and ground connections.
Phone Jack
Jack for external send-receive relay connection.

DIMENSIONS

16 $\frac{1}{4}$ " long, 9 $\frac{7}{16}$ " high, 9 $\frac{1}{8}$ " deep.
Wt.: 30 lbs.



TELECHRON CLOCK-TIMER

Combination clock and automatic timer. Aids in meeting pre-arranged schedules. Optional accessory. Space in front panel provided.



SPEAKER

Matching 6" x 9" speaker. Extended range. 8 watt capacity. Housed in attractive metal cabinet. 9 $\frac{1}{2}$ " wide, 9 $\frac{1}{8}$ " high, 7" deep. (Optional accessory).



Established 1910

HAMMARLUND

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