HARRIS RF-350 SERIES HF RADIO GROUP

100/500/1000 Watt • 1.6 to 30 MHz

The RF-350 Series HF Radio product line provides high-performance, long-range communications capability. It is designed to provide reliable, easily maintained, HF voice and data communications for fixed plant, transportable, shelter, and mobile stations. The transceiver, configured with a 500 watt or 1000 watt linear power amplifier, fulfills a wide range of communications requirements.

The RF-350 is a microprocessor-controlled transceiver, conservatively rated at 100 watts PEP and Average. The solid-state power amplifier assures continuous full-output power during keydown operation. All operating and metering functions of the transceiver are fully remote controllable over two- or four-wire phone lines. Additionally, the built-in phone patch and internally mounted AFSK option provide full communication flexibility.

The exceptionally rugged, industrial/military design and construction of the RF-350 system guarantees continuous high performance and reliability under demanding field conditions. Automatic diagnostic BITE provides board-level fault isolation for the entire system.

The RF-350 system is tuned by simply selecting a frequency (or preset channel) and keying. All other tuning functions, including linear power amplifier and antenna tuning, are performed automatically.

RF-350 High Performance HF Transceiver Group

Remote Control  Transceiver  Power Amplifiers  Antenna Couplers  Antenna System

The RF-350K shown above combines the RF-350 Transceiver (DC operation) with the RF-366 multi-voltage power.

The versatility of the RF-350 Series allows for cost-effective, high-performance system integration. Systems providing 100, 500, and 1000 watt power output can be configured to meet a variety of demanding user requirements.
RF-350 Series
HF Transceiver Group

RF-350 Transceiver
- 100 watts PEP/Average
- 1.6 to 30 MHz
- Microprocessor controlled
- Digital fine tuning
- 10 Hz synthesized steps
- Field programmable channelization
- All solid state
- Built-in optional FSK modem
- Built-in phone patch
- LCD display
- BFO
- Automatic tuning
- Modular construction
- Automatic diagnostic BITE
- RS-232C/422 computer control/interface

RF-355 500 Watt Linear Power Amplifier
- Only 7 inches high
- 500 watt PEP/250 watt Average
- 110/220 VAC and optional 28 VDC
- Serial data interface control
- Continuous tuning, fully automatic
- Rack/stack mount
- Microprocessor BITE and control
- Rugged construction
- Manual tuning backup
- Fully protected into any load

RF-353/354 1 kW Linear Power Amplifier
- 1 kW PEP/Average
- Serial data interface control
- Continuous tuning, fully automatic
- Rack/stack mount
- Microprocessor BITE and control
- Rugged construction
- Manual tuning backup
- Fully protected into any load

RF-351 100/500 Watt Coupler
- 1.6 to 30 MHz
- 500 watt rating
- Fully automatic
- Matches 15- to 35-foot whips and 75- to 150-foot long wires
- Automatic long-wire adapter
- High VSWR protection

RF-352 Remote Control
- Provides full control and monitoring of transceiver
- Remote BITE of entire system
- 9600 baud RS-232C/422 control interface allows control up to 1 mile
- Built-in 300 baud FSK modem for control over phone lines for unlimited separation
- Built-in phone patch
AN/URC-121 (V) SERIES
TRANSPORTABLE HF TRANSCEIVER SYSTEM
HARRIS
AN/URC-121 (V) SERIES

The AN/URC-121(V) Transportable HF System provides high-performance, long-range communications capability. It is designed to provide reliable, easily maintained, HF voice and data communications for transportable and mobile operation. The transceiver, configured with a 500-watt or 1000-watt linear power amplifier and remote control, fulfills a wide range of communications requirements.

System Features
- 100/500/1000 watts output power
- 1.6 to 30 MHz
- Microprocessor controlled
- Digital fine tuning
- 10 Hz synthesized steps
- 99 field programmable channels

The AN/URC-121(V) Transportable HF System is based on the RT-1446/URC, a microprocessor-controlled transceiver, conservatively rated at 100 watts PEP and Average output power. The solid-state power amplifier assures continuous full-output power during keydown operation. All operating and metering functions of the transceiver are fully remote controllable over phone lines or computer interfaces. Additionally, the built-in phase patch and internally-mounted AFSK option provide communication flexibility. The unit is compatible with standard DOD secure communications devices, including ANDY.

The exceptionally rugged design and construction of this system guarantee continuous high performance and reliability under demanding field conditions. Automatic diagnostic BITE provides board-level fault isolation for the entire system.

The AN/URC-121(V) Transportable HF Transceiver System is tuned by simply selecting a frequency or preset channel and keying. All other functions, including linear power amplifier and antenna tuning, are performed automatically.

Upgrade All Your Long Range HF Radio Communications with a Product Line of Nomenclatured Equipment

The versatile AN/URC-121(V) HF System has been selected by the United States Department of Defense for a wide range of transportable applications, for large scale replacement of existing systems, as well as new communications requirements. It is electronically and mechanically designed to be compatible with existing networks and anticipated adaptive operating schemes to provide reliable, supportable, high-performance communications into the 21st century.

Operation of any system configuration is straightforward. Frequency, mode, and other operating characteristics can be operator selected or can be preset on up to 99 field-programmable channels. Tuning is as easy as selecting a frequency or channel and keying. All other tuning functions are automatic. An individual can become a qualified operator in a matter of minutes. System self-test and automatic diagnostic BITE make it simple to identify and locate problems in the field. Modular construction puts you back on the air when seconds count.

Operation and maintenance manuals, data, documentation, provisioning, and training packages provide all required levels of support from the field to the depot.
Typical Application Features

- Demonstrated AFSK interface with Transportable Record Communications Terminal (TRCT).
- Demonstrated high-speed data transmission and reception up to 2400 bps (with RF-3466 High-Speed Data Modem and ANDVT).
- Additive HF with channel evaluation and selective cell using RF-7110 AUTOLINK® Adaptive Controller.
- Built-in phone patch and VOX for operation to/from telephone lines.
- Interfaces with various record message devices such as AN/UGC-74, AN/UGC-129, and AN/UGC-141.
- Operates with various digital message entry devices (DMED) to provide burst communications capability.
- Demonstrated interface with COMSEC equipment such as Parkhill KY65/KY75 and Advanced Narrow-Band Digital Voice Terminal (ANDVT) CV-3591.

AN/URC-121(V) System Configurations

The basic Transportable Ground System is designed for applications requiring a pre-wired, pre-configured system. The system is fully operational by removing the front and rear end bells.

The AN/URC-121(V) Antenna Coupler/Remote Control Deployment option provides storage for the antenna coupler, control and RF cables, and accessory remote control (when required).

The Adaptive Transportable Ground System provides full adaptive HF operation by incorporating the RF-7110-04 Adaptive Controller. This transportable AUTOLINK® system provides automatic link establishment, link quality analysis (LQA), and automated channel selection.

The Transportable Open Field option provides the versatility required for a fully-protected, open field system. The case housing the R/T and 500 Watt Power Amplifier is designed to environmentally protect the system when exposed to the elements. The second case contains the remote control, antenna coupler, coupler control, and RF cables, as well as interface cables for use with standard 407L cables provided by the government.
### Specifications for the AN/URC-121(V) Transportable HF Transceiver

**RT-1446/URC 100 Watt HF Transceiver**

**General**
- Frequency Range: 1.6 to 30 MHz (10 Hz synthesized steps)
- Power Output: 100 watts PEP/Average
- Channels: 99 front-panel programmable channels
- Frequency Stability: 0.0 parts in 10^6
- Power Input: 110/220 VAC ± 10% of 50 to 400 Hz, +28 VDC or +12 VDC
- RF Input/Output Impedance: 50 ohms nominal, unbalanced, capable of driving a 2:1 SWR load.
- Temperature: -30° to +65° C
- Tuning Time: Less than 10 sec.
- Display: LCD
- Built-in Test: Yes
- Diagnostics: Fault isolation to TRU/front-panel alpha-numeric indication.

**Emission Modes**
- A3J (single sideband, upper or lower)
- A3H (compatible AM, AMG, CW, AFSK)

**Size**
- 37.5 H x 16.75 W x 20.0 D inches

**Weight**
- 65 lbs. (30.6 kg)

**Mounting**
- Rack, stack, or pedestal case.

**Transmitter**
- Power Output: SSB (A3J): 100 watt PEP/Average; A3H (A2): 25 watt carrier nominal, CW (A2): 100 watt PEP.
- Overload Protection: Power amplifier is fully protected from mismatch, including an open or reversed antenna.
- Carrier Suppression (A3J Mode): At least 50 dB below PEP output.
- Intermodulation Distortion: Undesired Sideband Suppression: 50 dB at 1 kHz.
- Harmonic Suppression: 2nd 40 dB, 3rd 55 dB, 4th 40 MHz 70 dB below PEP.
- Audio Input: Either carbon or dynamic microphone in addition, a 600 ohm input is provided.
- Audio Output: 50 dB below PEP.

**Receiver**
- Sensitivity: SSB: 0.5 µv for 10 dB SINAD.
- Audio Output: 3 µv for 10 dB SINAD.
- Selectivity: SSB: nominally 250-3050 Hz at 3 dB.
- Image and IF Rejection: Greater than 80 dB.
- Intermodulation Distortion: Inband third order: -50 dB or better for two equal 20-dB signals falling within the SSB filter.
- Overload Protection: Source Sensitivity: -40 dB.
- FSK Modem Interface: MILSTD-188-114 interface.
- Center Frequency and Shift: 2805 ± 42.5 Hz.
- Power: 1000 watts PEP/250 watts Average.

**AM-7223/URC 500 Watt HF Linear Power Amplifier**

**General**
- Frequency Range: 1.6 to 30 MHz
- RF Output Power: AM-7223/URC: 500 watt PEP and 250 watt Average.
- Channel Change Time: 1 second nominal.
- RF Drive Power: 65 watts for full power output.
- Output Impedance: 50 ohms.
- Intermodulation: Third order more than 43 dB down.
- Harmonic Output: More than 43 dB down.
- Input Power: AM-7223/URC: 110/220 VAC ± 10% of 50 to 400 Hz.
- AM-7224/URC: 110/220 VAC ± 10% of 50 to 400 Hz.
- AM-7224/URC with AM-7213/URC: 110/220 VAC ± 10% of 50 to 400 Hz.
- Mounting: Output power, grid current, plate current, and plate voltage.
- Operating Temperature: -40° to +50° C.
- Cooling: Forced air from external blower.

**C-11329/URC Remote Control Unit**

**Functions**
- The remote control provides full control and monitoring of the transceiver.

**Display**
- Receivable Frequency: Controllable in 10 Hz steps, from 1.6 to 30 MHz.
- Transmit Frequency: Controllable in 10 Hz steps, from 1.6 to 30 MHz.
- Distance: 1 mile using RS-232C/422 on field wire, unlimited over VHF phone lines.
- Temperature Range: 30° to +50° C.

**Size**
- 8.25 H x 6.75 W x 12.5 D inches

**Weight**
- 20 lbs. (9.1 kg)

**CU 2310/URC 100/500 Watt HF Antenna Coupler**

**Input Impedance**
- 50 Ohms maximum VSWR 1.3:1

**Frequency Range**
- 1.6 to 30 MHz (into a 15- to 35-foot whip or a 75- to 150-foot long wire antenna)

**Power Level**
- 500 watt PEP/250 watt Average continuous duty.

**Size**
- 11.0 H x 6.0 W x 8.6 D inches

**Weight**
- 25 lbs. (11.3 kg)

**CU 2310/URC 100/500 Watt HF Antenna Coupler**

**Input Impedance**
- 50 Ohms maximum VSWR 1.3:1

**Frequency Range**
- 1.6 to 30 MHz (into a 15- to 35-foot whip or a 75- to 150-foot long wire antenna)

**Power Level**
- 500 watt PEP/250 watt Average continuous duty.

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**Size**
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**Weight**
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