

## SECTION 1

### GENERAL INFORMATION

#### 1.1 GENERAL DESCRIPTION

This manual provides complete user information for the RF-110A Radio Frequency Amplifier, shown in figure 1-1. The RF-110A was designed and manufactured by Harris Corporation, RF Communications Group, 1680 University Avenue, Rochester, New York, 14610, USA.

#### 1.2 DESCRIPTION

The RF-110A is a 2-30 MHz linear power amplifier capable of producing a 1 kW (PEP or AVG) output into a 50 ohm load. The RF-110A can be operated continuously in any operating mode. The MTBF (Mean Time Between Failures) is 1200 hours, and the MTTR (Mean Time To Repair) is .5 hours. The RF-110A will maintain the full rated output into antenna mismatches of up to 1.5:1, and will operate satisfactorily into much higher mismatch conditions. Internal protective circuitry will automatically reduce the transmitted output to the level required to protect the system if necessary. Drive requirements of approximately 100 milliwatts are needed to produce the full rated output. The transmitter can be set up to operate in a closed loop mode with the exciter. In this mode, APC (Average Power Control), and PPC (Peak Power Control) voltages are developed from an output sample, and fed back to the exciter for system power level control. These same voltages are used internally by the RF-110A for control and protection.

Table 1-1 lists optional and compatible equipment for the RF-110A.

#### 1.3 MANUAL/AUTOMATIC OPERATING CAPABILITY

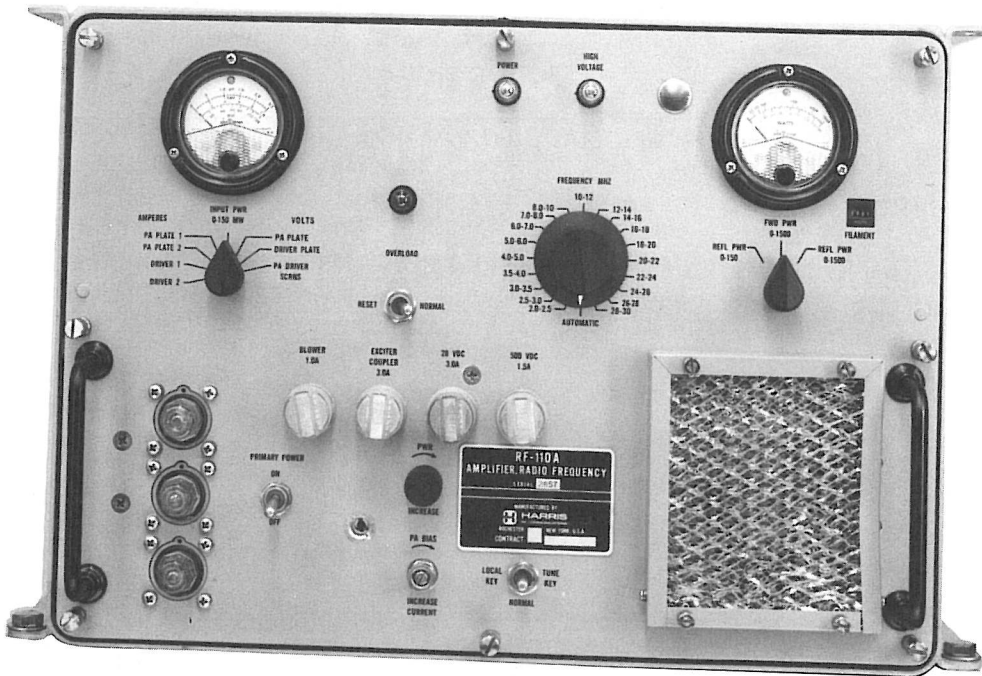
Broadband techniques eliminate the need for tuning the amplifier. The RF-110A divides the 2-30 MHz frequency spectrum into 19 bands. These frequency bands are pretuned for optimum performance. The appropriate band is automatically selected when the RF-110A is operated with compatible equipment. The desired band can also be manually selected to accommodate special requirements. The RF-110A operates in response to a five-wire code input from a companion exciter. In RF-130-01/02 Systems for example, this code input comes from the RF-1310 Exciter and will cause the RF-110A to automatically track any frequency set at the RF-1310 front panel.

#### 1.4 POWER SUPPLY OPTIONS

The RF-124, RF-112A, or RF-111A Power Supply is used with the RF-110A, depending on the available line voltages. A brief description of each power supply follows.

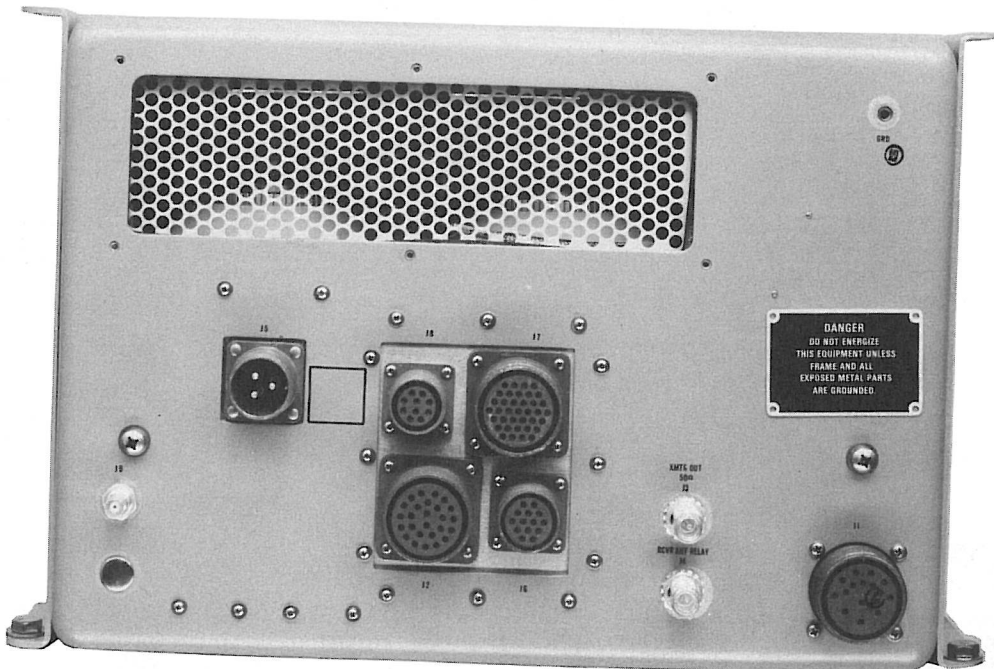
##### 1.4.1 RF-124 Power Supply (230 Vac Single-Phase, 50/60 Hz)

The RF-124 Power Supply is used when the only primary voltage available is 230 Vac, single-phase, 50/60 Hz (refer to figure 1-2). The source voltage must be capable of delivering 4500 watts. The RF-124 can be stack- or rack-mounted with the RF-110A. The RF-124 requires the most vertical rack space of the three power supply options. See the installation section of this manual and the RF-124 Power Supply Instruction Manual (8913-0003) for more information.



FRONT VIEW

110A-2(P)



REAR VIEW

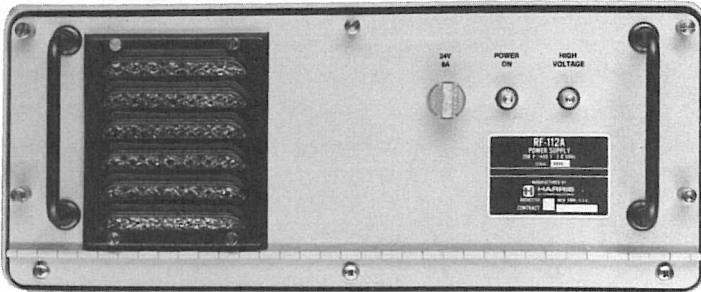
110A-3P

Figure 1-1. RF-110A Radio Frequency Amplifier

**Table 1-1. Optional and Compatible Equipment**

Item	Description	Application Notes
RF-111A	Power Supply	For use with 115 Vac, 400-Hz, three-phase power sources.
RF-112A	Power Supply	For use with 208/440-Vac, 50/60-Hz, three-phase power sources.
RF-115	Shock Mounting Kit	For use in high-vibration installations.
RF-124	Power Supply	For use with 230-Vac, 50/60-Hz, single -phase power sources.
RF-125	Noise Silencer	Reduces blower noise emissions.
RF-130	1 kW Transmitting System	RF-110A is a standard component of the system.
RF-130-01/02	1 kW Transmitting System	RF-110A is a standard component of the system.
RF-131	Exciter	Standard component of RF-130 Transmitting System. Also compatible with all RF-131 remote control systems.
RF-1310	Exciter	Standard component of RF-130-01/02 Transmitting System.
RF-142	Autotransformer	Permits operation of RF-112A from 380 Vac.
RF-180	1 kW HF/50 W VHF Transceiver	This application makes the RF-110A compatible with the RF-280 equipment family.
RF-193	Synthesized ARQ System	Variety of applications.
RF-270-5A	1 kW Transceiver	The RF-270-5A uses the RF-110A and units of the RF-230 equipment family.
RF-601A	Antenna Coupler	Fully automatic, 1-kW Antenna Coupler, matches a 15-35 foot (4.6 to 10.7 meter) whip antenna to 50 ohms from 2 to 30 MHz.  The unit will also match long-wire antennas when the RF-625 Long-Wire Adapter option is purchased.
RF-110A/RSK	Running Spares Kit	Contains operator-replaceable items. Refer to paragraph 1.7.1.
RF-110A/SSK	Site Spares Kit	Contains comprehensive maintenance repair parts. Refer to paragraph 1.7.2.
RF-110A/ARK	Assembly Repair Kit	Contains parts required to repair defective assemblies or subassemblies. Refer to paragraph 1.7.3.
RF-110A/MRK	Maintenance Repair Kit	Contains special parts unique to the RF-110A. Refer to paragraph 1.7.4.

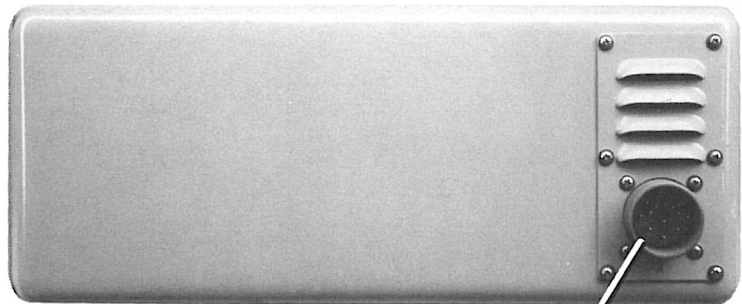
FRONT VIEW



THERE ARE NO OPERATOR CONTROLS ON THE RF-112A. ALL CONTROL IS AUTOMATIC IN RESPONSE TO SYSTEM SETUP CONDITIONS.

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REAR VIEW



PRIMARY POWER IS NOT CONNECTED DIRECTLY TO THE RF-112A. PRIMARY POWER AND ALL OTHER SYSTEM INTERFACES ARE ROUTED VIA A COMMON CABLE TO THE RF-110A.

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**Figure 1-3. RF-112A Power Supply Interface Information**

Antenna couplers, such as the RF-601A, provide the best results for most mobile and tactical applications. Designed specifically for use with the RF-110A, the antenna coupler ensures optimum match of the system antenna to the RF-110A. Automatic all-band operation is also provided.

Detailed antenna information is provided in the installation section of this manual and in the associated system or equipment manual.