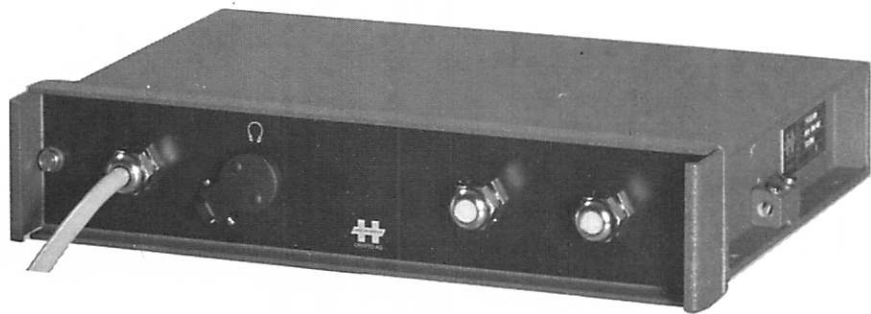


ARA-100-002

RADIO INTERFACE ADAPTER



OPERATING INSTRUCTIONS



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1. GENERAL

The ARA-100 is an adapter for the adaption of the CRM-008 or the HC-235 to any radio set. The power supply for the adapter is provided from the CRM-008 or the HC-235 and the adapter is galvanically seperated from the radio set.

The levels AF-in/AF-out as well as DX-in/DX-out can be adjusted by means of a potentiometer. A built-in headset allows the monitoring of the deciphered speech signal and sidetone.

The existing audio gear of the radio set can be connected to the ARA-100, or if this is not required the function is undertaken by the CRYPTO-MICROTEL AHF-100 connected to the CRM-008 or the HC-235.

The ARA-100 is intended for both fixed and mobile applications.



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2. INSTALLATION

The 10 pin multipole connector of the ARA-100 must be connected to the output DATA of the CRM-008 (HC-235). The plug is mechanically polarized and care must be taken to correctly align the plug before pushing it home. The plug is self-locking and may be released by pulling its front sleeve rearwards.

2.1. Receive Unit

Connect the audio output (phone) of the radio set (0 dBm output preferred) with a shielded cable to the terminals 28 and 29 of the ARA-100, 29 being the "hot" and 28 the common or shield terminal.

2.2. Send Unit

Connect the modulation line of the radio unit (input without AGC preferred) by means of a shielded cable to the ARA-100. It should be noted that for units equipped with carbon microphones or 600 ohm inputs the hot line goes to terminal 27. For units with dynamic microphones, the hot line goes to terminal 25. Terminal 26 is the common or shield. The keying line (push-to-talk) should be connected floating to terminals 23 and 22 or 23 and 24 respectively.

2.3. Audio Gear

When using the handset AFH-100 with the CRM-008 no further audio gear is required. If, however, existing units of the radio set are to be used, the earpiece must be connected to the terminals 11 and 12 of the ARA-100. Dynamic microphones should be connected between terminals 13 and 14. Carbon microphones should be connected between terminals 15 and 16. In addition the jumpers C-F, H-L, K-G and M-I must be connected with wire bridges for carbon microphones. The push-to-talk (PTT) button of the microphone should be connected to terminals 18 and 19. In addition the jumper P-Q must be connected with a wire bridge.

2.4. Plain/Crypto Remote Control.

In place of the PTT button of the microphone, the terminals 18 and 19 can be used for Plain/Crypto remote control via a switch. For this type of use the jumper P-N must be connected with a wire bridge.

2.5. Vox Control.

If the radio equipment possesses a Vox control, this should be connected to terminals 20 and 21. In addition the jumpers A-D and B-E must be connected with wire bridges.

2.6. Sidetone

With a wire bridge between the jumpers R-S the sidetone (own voice) can be switched in.

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3. LEVEL ADJUSTMENT

Level adjustment should be carried out as detailed in the procedures in this section.

3.1. CRM-008/HC-235 - ARA-100 - AFH-100 (Ref. Fig.3)

1) Send Unit

Switch the CRM-008 to position C and key the transmitter with the push-to-talk button. The potentiometer R5 (normally fully open) allows the reduction of the signal level to avoid overloading the radio transmitter.

Adjust the audio gain of the transmitter until the watt meter indicates approximately 10% of the full RF output power.

Speak a continuous a.a.a.a.a... into the microphone and observe the power output meter, which should read full power. While speaking, continuously increase or decrease the audio gain of the transmitter so that the needle of the power indicator jitters around the full-power mark.

NOTE: The transmitter should not be driven to the point where the signal is limited by the ALC or other dynamic compressor devices, to avoid distortions.

2) Receive Unit

The receiver must be properly tuned and adjusted to the incoming signal.

Check the position of the RF-gain control. If the receive signal is very strong, decrease the RF gain to prevent additional distortion by overriding IF and audio amplifiers. To improve the quality, adjust the clarifier of the radio set to a maximum deviation of ± 10 Hz

Decrease the RF gain and increase the audio volume to obtain a clear undistorted deciphered signal.

Adjust the receiving level (using speech as before for reference) of the opposite station, with the potentiometer R4, to between 200 and 700 mV on terminals 8 and 2

3.2. CRM-008/HC-235 - ARA-100 - Audio Gear of the Radio Set.

1) AF-In Path

For audio gear applications, the AF-in path must be adjusted. Speak a continuous a.a.a.a.a... into the microphone and adjust R17 to obtain between 200 and 500 mV between terminals 1 and 2.

2) Send Unit

Switch the CRM-008 or HC-235 to position C and key the transmitter with the push-to-talk button. The potentiometer R5 (normally fully open) allows reduction of the signal level to avoid overloading the radio transmitter.

Adjust the audio gain of the transmitter until the watt meter indicates approximately 10% of the full RF output power.

Speak a continuous a.a.a.a.a... into the microphone and observe the power output meter, which should read full-power. While speaking, continuously increase or decrease the audio gain of the transmitter so that the needle of the power indicator jitters around the full-power mark.

NOTE: The transmitter should not be driven to the point where the signal is limited by the ALC or other dynamic compressor devices, to avoid distortions.

3) Receive Unit

The receiver must be properly adjusted and tuned to the incoming signal.

Check the position of the RF-gain control. If the receive signal is very strong, decrease the RF gain to prevent additional distortion by overriding IF and audio amplifiers. To improve the quality, adjust the clarifier of the radio set to a maximum deviation of ± 10 Hz.

Decrease the RF gain and increase the audio volume to obtain a clear undistorted deciphered signal.

Adjust the receiving level (using speech as before for reference) of the opposite station, with the potentiometer R4, to between 200 and 700 mV on terminals 8 and 2.

4) AF-Out Path

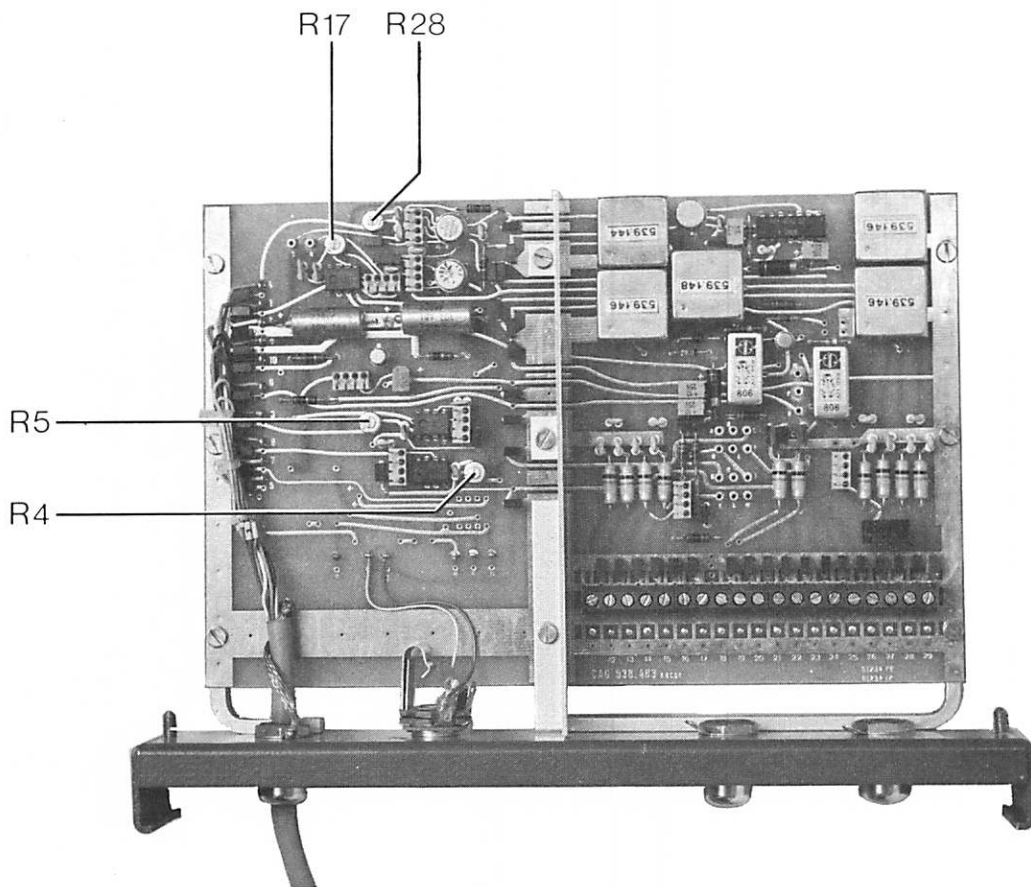
With the potentiometer R28, the AF-out level of the CRM-008 (HC-235) can be matched for the earpiece of the audio gear.

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4. FIGURES

| | |
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| Figure 4 | Connection Diagram with Audio Gear of the Radio Set |
| Figure 5 | Circuit Diagram |



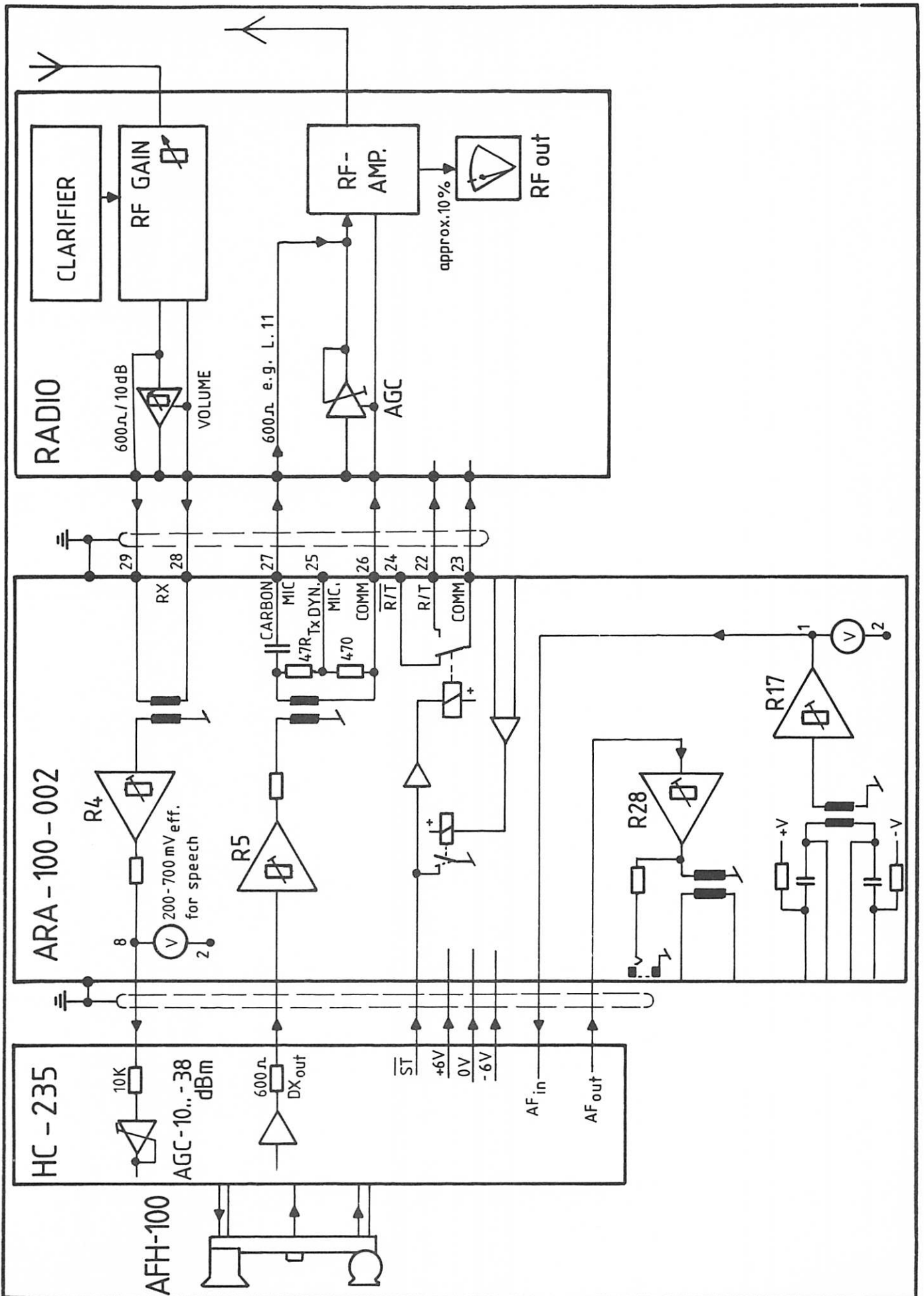


Print Connections and Terminals

Fig. 2

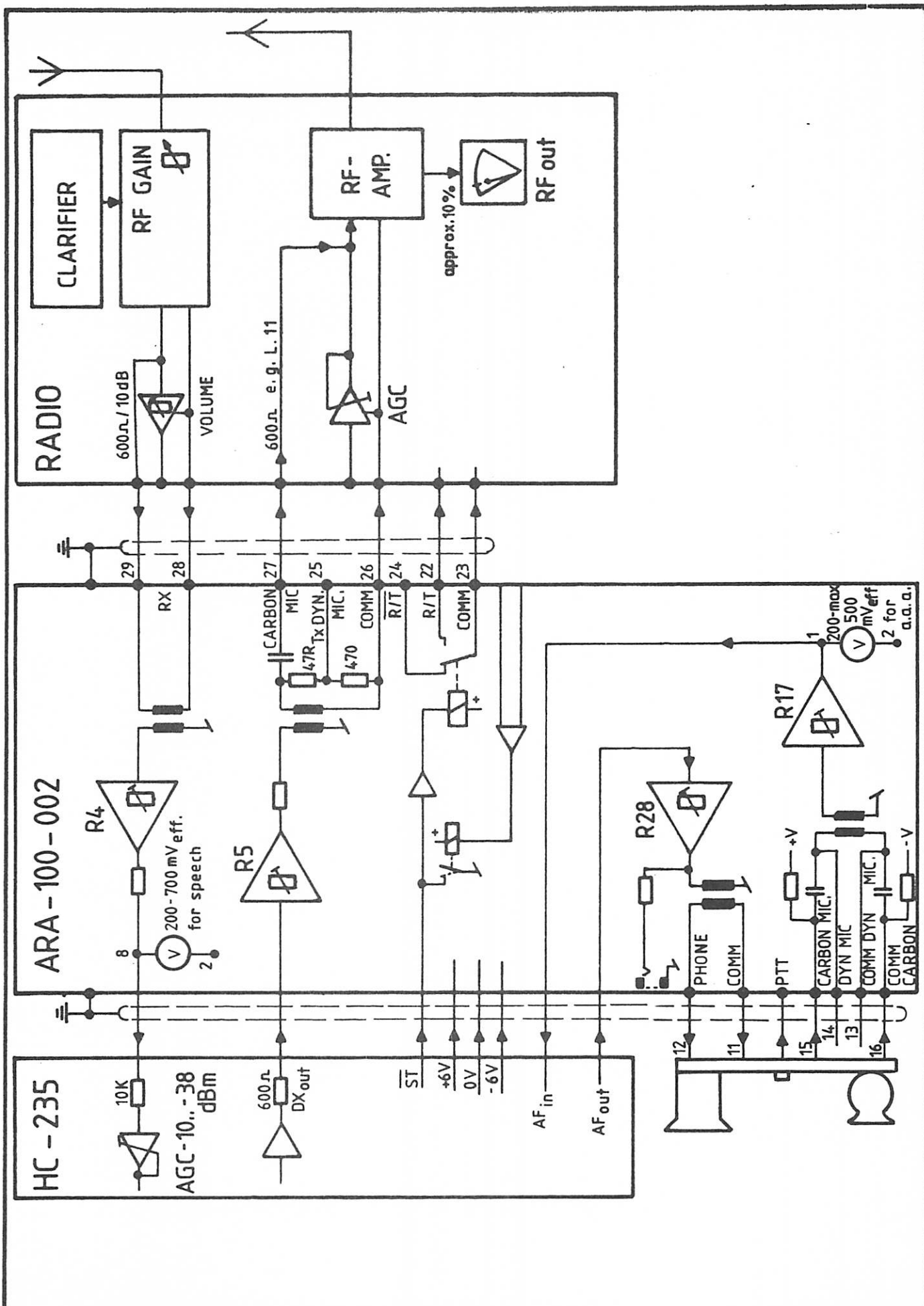
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**Connection Diagram
with AFH-100**

Fig. 3
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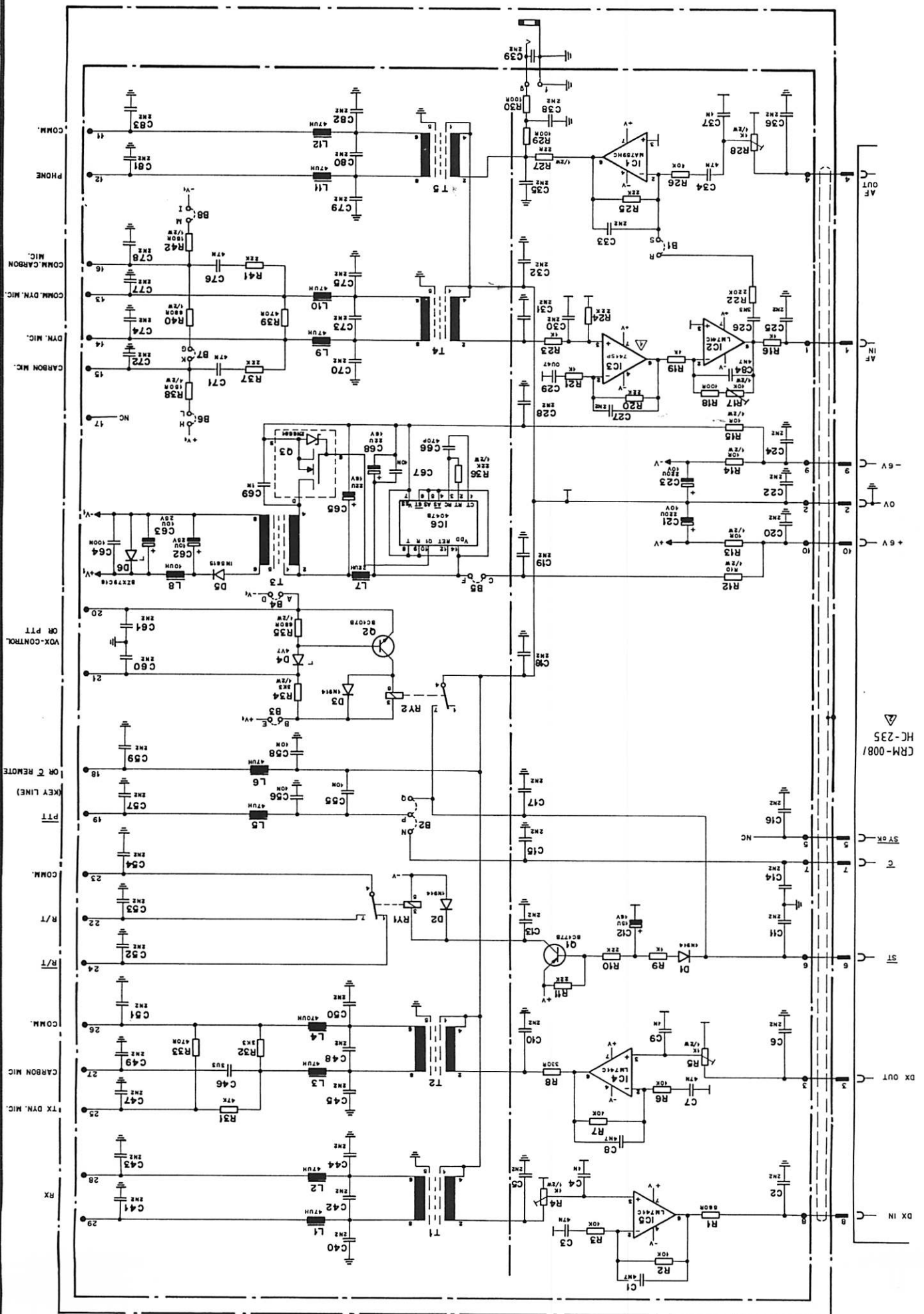


Connection Diagram with Audio Gear of the Radio Set

Fig. 4

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CRM-008/
HC-235

Nicht bezeichnete Widerstände 1/10W