

OVER-THE-HORIZON RADIO SYSTEMS
ITTL 12A-1 OVER-THE-HORIZON RADIO SYSTEM
NUS 3297 CONVERTER-AMPLIFIER
OPERATION

This section describes the function of all controls and indicators used in the NUS 3297 converter-amplifier and the turn-on and turn-off procedures to be followed. The front panel controls, indicators, and test appearances are shown in Fig. 1. The function of each control, indicator, and test appearance is listed in Table A.

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CHART 1
TURN-ON PROCEDURE

STEP	PROCEDURE
1	Set the ALARM switch to the DISABLE position.
2	Make certain that all circuit breakers are in the OFF position.
3	Check that the output cable is terminated in its proper load.
4	Check that the rear cabinet door is closed and that both front panels are in place and firmly secured.
5	On the voltage regulator panel, throw the circuit breaker to the ON position. <i>Requirement:</i> The indicator on the regulator shall illuminate. If the small panel doors are open, the cabinet lamps should light.
6	Check the indication on the voltage regulator voltmeter. <i>Requirement:</i> The voltmeter shall indicate 115 volts.

CHART 1 (Cont)

STEP

PROCEDURE

If the requirement is not met, adjust the OUTPUT VOLTAGE control on the regulator panel until the voltmeter indicates 115 volts.

7 Check that the voltmeter indication is stable. If hunting is noticed, back off slightly on the SENSITIVITY control until the hunting stops.

8 On the power supply unit, set the PS FIL, LV FIL, HV FIL, and LV circuit breakers to the ON position.

Requirement: The PS FIL, LV FIL, HV FIL, and AC READY indicator lamps shall light. The CRYSTAL HEATER lamp should light. After approximately 1 minute, the LV indicator lamp shall light.

Note: When the LV lamp is lighted, +150 volts is applied to all circuits.

9 Several minutes after the power is applied, the CRYSTAL HEATER lamp shall commence to blink slowly. This indicates that the crystal oven is operating.

10 Set the HV circuit breaker to the ON position. This applies +500 volts to all circuits.

Requirement: The HV indicator lamp shall light and the alarm buzzer shall sound.

11 Set the ALARM switch on the converter-amplifier chassis to NORMAL.

12 Check that all circuit breakers hold in the ON position. This indicates that no power supply, power distribution faults, or catastrophic failures exist.

13 On the metering panel, set switch S1 to position A and observe the meter indication.

Requirement: Greater than 95.

Note: This determines the output level of the +150 volt supply circuit.

14 If the requirement is not met, refer to the maintenance procedures in Section 403-414-500.

15 On the metering panel, set switch S1 to position B and observe the meter indication.

Requirement: Greater than 95.

Note: This determines the output level of the +500 volt supply circuit.

16 If the requirement is not met, refer to the maintenance procedures in Section 403-414-500.

17 Check the indications on the panel meter for all positions of switches S1 and S2.

Requirement: The indications should conform to those presented in Table B.

CHART 1 (Cont)

STEP	PROCEDURE
18	If any indication in Table B is not met, refer to the maintenance procedure in Section 403-414-500 for the component troubleshooting and alignment.

CHART 2
TURN-OFF PROCEDURES

Two turn-off procedures are provided for the NUS 3297 converter-amplifier. The procedure for turning off the equipment to the standby condition is presented in Part A and the complete turn-off procedure in Part B. The return to normal operation from the standby condition is immediate while the return from a complete turn-off is delayed because of the time delay built into the the system.

A. Turnoff to Standby

- 1 Set the LV circuit breaker to the OFF position. This also cancels the input to the high voltage circuit.

Requirement: The alarm buzzer will sound.

- 2 Set the ALARM BUZZER switch to DISABLE.

Requirement: The alarm buzzer shall be silenced.

Note: To resume normal operation, set the LV circuit breaker on the power supply panel to the ON position and set the ALARM BUZZER switch to NORMAL.

B. Complete Shutdown

- 3 Set the following circuit breakers to the OFF position in the order presented: HV, LV, HV FIL, and LV FIL.
 - 4 Set the ALARM BUZZER switch to DISABLE.
 - 5 Wait between 5 and 10 minutes for the cabinet fan to reduce the interior heat in the cabinet; then throw the PS FIL circuit breaker to the OFF position.
 - 6 Set the circuit breaker on the regulator panel to the OFF position.
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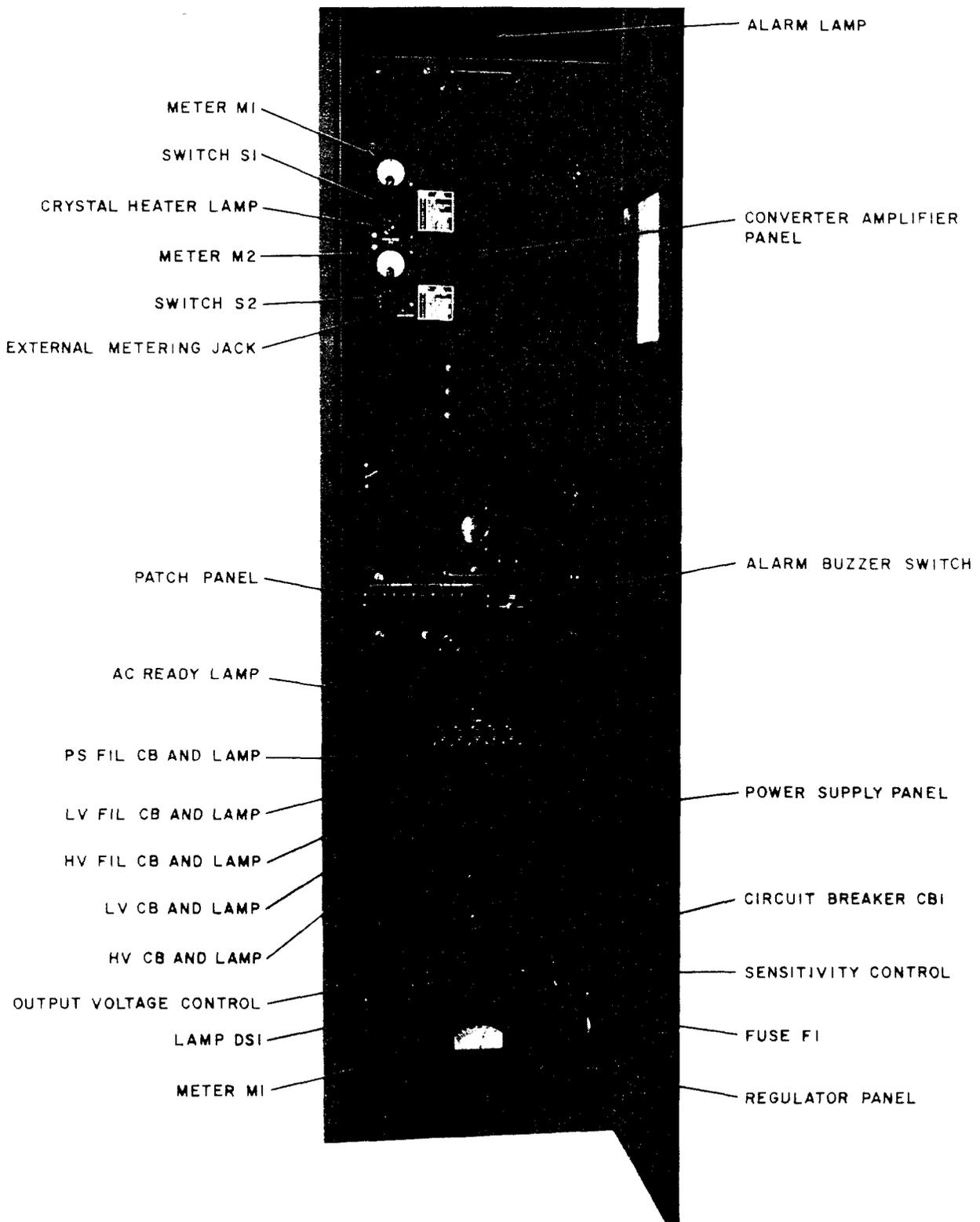


Fig. 1—NUS 3297 Converter-Amplifier—Controls, Indicators, and Test Appearances

TABLE A
CONVERTER-AMPLIFIER CONTROLS, INDICATORS, AND TEST APPEARANCES

UNIT	ITEM	FUNCTION
Regulator Panel	Circuit Breaker CB1	Controls input to regulator
	Meter M1	Indicates regulated output voltage
	OUTPUT Control	Adjusts ac output voltage
	SENSITIVITY Control	Adjusts range of regulation
	Lamp DS1	Indicates power condition
	Fuse F1	Protects input to control unit
Power Supply Panel	PS FIL Circuit Breaker	Controls application of filament power to +150, +500 volt rectifiers, and cabinet fan
	LV Circuit Breaker	Controls application of +150 volts to rectifier and power to HV circuit breaker
	LV FIL Circuit Breaker	Controls application of filament voltage to converter-amplifier circuit and HV FIL circuit breaker
	HV FIL Circuit Breaker	Controls application of power to high-voltage filament circuit in converter-amplifier
	HV Circuit Breaker	Controls application of +500 volts to rectifier and also cabinet blower
	AC READY lamp	Signifies that ac power is available to power supply and interlock circuit complete
	PS FIL, LV FIL, HV FIL, LV, HV Lamps	Signifies circuit breaker in operated condition

TABLE A (Cont)

<p>Jack Panel</p>	<p>IF AMPLIFIER RESPONSES H INPUT J 2ND GRID K 3RD GRID L 4TH GRID M 5 AND 6 GRID</p> <p>RF MIXER-AMPLIFIER RESPONSES R MIXER CATHODE S 1ST CATHODE T 2ND CATHODE U PWR OUT</p> <p>ALARM BUZZER</p> <p>NORMAL</p> <p>DISABLE</p>	<p>Provides access to designated circuit</p> <p>Provides access to designated circuit</p> <p>Enables buzzer if failure occurs during regular operation Disables buzzer during regular operation after failure activates buzzer when power is off.</p>
<p>Converter- Amplifier Panel</p>	<p>Meter M1</p> <p>Selector Switch S1</p> <p>CRYSTAL HEATER lamp</p> <p>Meter M2</p> <p>Selector Switch S2</p>	<p>Displays voltage or current selected by S1 Selects any of 11 test voltages or currents shown on panel for display on M1</p> <p>Blinks slowly to indicate crystal oven is operating correctly</p> <p>Displays voltages or currents selected by S2 Selects any of 8 internal test voltages or currents or 1 external test voltage for display on M2</p>
<p>Converter- Amplifier Cabinet</p>	<p>ALARM Lamp</p>	<p>Lights when failure occurs</p>

TABLE B
METER SWITCH FUNCTIONS AND INDICATIONS

SWITCH	SWITCH POSITION	MEASUREMENT		
		COMPONENT	CIRCUIT	INDICATION
S1	A	Power Supply	+150 VDC	>95
S1	B	Power Supply	+500 VDC	>95
S1	C	Oscillator-Multiplier	V10 grid	>50
S1	D	Oscillator-Multiplier	V11 plate	>50
S1	E	Oscillator-Multiplier	V12 cathode	>50
S1	F	Oscillator-Multiplier	V13 cathode	>50
S1	G	Oscillator-Multiplier	Power output	60
S1	H	IF amplifier	Input voltage	
S1	J	IF amplifier	V2 grid	
S1	K	IF amplifier	V3 grid	
S1	L	IF amplifier	V4 grid	
S2	M	IF amplifier	V5 and V6 grids	
S2	N	IF amplifier	V5 cathode	
S2	O	IF amplifier	V6 cathode	
S2	P	IF amplifier	Power output	>65
S2	R	Mixer-Amplifier	V7 cathode	50-70
S2	S	Mixer-Amplifier	V8 cathode	40-60
S2	T	Mixer-Amplifier	V9 cathode	50-80
S2	U	Mixer-Amplifier	Power output	
S2	V	All	External test points	