

OPERATING INSTRUCTIONS NTHX51AA

Note: These operating instructions describe the procedure for turning on and off the amplifier output power using signal generators. This amplifier will be used with transmitters which have been or will be type accepted separately. The specific transmitter instruction book should be consulted for the correct method to use this amplifier with transmitters.

1. The input voltage range, applied to pin A2 of the connector, should be between 20.95 and 29.5 VDC. Pin A3 should be grounded.
2. A CMOS-level pulse ($V_h > 3.5$ VDC, $V_l < 0.5$ VDC) of frequency greater than 1 Hz must be applied to pin 5 (chip select input) of the connector. This prevents the watchdog timer circuitry from disabling the RF circuitry of the amplifier.
3. Pin 3 of the connector functions as the PA Enable. A CMOS high applied to Pin 3 enables the RF amplifier. CMOS low disables the amplifier.
4. The RF input is Pin A4. The output is Pin A1.
5. Pins 10, 15, and 17 should be connected to ground
6. To turn on the amplifier, first apply the DC voltage within the range specified above (25.15 VDC nominal).
7. Turn on the pulse to the chip select line (Pin 5).
8. Turn on the PA Enable (Pin 3).
9. For full rated output power (+47.5 dBm), the gain range may be from 23.5 to 27.0 dB. Increase the input power to the amplifier until the desired output power, monitored at the output connector, is reached.
10. The gain may change up to 0.5 dB as the amplifier temperature stabilizes after turn-on. Let the amplifier warm up for 10-30 minutes, then re-adjust the power to compensate for the gain change.
11. The amplifier is now operational.
12. Additional functions are available through the digital control circuitry. They are not necessary for turning on the amplifier and obtaining the desired signal, but they do communicate information to the Transmit/Receive Unit (TRU). Since these functions are controlled by the TRU, instructions for using these functions are contained in the specific TRU manuals, not the amplifier manual.
 - a. Pins 8 and 9 are serial data lines accessing the EEPROM and digital control circuit.
 - b. Pin 4 is used for the system clock. The TRU will provide a 24.3 kbits/s signal when performing an EEPROM read, and 9.72 kHz when clocking in the address and clocking out the data for A/D operations.
 - c. Pin 6 is a CMOS input for selecting either the A/D converter or the EEPROM for the desired communications.
 - d. Pin 11 is connected to the alarm LED anode. The TRU determines whether an alarm condition exists.

- e. Pin 12 is connected to the alarm LED cathode.
- f. Pin 13 is used for EEPROM register protection.
- g. Pins 14 and 16 are not used.

SPECIFICATIONS

<u>Parameter</u>	<u>Specification</u>	
Operating Frequency	869 to 894 MHz	
Rated Output Power	+47.5 dBm (56 Watts)	
Gain at Full Power	23.5 to 27.0 dB	
Input Voltage Range	20.95 to 29.5 VDC	
Channeling	Controlled by transmitter	
Modes of Transmission	AMPS Voice Mode AMPS Supervisory Audio Tone AMPS Wideband Data TDMA CDPD	
Type of Modulation	Not applicable (performed by transmitter)	
Occupied Bandwidth and Emissions Designators		
<u>Emissions Type</u>	<u>Amplitude</u>	<u>Frequency Removed from Carrier</u>
AMPS Voice Mode (F8W)	-26 dBc -60 dBc	20 kHz to 45 kHz > 45 kHz
AMPS Supervisory Audio Tone (F8W)	-26 dBc -60 dBc	20kHz to 45 kHz > 45 kHz
AMPS Wideband Data (F1D)	-26 dBc -45 dBc -60 dBc	20 kHz to 45 kHz 45 kHz to 90 kHz > 90 kHz
TDMA Mode (DXW)	-26 dBc -45 dBc -60 dBc	15 to 45 kHz 45 to 75 kHz > 75 kHz
CDPD Mode (FXW)	-26 dBc -45 dBc -60 dBc	15 to 45 kHz 45 to 75 kHz > 75 kHz