



# XTD-750 C and Ku-Band Antenna Mount High Power Amplifier



- **750 Watts C-Band**  
**750 Watts Ku-Band**
- **No Shelter Required**
- **Short Waveguide Run**
- **Variable Gain**
- **High Efficiency Dual-Stage TWTs**
- **Complete RS-232/422/485 Interface**

The XTD-750 is a compact, self-contained, antenna mountable power amplifier designed for low cost installation and long life. The XTD-750 design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and antenna feed horn. RF filters, cooling, and monitoring & control (M&C) systems are all self-contained within the High Power Amplifier (HPA). These features provide high reliability, low maintenance costs, and low replacement costs.

The XTD-750 uses high efficiency, dual-stage collector Traveling Wave Tubes (TWT). Some benefits of this type of tube are:

- Reduced prime power consumption.
- Lower internal operating temperatures.
- Reliability enhancement.

These benefits are obtained for both the linear and saturated modes of operation.

The XTD-750 incorporates power factor correction circuitry, which minimizes line current distortion and reduces the required Volt-Amps. The combination of power factor correction and high efficiency TWTs reduces input Volt-Amps by 45% when compared to equivalent amplifiers. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (180 to 260 VAC). The automatic features of the power supply include quick recovery from prime power outages and multiple helix arc fault resets (three fault cycles).

A complete serial M&C system is built into the unit.

The XTD-750 may be configured for single thread, redundant, phase-combined, or linearized operation.

A remote external controller is available to operate the HPA from a user selected location. Mounting brackets can be supplied to mount the HPA to most popular antennas.

# PERFORMANCE SPECIFICATIONS

Parameter	XTD-750C, C-Band	XTD-750K, Ku-Band
FREQUENCY RANGE optional extended frequency)	5.850 to 6.425 GHz (5.850 to 6.650 GHz) (5.850 to 6.725 GHz) (6.725 to 7.025 GHz)	13.75 to 14.5 GHz (12.75 to 14.5 GHz)
OUTPUT POWER Traveling Wave Tube) Rated Power @ Amplifier Flange	750 Watts 650 Watts	750 Watts 650 Watts
GAIN		
Large Signal, minimum	70 dB	70 dB
Small Signal, minimum	75 dB	75 dB
Attenuator Range (continuous)	25 dB	25 dB
Maximum SSG Variation Over:		
Any narrow band	1.0 dB per 40 MHz	1.0 dB per 80 MHz
Full Band	2.5 dB	2.5 dB per 500 MHz
Slope, maximum	$\pm 0.04$ dB/MHz	$\pm 0.04$ dB/MHz
Stability, 24 Hr maximum	$\pm 0.25$ dB	$\pm 0.25$ dB
Stability, Temperature	$\pm 1.0$ dB maximum over temperature range at any frequency	
INTERMODULATION with two equal signals	- 18 dBc maximum with two equal carriers at 4 dB total power backoff from rated output	
HARMONIC OUTPUT, maximum	- 60 dBc	- 60 dBc
AM/PM CONVERSION, maximum	2.5 deg/dB at 6 dB below rated output power	
NOISE POWER, maximum		
Transmit Band	- 70 dBW/4 kHz	- 70 dBW/4 kHz
Receive Band	- 150 dBW/4 kHz 3.7 to 4.2 GHz	- 150 dBW/4 kHz 10.95 to 12.75 GHz
GROUP DELAY, maximum		
Bandwidth	Any 40 MHz	Any 80 MHz
Linear	$\pm 0.01$ nS/MHz	$\pm 0.01$ nS/MHz
Parabolic	$\pm 0.005$ nS/MHz <sup>2</sup>	$\pm 0.005$ nS/MHz <sup>2</sup>
Ripple	0.05 nS/Pk-Pk	0.05 nS/Pk-Pk
RESIDUAL AM NOISE, maximum	- 50 dBc to 10 kHz - 20 (1.5 + logf) dBc 10 to 500 kHz - 85 dBc above 500 kHz	
PHASE NOISE, maximum	12 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc	
VSWR		
Input, maximum	1.3:1	1.3:1
Output, maximum	1.3:1	1.3:1

# PRIME POWER

180-260 VAC  
47 to 63 Hz, single phase  
2450 VA Maximum  
0.95 Minimum Prime Power Factor



# OPTIONS

- Extended Frequency Coverage
- Linearizer
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Variable Phased Combined

# ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50° C to + 70° C
OPERATING TEMPERATURE RANGE	-40° C to +50° C
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

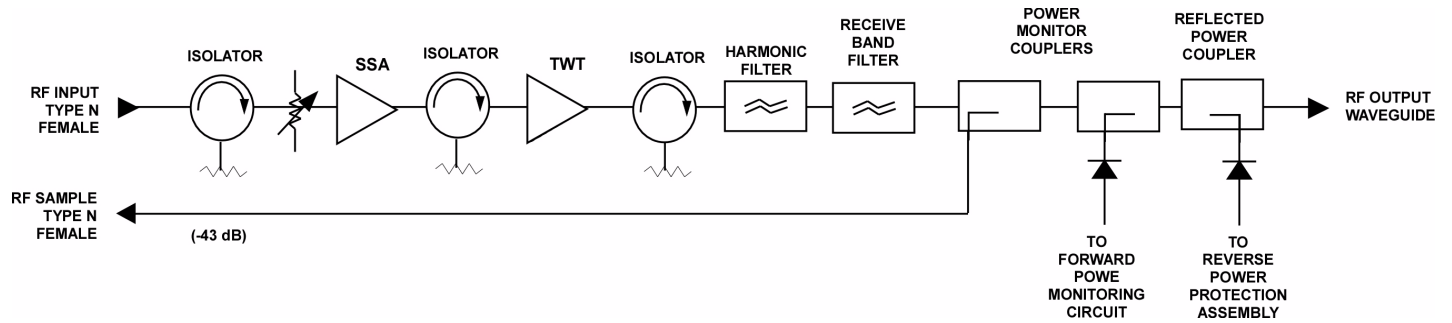
# INTERFACE

TYPE		FUNCTION	
LOCAL CONTROL	Prime Power ON/OFF	Local/Remote	HV ON/OFF
REMOTE CONTROL	High Voltage ON/OFF	Constant Power	Heater Standby ON/OFF
	Min/Max Power Alarm/Fault	Gain	Units (Watts, dBm, dBW)
	Reflected Power Alarm/Fault	Fault Reset	
LOCAL STATUS	Tri-Color LED:		
	Fault: Red HV ON: Green	Standby: Continuous Amber FTD: Flashing Amber	
REMOTE STATUS	Power Out	Reflected Power	TWT Temperature
	Helix Current	Helix Voltage	Faults:
	Heater Hours	Beam Hours	High VSWR
	Attenuator Setting	Units Selection	High Voltage Helix Current TWT Temperature Arc Detection
Form C Dry Contact Closure	Summary Fault		
COMPUTER	Hardware Interface	2 ports: RS-232 & RS-422/485	
SERIAL PORT	Xicom Command Set	ASCII Commands	
RF SAMPLE PORT COUPLING	-43 dB Nominal		

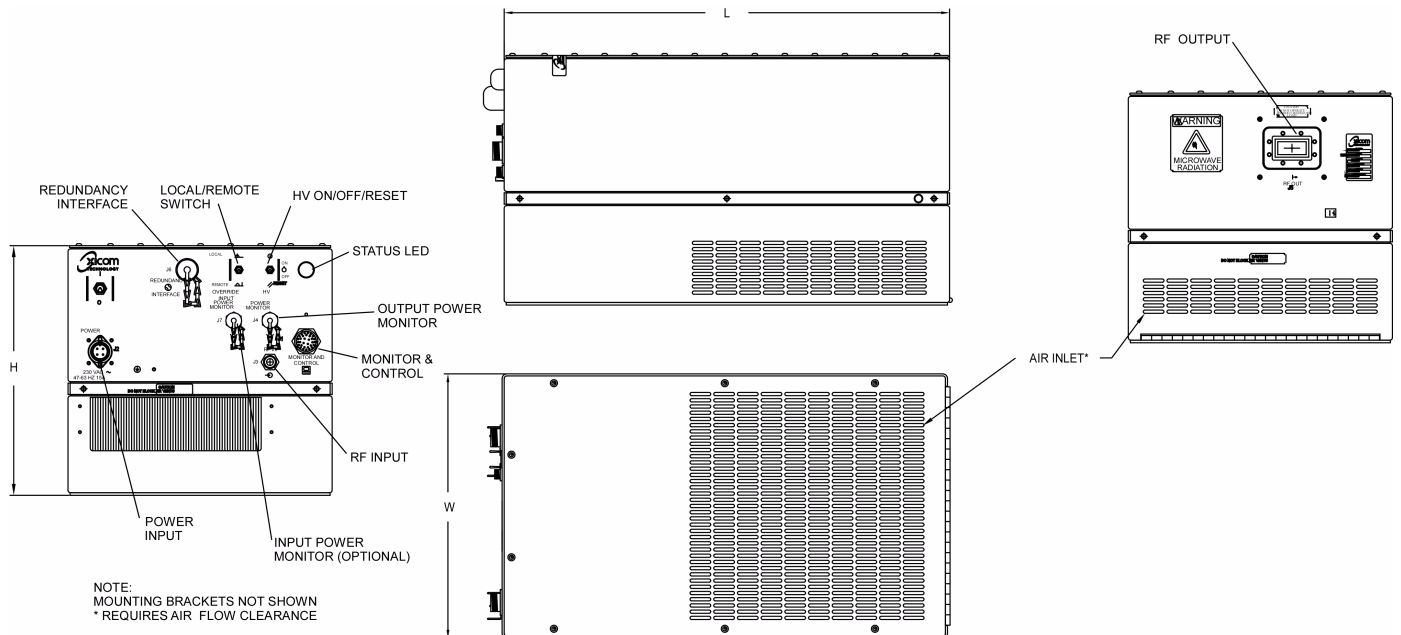
# XTD-750 High Power Amplifiers



# Block Diagram



# Outline Drawing



NOTE:  
MOUNTING BRACKETS NOT SHOWN  
\* REQUIRES AIR FLOW CLEARANCE

DIMENSIONS		
	INCHES	CENTIMETERS
L	21.50	54.61
H	12.13	30.81
W	12.75	32.39

RF OUTPUT	
FREQUENCY BAND	WAVEGUIDE FLANGE
DBS	WR-62, COVER
KU	WR-75, COVER
C or X	CPR-137, GROOVED