



Antenna Mount HPAs for Satellite Communications



- 450 Watts Ku-Band
450 Watts DBS-Band
- No Shelter Required
- Short Waveguide Run
- Variable gain Corrected
- High Efficiency Dual-Stage
TWTs
- Complete RS-232/422/
485 Interface

The XTD-450KD is a compact, self-contained, antenna mountable power amplifier designed for low cost installation and long life. The XTD-450KD design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and the 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-450KD uses high efficiency, dual-stage collector Traveling Wave Tubes (TWT). Some benefits of this type of TWT 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-450KD 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 efficiency 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 fault resets (three fault cycles).

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

The XTD-450KD 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-450KD
FREQUENCY RANGE standard extended frequency coverage available	Ku-Band (13.75 - 14.5 GHz) Optional (12.75 - 14.5 GHz) DBS-Band (17.3 - 18.4 GHz)
OUTPUT POWER	
Traveling Wave Tube	450W
Rated Power @ Amplifier Flange	
Ku-Band (13.75 - 14.5 GHz)	400W
DBS-Band (17.30 - 18.4 GHz)	400W
GAIN	
Large Signal, minimum	70 dB
Small Signal, minimum	75 dB
Attenuator Range (continuous)	25 dB
Maximum SSG Variation Over:	
Any Narrow Band	1.0 dB per 80 MHz
Full Band	4.0 dB
Slope, maximum	±0.04 dB/MHz
Stability, 24 Hr maximum	±0.25 dB
Stability, Temperature	±1.0 dB maximum over temperature at any frequency
INTERMODULATION, 4 dB Total B.O.	
13.75 - 14.5 GHz Band	-16 dBc with two equal carriers max.
Optional 12.75 - 14.5 GHz Band	-16 dBc with two equal carriers max.
17.3 - 18.4 GHz Band	-16 dBc with two equal carriers max.
HARMONIC OUTPUT, maximum	-60 dBc
AM to PM CONVERSION, maximum	3.0°/dB @ 6 dB below rated power
NOISE POWER, maximum	
Transmit Band	-70 dBw/4 kHz
Receive Band	-150 dBw/4 kHz (10.95 to 11.75 GHz)* -150 dBw/4 kHz (10.95 to 12.75 GHz)** -70 dBw/4 kHz (10.95 to 13.25 GHz)***
<small>* Applicable to optional Ku-Band transmit frequency (12.75 - 14.5 GHz). ** Applicable to optional Ku-Band transmit frequency (13.75 - 14.5 GHz). *** An External Filter is available for (10.95 - 13.25 GHz) to achieve -150 dBw/4 kHz.</small>	
GROUP DELAY, maximum	
Bandwidth	Any 80 MHz
Linear	0.01 nsec/MHz
Parabolic	0.005 nS/MHz ²
Ripple	0.5 nsec/Pk-Pk
RESIDUAL AM NOISE, maximum	-50 dBc to 10 kHz -20 (1.5 + log f) dBc 10 to 500 kHz -85 dBc above 500 kHz
PHASE NOISE, maximum	10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc
VSWR	
Input, maximum	1.3:1
Output, maximum	1.3:1

PRIME POWER

180-260 VAC
 47 to 63 Hz, Single Phase
 2400 VA Maximum
 0.95 Minimum Power Factor



OPTIONS

Extended frequency Coverage
 Linearizer
 Parallel (Discrete) Interface
 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

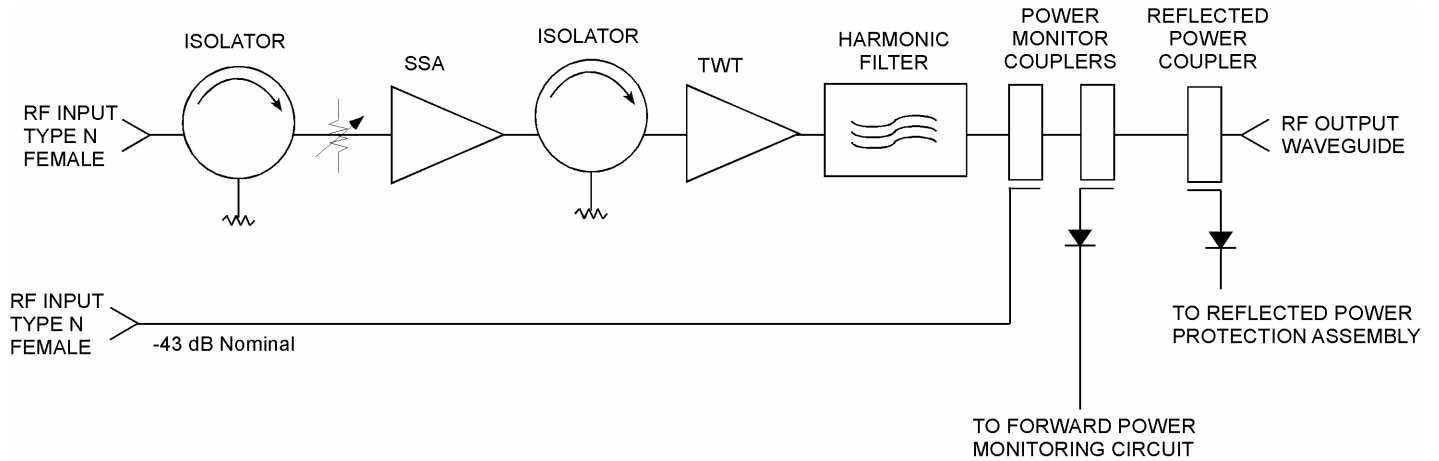
INTERFACE

TYPE AND MODE		FUNCTION	
CONTROLS	Local	Local/Remote HV ON/OFF	AC Power ON/OFF
	Remote	Gain Heater Standby ON/OFF Min/Max Power Alarm/Fault Reflected Power Alarm/Fault Fault Reset	High Voltage ON/OFF Units (Watts, dBm, dBw) Constant Power
STATUS	Local Tri-color LEDs	Fault: Red HV ON: Green	Standby: Continuous Amber FTD: Flashing Amber
	Remote	Power Out Reflected Power TWT Temperature Helix Current Helix Voltage Heater Hours Beam Hours	Attenuator Setting Units Selection Faults: High VSWR High Voltage Helix Current TWT Temperature Arc Detect
Arc Detection	Dry Form-C Relay Contacts (Two)	Summary Fault	
COMPUTER SERIAL PORT	Hardware Interface Xicom Command Set	Two Ports: RS-232 & RS-422/RS-485 ASCII Commands	
RF SAMPLE PORT COUPLING		-43 dB Nominal	

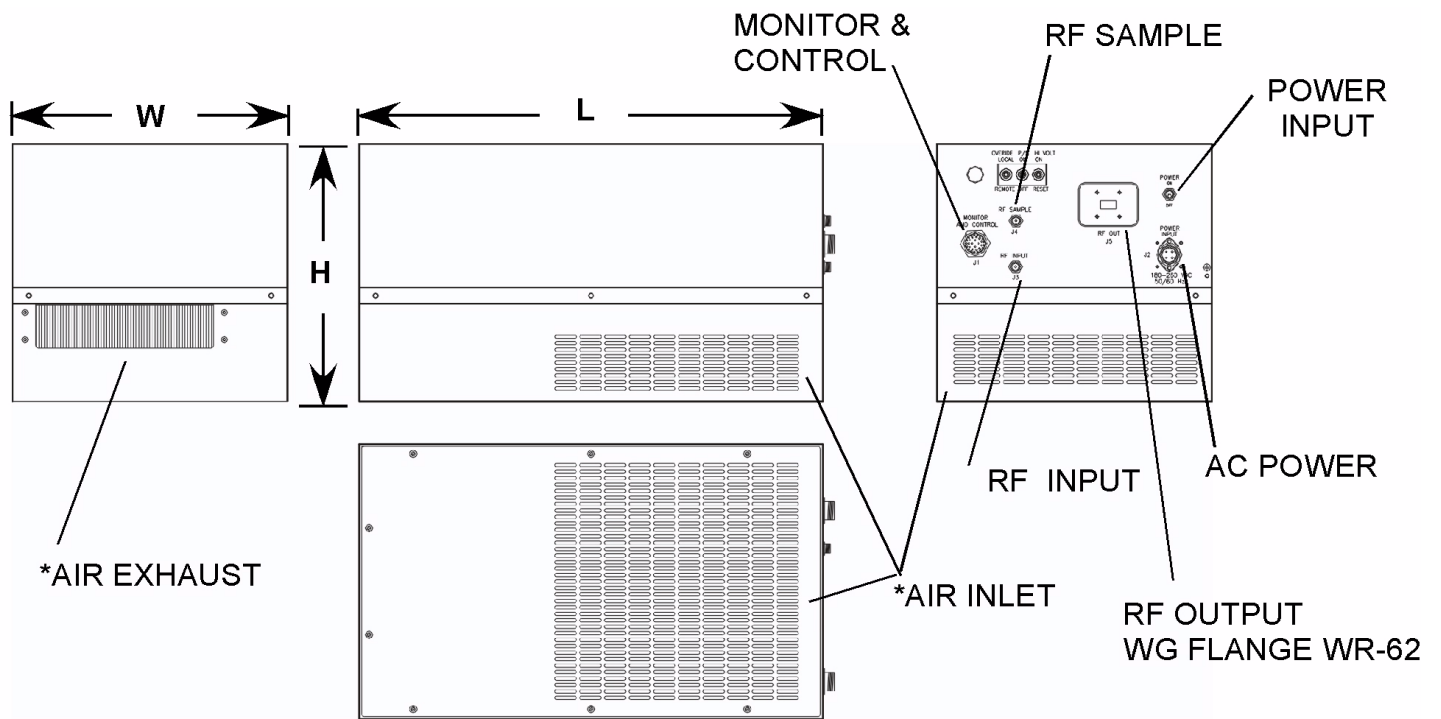
Antenna Mount High Power Amplifiers



Block Diagram



Outline Drawing



Note:
Mounting Brackets Not Shown
* Requires Air Flow Clearance

WEIGHT (TYPICAL)
75 lbs

DIMENSIONS (MAX)	
L	21.50 INCHES
W	11.95 INCHES
H	12.75 INCHES