XTD-120Ka/150Ka/175Ka/250KaL K-Band Antenna Mount Amplifiers

- **120 Watts, 150 Watts, 175 Watts, or 250 Watts**
- **No Shelter Required**
- **Variable Gain Control**
- **Complete RS-232/422/485 Interface**
- **Designed for Uplink & LDMS Applications**

The XTD-120Ka, XTD-150Ka, XTD-175Ka, and XTD-250KaL series are compact self contained antenna mount power amplifiers designed for low cost installation and long life.

Cooling and monitor & control systems are all self contained within the amplifier. By combining the power supply and the RF components within the same amplifier case, the need for external high voltage cables (required for split-box designs) is eliminated. These highly compact units typically weigh only 48 pounds.

TWTs are available delivering 120 Watts to 250 Watts in the 26.5 to 31.0 GHz band. Alternative frequency coverage is available.

This series of amplifiers provides several methods of tube protection. Due to Xicom's unique power supply design less than 1 joule is stored in the power supply. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (100 to 260 VAC).

The unit also features power factor correction circuitry that minimizes line current distortion and reduces the required volt-amps input.

These amplifiers have built-in waveguide switch control capability. This can be used in a 1:1 redundancy configuration. A single RS-485 cable can control two amplifiers and redundancy switch.

The amplifiers are available with mulitple options including redundant and phase combined system configurations, integral linearizers and harmonic filters.

Remote external controllers are available to operate the HPA from a user selected location.

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PERFORMANCE SPECIFICATIONS

Parameter	XTD-120Ka	XTD-150Ka	XTD-175Ka	XTD-250KaL
FREQUENCY RANGE	28.0 - 30.0 GHz Alternate Frequency coverage over 26.5 - 31.0 GHz band available			
OUTPUT POWER				
Saturated Power (Typical)	120 W	150 W	175 W	250 W peak
Rated Power(P1dB) @ Amplifier Flange	100 W	125 W	145 W	100 W
GAIN				
Large Signal, minimum	70 dB			
Small Signal, minimum	75 dB			
Attenuator range (0.1 dB steps)	20 dB			
Maximum SSG Variation Over:				
Any Narrow Band	0.80 dB maximum per 60 MHz			
Any 1 GHz Band	2.5 dB maximum dB			
Slope, maximum	±0.04 dB/MHz maximum			
Stability, 24 Hr maximum	± 0.25 dB			
Stability, Temperature	± 1.0 dB maximum over temperature range at any frequency			
INTERMODULATION with two equal signals at 50 W total output power	-16 dBc max	-18 dBc max	-19 dBc max	-23 dBc max
HARMONIC OUTPUT, maximum	-15 dBc (- 60 dBc with optional filter)			
AM/PM CONVERSION, maximum	2.5 deg/dB at 6 dB below rated power			
NOISE POWER, maximum				
Transmit Band (27.5-29.5 GHZ)	- 70 dBW/4 kHz			
Receive Band (<21.2 GHz)	- 150 dBW/4 kHz			
GROUP DELAY, maximum				
Bandwidth	Any 60 MHz			
Linear	± 0.01 nS/MHz			
Parabolic	± 0.005 nS/MHz^2			
Ripple	0.5 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	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 OPTIONS

100-260 VAC

47 to 63 Hz, single phase

650 VA Maximum — XTD-120Ka
750 VA Maximum — XTD-150Ka
800 VA Maximum — XTD-175Ka
800 VA Maximum — XTD-250KaL

0.95 Minimum Prime Power Factor

Linear
Harmonic Filter (0.3 dB output power reduction)
WR-34 Waveguide Output or Input
Alternate Frequency Coverage
Remote External Controller
1:1, 1:2, 1:N Redundancy
Phase Combined

CE COMPLIANT

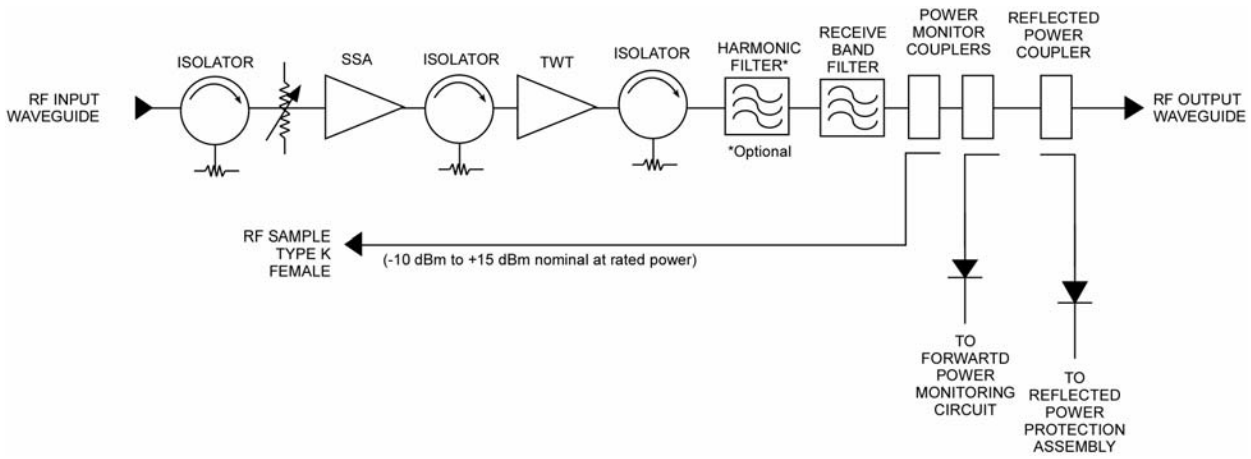
ENVIRONMENT

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 with standard adiabatic derating
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air (self cooled)

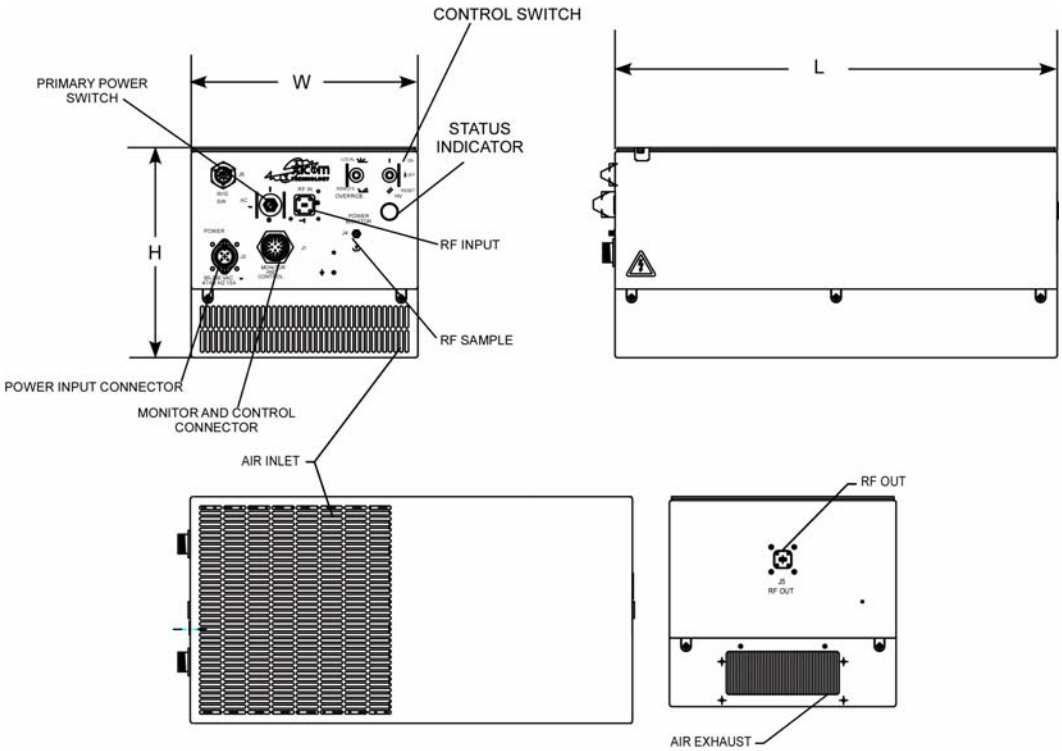
INTERFACE

TYPE	FUNCTION		
LOCAL CONTROL	Prime Power ON/OFF	Local/Remote	
		HV ON/OFF	
LOCAL STATUS	Tri-Color LED:		
	Fault: Red	Standby: Continuous Amber	
	Transmit ON: Green	FTD: Flashing Amber	
REMOTE CONTROL	HV ON/OFF	RF Inhibit	Heater Standby
	RF Attenuation	Fault Reset	Constant Power
REMOTE STATUS	HV ON	Heater/Beam Hours	Filament Time Delay
	RF Output Power	Fault Identification	Helix Current
	Reflected Power	TWT Temperature	Helix Voltage
DISCRETE STATUS	Summary Fault (2X Form C Dry Contact Closure)		
RF MONITOR PORT	-40 dB Coupling Value (Approx)		

Block Diagram



Outline Drawing



DIMENSIONS

	INCHES	CENTIMETERS
W	10.25	26.04
L	20.00	50.80
H	9.50	24.13

RF OUTPUT

Ka-Band	WR-28 Tapped

Nominal Weight = 48 lbs. (21.77 kg)

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