

150, 175 and 250 Watt Ka-Band Antenna Mount High Power Amplifiers



FEATURES

- No Shelter Required
- Variable Gain Control
- Complete RS-232/422/485 Interface
- Designed for Uplink Applications

The **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 multiple options including redundant and phase combined system configurations, integral linearizers and harmonic filters

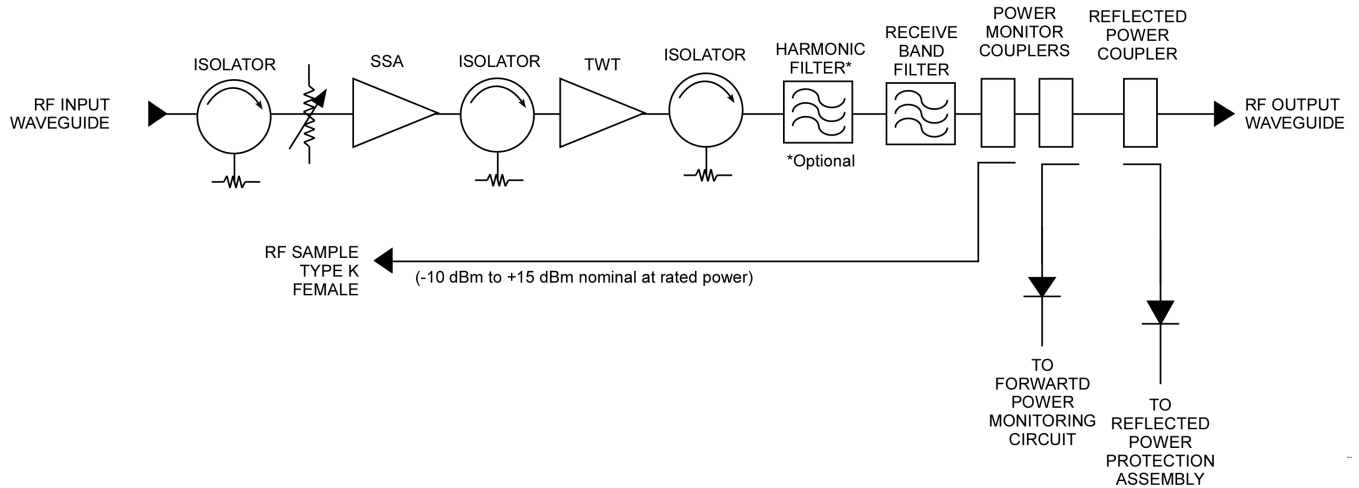
Remote external controllers are available to operate the HPA from a user selected location.



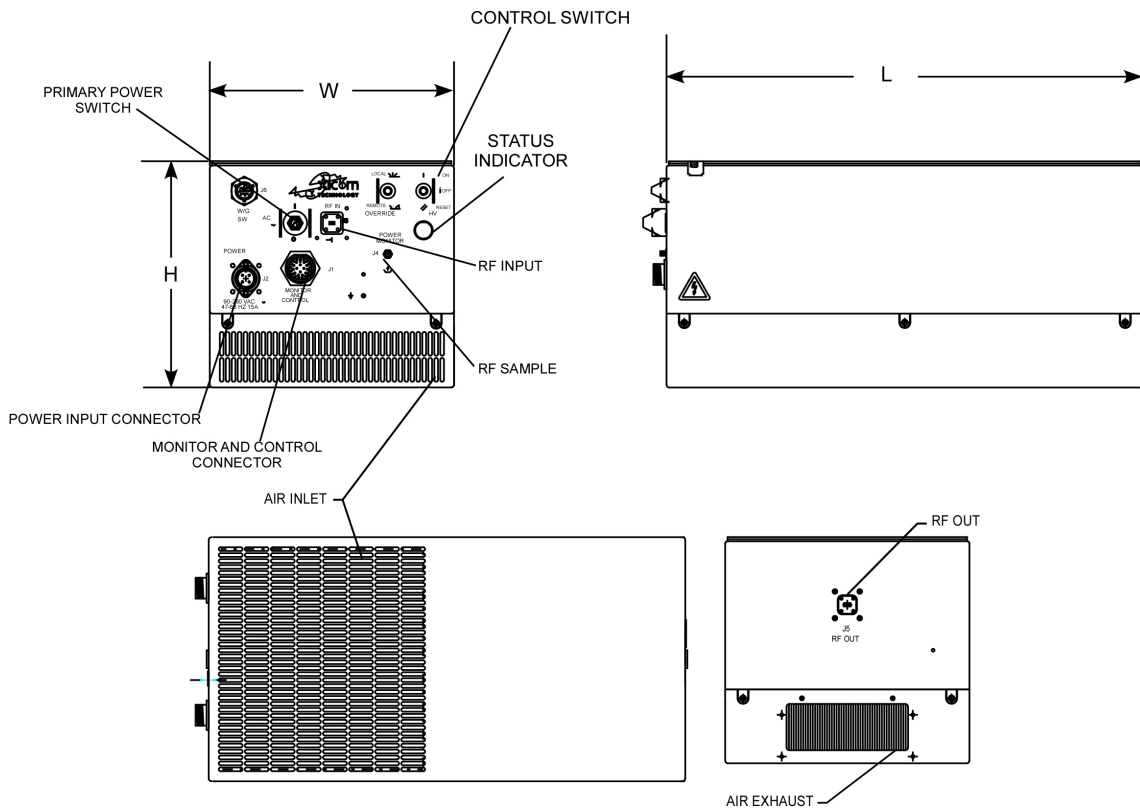
PERFORMANCE SPECIFICATION

Parameters	XTD-150Ka	XTD-175Ka	XTD-250KaL
FREQUENCY RANGE	28.0 to 30.0 GHz (alternate frequency coverage over 26.5 to 31.0 GHz band available)		
OUTPUT POWER			
Saturated Power (typical)	150 W	175 W	250 W Peak
Rated Power @ Amplifier Flange (minimum)	125 W	145 W	100 W
GAIN			
Large Signal (minimum)		70 dB	
Small Signal (minimum)		75 dB	
Attenuator Range (continuous)		20 dB	
Maximum SSG Variation Over			
Any Narrow Band		0.80 dB per 60 MHz	
Any 1 GHz Band		2.5 dB	
Slope (maximum)		± 0.04 dB/MHz	
Stability, 24 hr. (maximum)		± 0.25 dB	
Stability, Temperature (maximum)		± 1.0 dB over temperature range at any frequency	
INTERMODULATION (maximum) with two equal carriers	-18 dBc	-19 dBc	-23 dBc
	@ 50 W total output power backoff from rated power		
HARMONIC OUTPUT (maximum)		-15 dBc (-16 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 to 29.5 GHz)		-70 dBW/4 kHz	
Receive Band (<21.2 GHz)		-150 dBW/4 kHz	
GROUP DELAY (maximum)			
Bandwidth		Any 60 Hz	
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	

BLOCK DIAGRAM



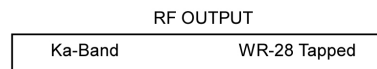
OUTLINE DRAWING



DIMENSIONS

	INCHES	CENTIMETERS
W	10.25	26.04
L	20.00	50.80
H	9.50	24.13

Nominal Weight = 48 lbs. (21.77 kg)



PRIME POWER

100 to 260 VAC
47 to 63 Hz, Single Phase
750 VA Max. — XTD-150Ka
800 VA Max. — XTD-175Ka, XTD-250KaL
0.95 Minimum Prime Power Factor



ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +50°C (2°C/1000 Feet Derating)
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 Feet MSL Max.
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air (self cooked)

INTERFACE

Type	Function	
LOCAL CONTROL	Prime Power ON/OFF	Local/Remote
	Power Supply ON/OFF	HV ON/OFF
LOCAL STATUS	Tri-Color LED:	
	Fault: Red	Standby: Continuous Amber
	HV ON: Green	FTD: Flashing Amber
REMOTE CONTROL	HV ON/OFF	RF Inhibit
	RF Attenuation	Fault Reset
	Heater Standby	Constant Power
REMOTE STATUS	HV ON	Heater/Beam Hours
	RF Output Power	Fault Identification
	Reflected Power	TWT Temperature
	Filament Time Delay	Helix Current
	Helix Voltage	
DISCRETE STATUS	Summary Fault (2X Form C Dry Contact Closure)	
RF MONITOR PORT	-43 dB Coupling Value (approx.)	

OPTIONS

- Linearizer
- 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

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