

500W/550W Ka-Band Antenna Mount High Power Amplifiers



FEATURES

- 500 or 550 watts Ka-band
- 27.0 to 29.5 GHz
- Rugged 58 lb. antenna mount package
- Includes linearizer
- Complete RS-232/422/485 ethernet interface
- -40°C to +60°C ambient

The **XTD-500KaL-EN1** and **XTD-550KaL-EN2** series are compact, self contained antenna mount power amplifiers designed for low cost installation and long life. The amplifiers use 500W or 550W TWTs and operate between 27.0 and 29.5 GHz.

The **XTD-500KaL-EN1/XTD-550KaL-EN2** family features high RF efficiency which enables a smaller, lighter amplifier with the ability to operate at up to 60 deg C ambient temperatures.

Comtech Xicom has developed proprietary features to improve performance and life including an automatic bias control system which extends TWT life by maintaining constant beam current over time and a precise system for matching linearizer performance to a specific tube over a wide range of operating conditions maximizing useable linear power.

The amplifiers are available as single units or in 1:1 and 1:2 switching system configurations.

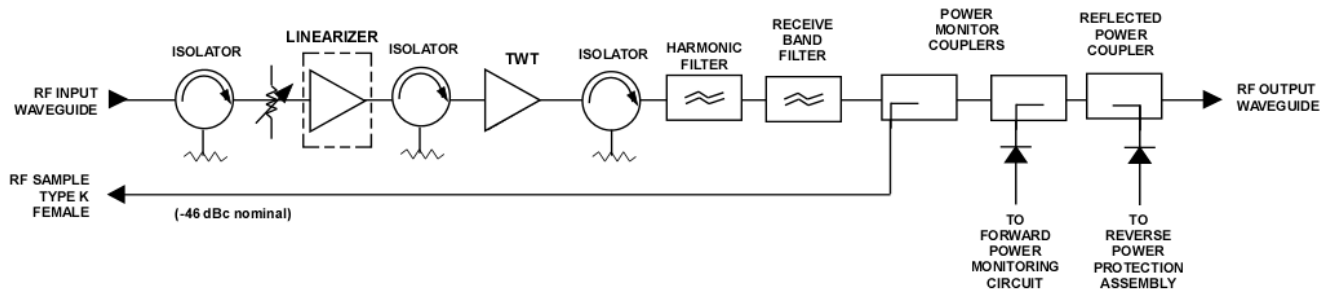
The amplifier is equipped with an internal 1:1 switch control capable of driving an input and output switch for redundancy. Rack mountable controllers are also available.



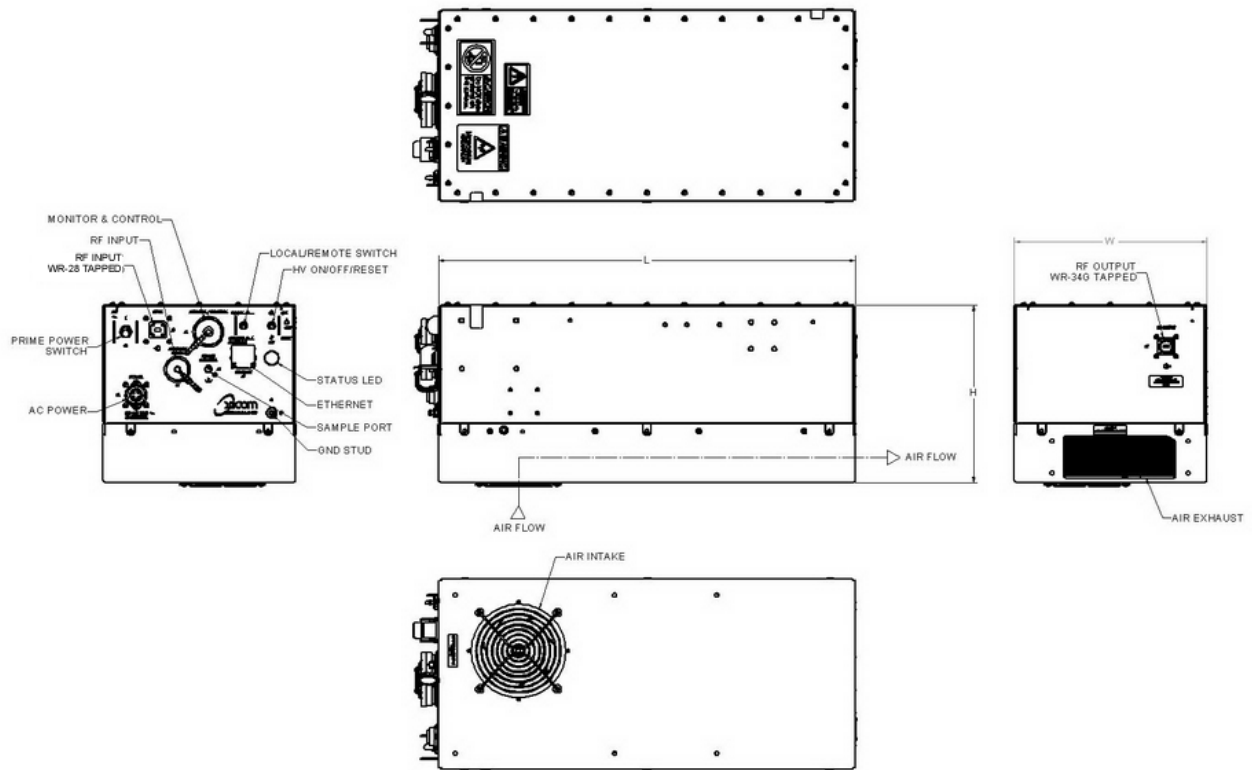
PERFORMANCE SPECIFICATION

Parameters	XTD-500KaL-EN1	XTD-550KaL-EN2
FREQUENCY RANGE	27.0 to 29.5 GHz	
OUTPUT POWER		
Traveling Wave Tube	500W (57 dBm)	550W (57.4 dBm)
Rated Power @ Amplifier Flange	250W (54.0 dBm)	250W (54.0 dBm)
Linear Power @ Amplifier Flange: -19 dB NPR	166W (52.2 dBm)	182W (52.6 dBm)
GAIN		
Large Signal (minimum)	70 dB	
Small Signal (minimum)	70 dB	
Attenuator range (0.1 dB steps)	30 dB	
Maximum Gain Variation @ P_{LINEAR}		
Any 500 MHz	1 dB	
Any 1 GHz Band (maximum)	2.5 dB	
Slope (maximum)	± 0.04 dB/MHz	
Stability, 24 hr. (maximum)	± 0.25 dB	
Stability, Temperature (maximum)	± 1.0 dB at any frequency	
INTERMODULATION (maximum) with two equal carriers	-26 dBc @ P_{Linear}	
HARMONIC OUTPUT (maximum)	-60 dBc	
AM/PM Conversion (maximum)	2 deg/dB @ P_{Linear}	
NOISE POWER (maximum)		
Transmit Band	-75 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	0.001 nS/MHz ²	
Ripple	0.5 nS/Pk-Pk	
RESIDUAL AM NOISE (maximum)	-55 dBc to 10 kHz -20 (1.5 + logf) dBc 10 to 500 kHz -85 dBc above 500 kHz	
PHASE NOISE (maximum)	20 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc	
SHOCK/VIBRATION	20G peak, 11ms 1/2 sine, 2.1grms, 5-500Hz (non-operational)	
VSWR		
Input (maximum)	1.3:1	
Output (maximum)	1.3:1	

BLOCK DIAGRAM



OUTLINE DRAWING



DIMENSIONS		
	INCHES	CENTIMETERS
L	22.25	56.52
H	9.50	24.13
W	10.25	26.04
Typical Weight = 58 lb (26.31 kg)		

PRIME POWER

90 to 264 VAC
47 to 66 Hz, Single Phase
1400 VA Typical
0.95 Min. Prime Power Factor



ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +60°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
	Power Supply ON/OFF	HV ON/OFF
LOCAL STATUS	Tri-Color LED:	
	Fault: Red	Standby: Continuous Amber
	HV ON: Green	
REMOTE CONTROL	HV ON/OFF	RF Inhibit (HV OFF)
	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	-50 dB Coupling Value (nominal)	
INTERFACE	Serial 232/422/485 Ethernet	

OPTIONS

- WR-28 Waveguide
- Alternate Frequency Coverage in the 27 to 31 GHz Band
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Phase Combined
- L-Band Block Upconverter
- Nonlinearized

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